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FORUM

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5-11 DECEMBER 2022  
ONLINE ONLY



# 高端精密实验环境 系统建设领导者

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- 5、三维运维平台，全方位的运行维护及展示



# SPIE/COS Photonics Asia Digital Forum

During the week of 5-11 December, presentation video recordings will be made available to registered attendees.

After the Digital Forum ends, participants can use the 50 proceedings download tokens they received with registration to access presentation videos and manuscripts from the SPIE/COS Photonics Asia event.

**This program was pulled 2 December 2022, and contains all submissions accepted into the program. Not all listings in this program will submit a presentation for participation in the digital forum, and therefore may not be displayed during the event.**

## Conferences — On-demand starting 5 December

|   |       |   |       |
|---|-------|---|-------|
| <b>Plenary Presentations</b> . . . . .                            | 2-3   | Conference 12318 . . . . .  | 29-33 |
| Conference 12310 . . . . .  | 5-7   | <b>Holography, Diffractive Optics, and Applications XII</b>               |       |
| <b>Advanced Lasers, High-Power Lasers, and Applications XIII</b>  |       | Chair(s): Changhe Zhou; Ting-Chung Poon; Liangcai Cao; Hiroshi Yoshikawa  |       |
| Chair(s): Jun Liu; Shibin Jiang; Ingmar Hartl                     |       | Conference 12319 . . . . .  | 35-39 |
| Conference 12311 . . . . .  | 8-10  | <b>Optical Metrology and Inspection for Industrial Applications IX</b>    |       |
| <b>Semiconductor Lasers and Applications XII</b>                  |       | Chair(s): Sen Han; Gerd Ehret; Benyong Chen                               |       |
| Chair(s): Wei Li; Werner H. Hofmann; Yikai Su                     |       | Conference 12320 . . . . .  | 40-44 |
| Conference 12312 . . . . .  | 11-12 | <b>Optics in Health Care and Biomedical Optics XII</b>                    |       |
| <b>Advanced Laser Processing and Manufacturing VI</b>             |       | Chair(s): Qingming Luo; Xingde Li; Ying Gu; Dan Zhu                       |       |
| Chair(s): Rongshi Xiao; Minghui Hong; Jianhua Yao; Yuji Sano      |       | Conference 12321 . . . . .  | 45-48 |
| Conference 12313 . . . . .  | 13-14 | <b>Advanced Sensor Systems and Applications XII</b>                       |       |
| <b>Photonics for Energy II</b>                                    |       | Chair(s): Minghong Yang; Gang-Ding Peng; Xinyu Fan                        |       |
| Chair(s): Haizheng Zhong; Rui Zhu; Samuel D. Stranks; Jianpu Wang |       | Conference 12322 . . . . .  | 50-54 |
| Conference 12314 . . . . .  | 15-17 | <b>Nanophotonics, Micro/Nano Optics, and Plasmonics VIII</b>              |       |
| <b>Optoelectronic Devices and Integration XI</b>                  |       | Chair(s): Zhiping Zhou; Kazumi Wada; Limin Tong; Zheyu Fang; Takuo Tanaka |       |
| Chair(s): Xuping Zhang; Baojun Li; Changyuan Yu; Xinliang Zhang   |       | Conference 12323 . . . . .  | 55-57 |
| Conference 12315 . . . . .  | 19-22 | <b>Quantum and Nonlinear Optics IX</b>                                    |       |
| <b>Optical Design and Testing XII</b>                             |       | Chair(s): Qiongyi He; Dai-Sik Kim; Chuan-Feng Li                          |       |
| Chair(s): Yongtian Wang; Tina E. Kidger; Rengmao Wu               |       | Conference 12324 . . . . .  | 59-62 |
| Conference 12316 . . . . .  | 23-25 | <b>Infrared, Millimeter-Wave, and Terahertz Technologies IX</b>           |       |
| <b>Advanced Optical Imaging Technologies V</b>                    |       | Chair(s): Cunlin Zhang; Xi-Cheng Zhang; Masahiko Tani                     |       |
| Chair(s): Xiao-Cong Yuan; P. Scott Carney; Kebin Shi              |       |   |       |
| Conference 12317 . . . . .  | 26-28 |   |       |
| <b>Optoelectronic Imaging and Multimedia Technology IX</b>        |       |   |       |
| Chair(s): Qionghai Dai; Tsutomu Shimura; Zhenrong Zheng           |       |   |       |

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# Plenary Presentations

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The SPIE/COS Photonics Asia plenary session featured livestreamed presentations from a wide range of leaders in select fields, with focus on developing research and visions of the future of optics and photonics technologies.

## Nature of light wave and photonic devices

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**Yi Luo**  
Tsinghua University (China)

Light wave is of some attractive natures such as huge bandwidth, the possibility to control optical field 2D parallelly by optical free form surface and optical diffraction device. Such nature is very important to many applications such fiber telecommunications, high-speed 3D sensing lidar systems, and VR/AR components. In this talk, those optical devices based on the nature of light wave, including ultra-high speed DFB laser integrated with EA modulators, ultra-wide band lithium niobate thin film optical modulators, and ultra-high-speed photodetectors, will be introduced.

Yi Luo, Professor of Department of Electronic Engineering, Tsinghua University. Vice Director of Beijing National Research Center for Information Science and Technology, Oversea Editor of Japanese Journal of Applied Physics, Oversea Editor of Applied Physics Express, and Program committee member of ECOC (European Conference on Optical Communication). He has a long-term research focus on basic theory of semiconductor optoelectronic devices, fabrication technology, application technology development and training. He has obtained many outstanding contributions in optoelectronic devices to support broadband fiber optic network and semiconductor lighting technology. Prof. Luo has won three Second Prize of the State Technological Invention Awards (ranked 1), one Second Prize of the State Scientific and Technological Progress Awards (ranked 2), three provincial-level awards (ranked 1).

## Early detection of cancer with miniature optical endoscopes

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**Jennifer K. Barton**  
Biomedical Engineering at  
Univ of Arizona (United States)

With multiple mechanisms of contrast, high sensitivity, high resolution, and the possibility to create miniature, inexpensive devices, light-based techniques have tremendous potential to positively impact cancer detection and survival. Many organs of the body can be reached in a minimally-invasive fashion with small flexible endoscopes. Some organs, such as the fallopian tubes and ovaries, require extremely miniature (sub-mm) and flexible endoscopes to avoid tissue cutting. Additionally, some modalities, such as side-viewing optical coherence tomography, are naturally suited to miniature endoscopes, whereas others like forward-viewing reflectance or fluorescence imaging, may require performance tradeoffs. The development of small, robust and fiber-delivered advanced light sources, miniature fiber bundles, and sensitive detectors has aided the development of novel miniature endoscopes. We have incorporated these technological advances to build endoscopes for challenging applications, especially early detection of ovarian cancer.

Jennifer K. Barton is known for her development of miniature endoscopes that combine two novel imaging techniques: optical coherence tomography and fluorescence spectroscopy. She also evaluates the suitability of these optical techniques for detecting early cancer development in patients and pre-clinical models. She is particularly interested in colon and ovarian cancer, and conducted the first pilot test of optical coherence tomography in women,

seeking to determine if this technique could identify the early stages of cancerous development. Dr. Barton has also conducted significant research into laser-tissue interaction and dynamic optical properties of blood. This work laid the groundwork for a novel therapeutic laser to treat disorders of the skin's blood vessels (port wine stains). She has published over 110 peer-reviewed journal papers in these and related research areas. Dr. Barton was inaugural Head of the Department of Biomedical Engineering and previously served as Associate Vice President for Research. She is a fellow of SPIE and the American Institute for Medical and Biological Engineering. Dr. Barton received the BS and MS degrees in electrical engineering from the University of Texas at Austin and University of California, Irvine, respectively. She worked for McDonnell Douglas (now Boeing) on the Space Station program before returning to the University of Texas at Austin to obtain the Ph.D. in Biomedical Engineering in 1998.

## Quantum steering and its applications in quantum information

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**Qiongyi He**  
Peking University (China)

The concept of quantum steering was originally introduced by Schrödinger to describe the "spooky action-at-a-distance" effect noted in the Einstein-Podolsky-Rosen (EPR) paradox, whereby local measurements performed on one party apparently adjust (steer) the state of another distant party. In this talk, I will give an introduction about the advances of the EPR steering and its advantage as quantum resource. Then I will present our efforts on characterizing bipartite and multipartite steering and developing its unique applications in quantum information processing. I will give an overview of our recent developments on quantum steering and its applications in quantum information. I will share our view about the current challenges, opportunities and the future directions for this topic.

Qiongyi He has been focusing on the research of fundamental issues in quantum physics and quantum optics. Specifically, she is working on the creation and testing squeezing, entanglement, EPR nonlocality, etc., and developing methods to classify and quantify various types of quantum correlations and their applications in quantum information processing. She received her B.S. degree from Northeast Normal University in 2002 and Ph.D. degree from Jilin University in 2007. She then joined the University of Queensland and Swinburne University in Australia as a postdoctoral researcher, undertaking Australian Postdoctoral Fellowship and Discovery Early Career Research Award. Since 2012, she has been working at Peking University as a tenured-tracked associate professor. In 2018, she was promoted to a tenured faculty position and a full professor in 2022. She has authored more than 80 papers in Nature Physics, Nature Communications, Physical Review Letters, and others. She was granted by the National Science Foundation for Distinguished Young Scholars in 2021.

### Sculpted light in optical micromanipulation and quantum atom optics

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**Halina Rubinsztein-Dunlop**

Quantum Science Laboratory, The University of Queensland (Australia)

Sculpted light refers to the generation of custom designed light fields. These light fields can be applied in many diverse fields ranging from interrogating single atoms or atom assembly to using these fields for optical micromanipulation and optical tweezers as well as creating new quantum devices and sensors. We consider here the study and application of light with structured intensity, polarization and phase. We can create custom fields in multiple planes using dynamic and geometric phase control. As an example, the use of sculpted light in imaging has led to superresolution microscopy developed by Betzig, Hell and Moerner (2014 Nobel prize in Chemistry). Sculpted light can be generated using several technologies. These are spatial light modulators (SLM) and Digital Micromirror Devices (DMD) that enable the production of configurable and flexible confining potentials at the nano and micron-scale. Sculpted light can also be produced using time averaged methods such as Acousto-Optics Modulators (AOM), enabling production of highly configurable time-averaged traps. All these methods achieve dynamical and flexible sculpted light fields and enable imaging of the amplitude patterns, phase and polarization. Using these sculpted light we can produce novel optical potentials which can be used for intricate studies of light-matter interactions in a variety of environments. We will describe their use ranging from studies such as quantum thermodynamics using ultra cold atoms to trapping and manipulating nano and micron-size objects or even making measurements in-vivo inside biological cells.

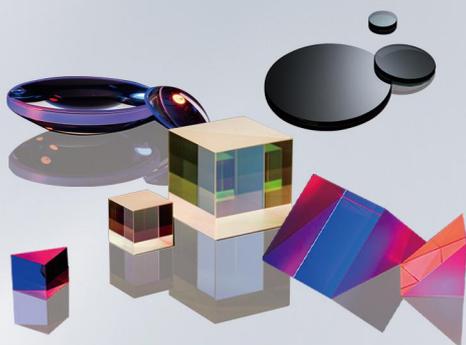
Halina Rubinsztein-Dunlop is Professor of Physics in the School of Mathematics and Physics at the University of Queensland. She was educated at the University of Gothenburg and Chalmers University of Technology, Gothenburg in Sweden. She is a Director of ARC CoE for Engineered Quantum Systems Translational Research Program and was for nine years Head of School of Mathematics and Physics. At the University of Queensland Halina leads large research groups in experimental quantum atom optics, laser micromanipulation and biophotonics. She also leads a program in the ARC Centre of Excellence in Engineered Quantum Systems. Halina has been awarded Australian Institute of Physics International Woman in Physics, Lecture Tour Medal and University of Queensland Award for Excellence in Research Higher Degree Supervision. Halina is a Fellow of Australian Academy of Science, a Fellow of SPIE and of Optica. Halina was awarded Officer in the General Division (AO) of the Order of Australia for distinguished service to laser physics and nano-optics as a researcher, mentor and academic, to the promotion of educational programs, and to women in science in 2018. She was also awarded Australian Optical Society W.H. (Beattie) Steel Medal, 2018 and 2018 Eureka Prizes in UNSW Eureka Prize for Excellence in Interdisciplinary Scientific Research (Optical Physics in Neuroscience). In 2019 she was awarded Lise Meitner Distinguished Lecture Tour 2019 Germany and Austria. In 2021 Halina was awarded the Optica 2021 C.E.K. Mees Medal. Most recently she was awarded AIP Harrie Massey Medal. Rubinsztein-Dunlop's group has published over 295 papers that have received over 10300 citations in the world's leading scientific journals. Halina is also actively involved in popularisation and promotion of science.



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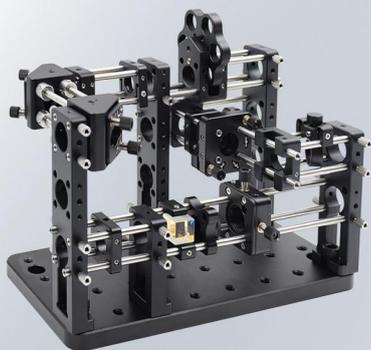
### 光学元件

产品种类齐全，透镜，反射镜  
滤光片，分光镜，相位元件等



### 光纤准直镜/耦合镜

单模光纤准直镜，大口径准直镜  
可调焦准直镜，多模光纤准直镜



### 同轴系统

系统模块化搭建，  
16mm，30mm，60mm系统齐全



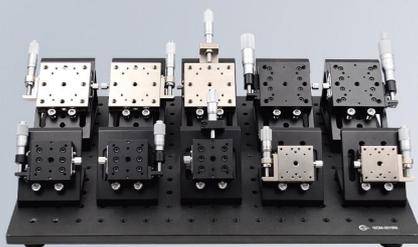
### 功率计

多种控制形式，多种探头选择，  
波段范围覆盖广，测量功率范围大



### 电控移动台

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**Advanced Lasers, High-Power Lasers, and Applications XIII****Proceedings of SPIE Vol. 12310**

*Conference Chairs:* **Jun Liu**, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **Shibin Jiang**, AdValue Photonics, Inc. (United States); **Ingmar Hartl**, Deutsches Elektronen-Synchrotron (Germany)

*Program Committee:* **Willy L. Bohn**, BohnLaser Consult (Germany); **Guoqing Chang**, Institute of Physics, Chinese Academy of Sciences (China); **Dianyuan Fan**, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **Mali Gong**, Tsinghua Univ. (China); **Minglie Hu**, Tianjin Univ. (China); **Do-Kyeong Ko**, Gwangju Institute of Science and Technology (Korea, Republic of); **Ruxin Li**, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **Zhaoyang Li**, Zhangjiang Lab. (China); **Chong Liu**, Zhejiang Univ. (China); **Zejin Liu**, National Univ. of Defense Technology (China); **Deyuan Shen**, Fudan Univ. (China); **Upendra N. Singh**, NASA Langley Research Ctr. (United States); **Fengqiu Wang**, Nanjing Univ. (China); **Shuangchun Wen**, Shenzhen Univ. (China); **Zuyan Xu**, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences (China); **Jianquan Yao**, Tianjin Univ. (China); **Tai Hyun Yoon**, Korea Univ. (Korea, Republic of); **Jirong Yu**, NASA Langley Research Ctr. (United States); **Heping Zeng**, East China Normal Univ. (China); **Xiaomin Zhang**, China Academy of Engineering Physics (China); **Pu Zhou**, National Univ. of Defense Technology (China); **Shou-huan Zhou**, Sichuan Univ. (China)

**KEYNOTE SESSION**

12310-1

**Spatiotemporal sculpturing of ultrashort pulses (Keynote Presentation)**

Author(s): Qiwen Zhan, Univ. of Shanghai for Science and Technology (China)

**ULTRA-INTENSE AND HIGH-POWER LASERS**

12310-2

**40 W, 10 kHz-1 MHz repetition rate femtosecond Yb solid-state regenerative amplifier**

Author(s): Jiangfeng Zhu, Wenlong Tian, Geyang Wang, Chun Bai, Lv Renchong, Xidian Univ. (China); Hao Teng, Zhiyi Wei, Institute of Physics (China)

12310-3

**Research on the effect of image noise on non-iterative fast mode decomposition technique in high-power fiber lasers**

Author(s): Yu Deng, Qi Chang, Tianyue Hou, Pengfei Ma, Pu Zhou, National Univ. of Defense Technology (China)

12310-4

**Study on cleaning technology of neodymium-doped amplifier slabs for high-power laser system**

Author(s): Yilan Jiang, Haibing Lv, Guorui Zhou, Longfei Niu, Xinxiang Miao, China Academy of Engineering Physics (China)

12310-5

**Coherent combination of low repetition rate pulsed lasers with multi-dithering phase-locking algorithm based on synchronous filtering method**

Author(s): Jiali Zhang, Chenyu Xu, Jie Cao, Yang Cheng, Liquan Dong, Qun Hao, Beijing Institute of Technology (China)

12310-6

**High-performance seed pulses for multi-petawatt laser**

Author(s): Wenhai Liang, Shanghai Institute of Optics and Fine Mechanics (China), Univ. Ctr. of Materials Science and Optoelectronics Engineering (China); Renjing Chen, Shanghai Institute of Optics and Fine Mechanics (China), Univ. Ctr. of Materials Science and Optoelectronics Engineering (China); Peng Wang, Shanghai Institute of Optics and Fine Mechanics (China), Zhangjiang Lab. (China); Jun Liu, Ruxin Li, Shanghai Institute of Optics and Fine Mechanics (China), Univ. Ctr. of Materials Science and Optoelectronics Engineering (China), Zhangjiang Lab. (China)

12310-7

**Millijoule femtosecond Tm:YAP regenerative amplifier for driving ultrabroad band collinear mid-infrared optical parametric amplifiers (Invited Paper)**

Author(s): Takao Fuji, Toyota Technological Institute (Japan)

12310-8

**Progress in 2- $\mu$ m high-power ultrafast thin-disk lasers (Invited Paper)**

Author(s): Yicheng Wang, Sergei Tomilov, Weichao Yao, Shahwar Ahmed, Martin Hoffmann, Clara J. Saraceno, Ruhr-Univ. Bochum (Germany)

**FIBER AND SOLID LASERS I**

12310-9

**High-power mid-infrared ultrafast fiber lasers (Invited Paper)**

Author(s): Chunyu Guo, Linpeng Yu, Jinhui Liang, Shenzhen Univ. (China); Shuangchen Ruan, Shenzhen Technology Univ. (China)

12310-10

**Laser performance of LD side-pumped Er: YSGG crystal rods with different diameters**

Author(s): Lunzhen Hu, Anhui Univ. (China), Anhui Institute of Optics and Fine Mechanics (China); Dunlun Sun, Anhui Institute of Optics and Fine Mechanics (China); Yuqiang Hou, Anhui Univ. (China); Evgeny L. Gurevich, Univ. of Applied Sciences Münster (Germany); Andreas Ostendorf, Ruhr-Univ. Bochum (Germany); Qingchuan Guo, Anhui Univ. (China)

12310-11

**A passively Q-switched dual-wavelength laser with pulsed LD coaxial end-pumped configuration**

Author(s): Xianzhong Zhang, Kai Zhong, Hongzhan Qiao, Yizhe Zheng, Fangjie Li, Degang Xu, Jianquan Yao, Tianjin Univ. (China)

12310-12

**Thermal effect analysis on cuboid Pr:YLF crystals pumped by blue laser diodes**

Author(s): Wang Ping, Ran Xia, Yu Xiao, Qinyun Yuan, Xiahui Tang, Gang Xu, Huazhong Univ. of Science and Technology (China)

**FIBER AND SOLID LASERS II**

12310-13

**New progress of high-power narrow-linewidth fiber lasers (Invited Paper)**

Author(s): Pengfei Ma, Tianfu Yao, Yisha Chen, Guangjian Wang, Shuai Ren, Wei Li, Wei Liu, Zhiyong Pan, Liangjin Huang, Huan Yang, Zilun Chen, Pu Zhou, Jinbao Chen, National Univ. of Defense Technology (China)

12310-14

**Study on pulse jitter of passively Q-switched Nd:YAG/Cr:YAG microchip laser**

Author(s): Hongzhan Qiao, Kai Zhong, Fangjie Li, Xianzhong Zhang, Sijia Wang, Yizhe Zheng, Tana Gegen, Xinqi Li, Degang Xu, Jianquan Yao, Tianjin Univ. (China)

12310-15

**Single longitudinal mode and wavelength tunable Er<sup>3+</sup>-doped sesquioxide ceramic laser at ~1.6 μm**

Author(s): Linglin Sheng, Hangbin Xie, Weiwei Huang, Jianing Zhang, Jiangsu Normal Univ. (China); Fei Wang, Jiangsu Collaborative Innovation Ctr. of Advanced Laser Technology and Emerging Industry (China), Jiangsu Institute of Mid Infrared Laser Technology and Applications (China); Deyuan Shen, Jun Wang, Jiangsu Normal Univ. (China), Jiangsu Collaborative Innovation Ctr. of Advanced Laser Technology and Emerging Industry (China); Dingyuan Tang, Jiangsu Normal Univ. (Singapore)

12310-16

**A general theoretical model of spatiotemporal mode-locked multimode fiber lasers**

Author(s): Lili Kong, Jiayu Lu, Beijing Univ. of Posts and Telecommunications (China); Xiaosheng Xiao, Beijing Univ of Posts and Telecommunications (China)

12310-43

**Simple method to generate all fiber CVBs and LP01 mode switchable laser**

Author(s): Xinhua Jiang, Anting Wang, Univ. of Science and Technology of China (China)

**FIBER AND SOLID LASERS III**

12310-17

**Recent progress in spatiotemporal mode-locked multimode fiber lasers (Invited Paper)**

Author(s): Xiaosheng Xiao, Beijing Univ. of Posts and Telecommunications (China)

12310-18

**Photodarkening-induced power degradation of single-mode Yb<sup>3+</sup>-doped fiber laser**

Author(s): Li Yanyan, Shijie Fu, Junxiang Zhang, Quan Sheng, Xun Deng, Wei Shi, Jianquan Yao, Tianjin Univ. (China)

12310-19

**A 209 MHz compact all-fiber Er-doped mode-locked laser**

Author(s): Qiuying Ma, Tsinghua Univ. (China); Haoyang Yu, Central South Univ. (China); Qian Zhou, Xinghui Li, Guanhao Wu, Kai Ni, Tsinghua Univ. (China)

12310-20

**Power scaling over kilowatt on random distributed feedback Raman fiber laser based on multimode graded-index fiber**

Author(s): Chenchen Fan, Tianfu Yao, Hu Xiao, Jiangming Xu, Jinyong Leng, Pu Zhou, National Univ. of Defense Technology (China); Alexey A. Wplf, Ilya N. Nemov, Alexey G. Kuznetsov, Sergey I. Kablukov, Sergey A. Babin, Institute of Automation and Electrometry of the SB RAS (Russian Federation)

**FIBER AND SOLID LASERS IV**

12310-21

**High-dimensional OAM generation and recognition for beams (Invited Paper)**

Author(s): Shiyao Fu, Beijing Institute of Technology (China)

12310-22

**A stable and tunable PT-symmetric single-longitudinal-mode fiber laser**

Author(s): Liu-Yuan Tao, Fei Wang, Zheng-Mao Wu, Guang-Qiong Xia, Southwest Univ. (China)

12310-24

**Gain- and Q-switched operation of Er:Y<sub>2</sub>O<sub>3</sub> ceramic laser at 1640 nm**

Author(s): Hangbin Xie, Weiwei Huang, Linglin Shen, Jianing Zhang, Jiangsu Normal Univ. (China); Fei Wang, Jiangsu Collaborative Innovation Ctr. of Advanced Laser Technology and Emerging Industry (China), Jiangsu Institute of Mid Infrared Laser Technology and Applications (China); Deyuan Shen, Jiangsu Normal Univ. (China), Jiangsu Collaborative Innovation Ctr. of Advanced Laser Technology and Emerging Industry (China); Jun Wang, Jiangsu Normal Univ. (China); Dingyuan Tang, Jiangsu Normal Univ. (China), Jiangsu Collaborative Innovation Ctr. of Advanced Laser Technology and Emerging Industry (China)

12310-25

**1 kW low-SWaP fiber laser based on the technology of phase-change cool storage**

Author(s): Yanxing Ma, Jian Wu, Baolai Yang, Feng He, Pu Zhou, Lei Si, Xiaojun Xu, National Univ. of Defense Technology (China)

**ADVANCED LASER APPLICATIONS**

12310-26

**Laser-driven ultra-high dose rate protons for radiobiological research of the FLASH effect (Invited Paper)**

Author(s): Jianhui Bin, Shanghai Institute of Optics and Fine Mechanics (China)

12310-27

**Radiometric correction method for hyperspectral LiDAR considering incident angle**

Author(s): Wenxin Tian, Chinese Academy of Sciences (China)

12310-28

**Online monitoring of trace amount of airborne molecular contaminants based on microfiber structure**

Author(s): Guorui Zhou, Siheng Xiang, Hui You, Longfei Niu, Yilan Jiang, China Academy of Engineering Physics (China)

12310-29

**Frequency stepwise fiber laser for practical gas spectroscopy (Invited Paper)**

Author(s): Tao Chen, The Shanghai Institute of Technical Physics (China); Xin Chen, The Shanghai Institute of Technical Physics (China); Wei Kong, The Shanghai Institute of Technical Physics (China); Genghua Huang, Rong Shu, The Shanghai Institute of Technical Physics (China)

12310-30

**Atomic-level insight into the formation of subsurface dislocation layer and its effect on mechanical properties during ultrafast laser micro/nano fabrication**

Author(s): Jianfeng Yan, Jiawang Xie, Tsinghua Univ. (China)

12310-31

**A simple method to estimate molecular contamination level of the final optics assembly(FOA) in the high-power solid-state laser facility**

Author(s): Longfei Niu, Yilan Jiang, Jin Huang, Lin Huang, Hongwei Yan, Haibing Lv, Laser Fusion Research Ctr., China Academy of Engineering Physics (China)

12310-32

**Gain-self-balanced coaxial-end-pumped orthogonally polarized laser with high coherence and good beam quality**

Author(s): Yizhe Zheng, Tianjin Univ. (China); Kai Zhong, Tianjin Univ (China); Hongzhan Qiao, Xianzhong Zhang, Fangjie Li, Sijia Wang, Tana Gegen, Xinqi Li, Degang Xu, Jianquan Yao, Tianjin Univ. (China)

POSTER SESSION

Some posters may have an accompanying preview video from the presenter.

12310-23

**High-efficient diode-end-pumped actively Q-switched Nd:YAG/Nd:YVO<sub>4</sub> laser**

Author(s): Pengbo Jiang, Qilu Univ. of Technology (China); Xin Ding, Tianjin Univ. (China); Jian Guo, Qilu Univ. of Technology (China); Haiwei Zhang, Tianjin Univ. of Technology (China); Haifeng Qi, Ying Shang, Zhiqiang Song, Weitao Wang, Chen Wang, Jiasheng Ni, Qilu Univ. of Technology (China); Jianquan Yao, Tianjin Univ. (China)

12310-33

**Watt-level self Q-switched all-fiber Er laser in a liner cavity**

Author(s): Haizhou Huang, Jiangdian Zhang, Lixia Wu, Liming Xin, Jinhui Li, Wenxiong Lin, Fujian Institute of Research on the Structure of Matter (China)

12310-34

**Mid-infrared properties of optical parametric oscillations based on layered PtS<sub>2</sub> modulated laser pumping**

Author(s): Heze Guo, Jing Wang, Xinyu Hu, Kai Jiang, Wenjing Tang, Wei Xia, Univ. of Jinan (China)

12310-35

**Nonlinear optical properties and laser modulation of gold non-covalently doped all-inorganic perovskite**

Author(s): Leilei Guo, Yifan Zhang, Xia Wang, Mengqi Lv, Maorong Wang, Enlin Cai, Linhong Hao, Qingdao Univ. of Science and Technology (China)

12310-36

**Research on the wavefront control technology in high-power laser device**

Author(s): Xiaolu Zhang, China Academy of Engineering Physics (China)

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**Passively Q-switched fiber laser based on Sb<sub>2</sub>S<sub>3</sub> saturable absorber**

Author(s): Xuehui Yao, Yunnan Normal Univ. (China); Ya Liu, Xin Tan, Yongkang Zheng, Zewu Xie, Yunnan Normal Univ. (China)

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**Single-frequency fiber laser with tunable linewidth by optical self-injection**

Author(s): Ziqi Zheng, Qiaoxia Luo, Kai Chen, Yiqi Chu, Xian Wang, Kai Zhang, Weiqing Gao, Yong Zhou, Hefei Univ. of Technology (China)

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**Study on the simulation of YDFA and reabsorption effect**

Author(s): Tianjia Xu, Beijing Jiaotong Univ. (China), Beijing Institute of Technology (China); Xinyang Su, Beijing Jiaotong Univ. (China)

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**Experimental study of a new kind of gas-flowing diode pumped cesium laser**

Author(s): Guofei An, Jiao Yang, Jiawei Guo, He Cai, Kepeng Rong, You Wang, Southwest Institute of Technical Physics (China)

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**The ratio of quadratic and cubic nonlinearity of crystals in the THz range**

Author(s): I. R. Artser, M. S. Guseynikov, M. V. Melnik, A. N. Tsyarkin, S. A. Kozlov, ITMO Univ. (Russian Federation)

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**Random lasing in multimode diode-pumped graded-index fiber based on artificial Rayleigh scattering in fs-inscribed random structure**

Author(s): A. G. Kuznetsov, A. A. Wolf, Zh. Munkueva, S. A. Babin, Institute of Automation and Electrometry SB RAS (Russian Federation)

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**Incoherent laser**

Author(s): S. Kobtsev, Novosibirsk State Univ. (Russian Federation)

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**7-core Yb-doped fiber laser with femtosecond pulse inscribed fiber Bragg gratings**

Author(s): Alexey A. Wolf, Alexey G. Kuznetsov, Institute of Automation and Electrometry of the SB RAS (Russian Federation); Olga N. Egorova, Sergey L. Semjonov, Dianov Fiber Optics Research Ctr., Prokhorov General Physics Institute RAS (Russian Federation); Sergey A. Babin, Institute of Automation and Electrometry of the SB RAS (Russian Federation)

# Semiconductor Lasers and Applications XII

## Proceedings of SPIE Vol. 12311

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### APPLICATIONS OF LASER DIODES

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#### **Optical domain controlled microwave signal processing technology** (*Invited Paper*)

Author(s): Sha Zhu, College of Microelectronics, Beijing Univ. of Technology (China), City Univ. of Hong Kong (China); Jiaxue Feng, College of Microelectronics, Beijing Univ. of Technology (China); Kunpeng Zhai, Institute of Semiconductors, Chinese Academy of Sciences (China), Univ. of Chinese Academy of Sciences (China); Ninghua Zhu, Institute of Semiconductors, Chinese Academy of Sciences (China), University of Chinese Academy of Sciences (China)

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#### **Comparison of kramers–kronig and coherent receivers for few-mode long-haul optical transmission**

Author(s): Jiahui Yang, Jian Zhao, Yuqing Yang, Tianyu Gao, Yanze Wang, Tianjin Univ. (China); Tianhua Xu, The Univ. of Warwick (United Kingdom)

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#### **Absolute distance measurement based on laser self-mixing interferometry and deep neural network**

Author(s): Jinyuan Yuan, Yangfan Jiang, Bin Liu, Xiangtan Univ. (China)

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#### **Fixed low-frequency pilot analysis for self-calibrated frequency response characterization of electro-absorption modulated lasers**

Author(s): Mengke Wang, Univ. of Electronic Science and Technology of China (China), National Institute of Measurement and Testing Technology (China); Ying Xu, Zhao Liu, Yali Zhang, Zhiyao Zhang, Shangjian Zhang, Yong Liu, Univ. of Electronic Science and Technology of China (China)

12311-5

#### **Self-reference photonic sampling measurement of photodiode chips with microwave de-embedding**

Author(s): Yutong He, Chao Jing, Mengke Wang, Ying Xu, Yali Zhang, Zhiyao Zhang, Shangjian Zhang, Yong Liu, Univ. of Electronic Science and Technology of China (China)

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#### **Estimation of displacement direction based on self-mixing interferometry and convolutional neural networks**

Author(s): Lei An, Bo Wang, Bin Liu, Xiangtan Univ. (China)

### CHARACTERIZATION TECHNOLOGIES FOR LASER DIODES

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#### **Generation mechanics and reduction of “smile” of conduction cooled diode bars during the annealing process**

Author(s): Lingling Xiong, Hui Liu, Xi'an Polytechnic Univ. (China); Jinhua Han, Sichuan University (China); Dong Hou, Lei Gao, Xuejie Liang, Focuslight Technologies, Inc. (China)

12311-10

#### **Study of thermal characteristics of high-power photonic crystal laser diodes with CS-mount package**

Author(s): Yu Zhang, Qufu Normal Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China); Hongwei Qu, Weifang Academy of Advanced Opto-Electronic Circuits (China), Institute of Semiconductors, Chinese Academy of Sciences (China); Guangqiang Liu, Qufu Normal Univ. (China); Xuyan Zhou, Weifang Academy of Advanced Opto-Electronic Circuits (China), Institute of Semiconductors, Chinese Academy of Sciences (China); Jianxin Zhang, Weifang Academy of Advanced Opto-Electronic Circuits (China), Weifang Univ. (China); Aiyi Qi, Institute of Semiconductors, Chinese Academy of Sciences (China); Yufei Wang, Weifang Academy of Advanced Opto-Electronic Circuits (China), Institute of Semiconductors, Chinese Academy of Sciences (China); Jiatong Sui, Meihao Zheng, Qufu Normal Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China)

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#### **The lateral leakage current restriction in the lateral direction of ridge diode lasers**

Author(s): Yi Jiang, Qufu Normal Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China); Xuyan Zhou, Weifang Academy of Advanced Opto-Electronic Circuits (China), Institute of Semiconductors, Chinese Academy of Sciences (China); Guangqiang Liu, Qufu Normal Univ. (China); Jianxin Zhang, Weifang Academy of Advanced Opto-Electronic Circuits (China), Weifang Univ. (China); Tongtong Li, Tingyu Si, Qufu Normal Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China)

12311-12

#### **Analysis of thermal characteristics of microchannel-cooled photonic crystal laser diode bars**

Author(s): Meihao Zheng, Qufu Normal Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China); Hongwei Qu, Weifang Academy of Advanced Opto-Electronic Circuits (China), Institute of Semiconductors, Chinese Academy of Sciences (China); Guangqiang Liu, Qufu Normal Univ. (China); Xuyan Zhou, Weifang Academy of Advanced Opto-Electronic Circuits (China), Institute of Semiconductors, Chinese Academy of Sciences (China); Jianxin Zhang, Weifang Academy of Advanced Opto-Electronic Circuits (China), Weifang Univ. (China); Aiyi Qi, Institute of Semiconductors, Chinese Academy of Sciences (China); Jiatong Sui, Yu Zhang, Qufu Normal Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China)

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**Method to reduce the smile of high-power diode laser bar by balancing the thermal-induced stress**

Author(s): Tingyu Si, Qufu Normal Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China); Xuyan Zhou, Weifang Academy of Advanced Opto-Electronic Circuits (China), Institute of Semiconductors, Chinese Academy of Sciences (China); Yangqing Wu, Qufu Normal Univ. (China); Jianxin Zhang, Weifang Academy of Advanced Opto-Electronic Circuits (China), Weifang Univ. (China); Tongtong Li, Yi Jiang, Qufu Normal Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China)

**INTEGRATED OPTOELECTRONIC DEVICES**

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**Reflection and temperature insensitive quantum dot lasers**

Author(s): Wenlu Wang, Harbin Institute of Technology (China); Zihao Wang, Institute of Physics (China); Ting Wang, Institute of Physics (China); Jiajian Chen, Institute of Physics (China); Jianjun Zhang, Institute of Physics (China); Jiawei Wang, Xiaochuan Xu, Yong Yao, Harbin Institute of Technology (China); Jianan Duan, Harbin Institute of Technology (China)

**MODELING AND DESIGN**

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**Design of a 976nm 190W fiber-coupled laser diode**

Author(s): Tongtong Li, Qufu Normal Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China); Xuyan Zhou, Weifang Academy of Advanced Opto-Electronic Circuits (China), Institute of Semiconductors, Chinese Academy of Sciences (China); Guangqiang Liu, Qufu Normal Univ. (China); Weiqiao Zhang, Weifang Academy of Advanced Opto-Electronic Circuits (China), Institute of Semiconductors, Chinese Academy of Sciences (China); Man Hu, Weifang Academy of Advanced Opto-Electronic Circuits (China), Institute of Semiconductors, Chinese Academy of Sciences (China); Jianxin Zhang, Weifang Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China); Tingyu Si, Yi Jiang, Qufu Normal Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China)

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**Research on high-frequency and high-reliability laser technology**

Author(s): Yuanrong Guo, Beijing Institute of Space Mechatronics (China)

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**Performance enhancement of distributed feedback laser with a partial grating**

Author(s): xu wei, Wei Hong, Shi Haotian, Junqiang Sun, Huazhong Univ. of Science and Technology (China)

**OPTICAL FREQUENCY COMBS**

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**Generation of tunable and broadband optical frequency comb based on gain-switching vertical-cavity surface-emitting laser driven by square wave signal under optical injection**

Author(s): Chen-Hao Gou, Jun-Hui Zhang, Yang Luo, Zi-Ye Gao, Qi-Bo Chen, Xuan Li, Li Fan, Southwest Univ. (China)

**SUBSYSTEMS USING LASER DIODES**

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**Multi-disciplinary strategies: methodologies and products (Invited Paper)**

Author(s): Hua Liu, Science and Technology on Electro-Optic Control Lab. (China)

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**State boundary of period-one dynamics in a semiconductor laser with dual external optical feedback**

Author(s): Yangfan Jiang, Jinyuan Yuan, Bin Liu, Xiangtan Univ. (China)

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**Comparison on the error rates of different coding in underwater optical communication using 520-nm green laser diode**

Author(s): Liqi Liu, Chongqing Normal Univ. (China)

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**The effect of multifrequency self-injection locking in the interaction of a semiconductor laser and a high-Q microcavity**

Author(s): Andrey N. Danilin, Lomonosov Moscow State Univ. (Russian Federation), Russian Quantum Ctr. (Russian Federation); Nikita M. Kondratiev, Ramzil R. Galiev, Technology Innovation Institute (United Arab Emirates); Valery E. Lobanov, Russian Quantum Ctr. (Russian Federation); Igor A. Bilenko, Lomonosov Moscow State Univ. (Russian Federation), Russian Quantum Ctr. (Russian Federation)

**VCSELS**

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**Vertical-external-cavity surface-emitting laser using multi-cascaded gain chip**

Author(s): Ri Yan, ChongQing Normal University (China)

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**High peak power self-mode-locked external-cavity surface-emitting blue laser**

Author(s): Lin Mao, Chongqing Normal Univ. (China)

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**Wet oxidation and its influence on high performance five-junction 940 nm VCSELS**

Author(s): Jiatong Sui, Qufu Normal Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China); Hongwei Qu, Weifang Academy of Advanced Opto-Electronic Circuits (China), Institute of Semiconductors, Chinese Academy of Sciences (China); Guangqiang Liu, Qufu Normal Univ. (China); Xuyan Zhou, Weifang Academy of Advanced Opto-Electronic Circuits (China), Institute of Semiconductors, Chinese Academy of Sciences (China); Jianxin Zhang, Weifang Academy of Advanced Opto-Electronic Circuits (China), Weifang Univ. (China); Fansheng Meng, Institute of Semiconductors, Chinese Academy of Sciences (China); Yufei Wang, Weifang Academy of Advanced Opto-Electronic Circuits (China), Institute of Semiconductors, Chinese Academy of Sciences (China); Yu Zhang, Meihao Zheng, Qufu Normal Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China)

POSTER SESSION

Some posters may have an accompanying preview video from the presenter.

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**Analysis of disturbances in the multi-radar environment and mitigation approaches**

Author(s): Yansong Bai, Nakarmi Bikash, Nanjing Univ. of Aeronautics and Astronautics (China); Ikechi Augustine Ukaegbu, Nazarbayev Univ. (Kazakhstan); Shilong Pan, Nanjing Univ. of Aeronautics and Astronautics (China)

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**Prototype demonstration of all-optical switches based on laser array**

Author(s): Zhewen Liu, Yaguang Wang, Qi Sun, Mi Li, Nanjing Univ. (China); Xingbang Zhu, The 41st Research Institute of China Electronics Technology Group Corp. (China); Tao Fang, Xiangfei Chen, Nanjing Univ. (China)

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**Thermal characterization of high-power GaSb-based laser**

Author(s): Jianmei Shi, Cheng'ao Yang, Yihang Chen, Tianfang Wang, Hongguang Yu, Yu Zhang, Yingqiang Xu, Zhichuan Niu, Institute of Semiconductors, Chinese Academy of Sciences (China), Univ. of Chinese Academy of Sciences (China)

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**Multi-channel chaos synchronization based on two asymmetric mutually coupled WRC-FPLDs**

Author(s): Qiu-Lan Zheng, Zi-Ye Gao, Xi Tang, Ying-Ke Xie, Fei Wang, Yi-Xin Ren, Zhou-Nan Du, Zheng-Mao Wu, Guang-Qiong Xia, Tao Deng, Southwest Univ. (China)

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**Numerical analysis on the mechanism of self-mode-locking in a semiconductor disk laser**

Author(s): Ya Dong Wu, Chongqing Normal Univ. (China)

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**Development of non-magnetic VCSEL module for compact atomic magnetometer**

Author(s): Quanpu Liu, Zhen Chai, Jixi Lu, Kaifeng Yin, Jianli Li, Beihang Univ. (China), Beihang Hangzhou Innovation Institute Yuhang (China)

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**Single transverse mode GaSb-based ridge waveguide lasers with low lateral beam divergence**

Author(s): Tian-fang Wang, Cheng-ao Yang, Yi-hang Chen, Jian-mei Shi, Hong-guang Yu, Xiang-bin Su, Institute of Semiconductors, Chinese Academy of Sciences (China), Univ. of Chinese Academy of Sciences (China); Yu Zhang, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Ying-qiang Xu, Hai-qiao Ni, Zhi-chuan Niu, Institute of Semiconductors, Chinese Academy of Sciences (China), Univ. of Chinese Academy of Sciences (China)

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**A compact milliwatt-level QCW high-power semiconductor laser array based on dual-chip integration**

Author(s): Pu Zhang, Key & Core Technology Innovation Institute of the Greater Bay Area (China), Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences (China); Wenzhen Ren, Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences (China); Bo Wang, Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences (China), Univ. of Chinese Academy of Sciences (China); Xiangping Zhu, Key & Core Technology Innovation Institute of the Greater Bay Area (China), Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences (China); Junhong Yang, Key & Core Technology Innovation Institute of the Greater Bay Area (China)

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**High-output power GaSb-based diode laser with narrow n-type cladding layer**

Author(s): Yi-hang Chen, Institute of Semiconductors, Chinese Academy of Sciences (China), College of Materials Science and Optoelectronics Engineering, Univ. of Chinese Academy of Sciences (China); Yanzhao Yang, The 41st Institute of China Electronic Technology Group Corp. (China); Tianfang Wang, Hongguang Yu, Institute of Semiconductors, Chinese Academy of Sciences (China), College of Materials Science and Optoelectronics Engineering, Univ. of Chinese Academy of Sciences (China); Jianmei Shi, Institute of Semiconductor, Chinese Academy of Sciences (China), College of Materials Science and Optoelectronics Engineering, Univ. of Chinese Academy of Sciences (China); Guiming Zhang, Bin Wu, The 41st Institute of China Electronic Technology Group Corp. (China); Chengao Yang, Yu Zhang, Institute of Semiconductors, Chinese Academy of Sciences (China), College of Materials Science and Optoelectronics Engineering, Univ. of Chinese Academy of Sciences (China); Yingqiang Xu, Institute of Semiconductors, Chinese Academy of Sciences (China), College of Materials Science and Optoelectronics Engineering, Univ. of Chinese Academy of Sciences (China); Zhichuan Niu, Institute of Semiconductors, Chinese Academy of Sciences (China), College of Materials Science and Optoelectronics Engineering, Univ. of Chinese Academy of Sciences (China)

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**Simulation study on the high-quality 32-tupling millimeter-wave signal generation based on a filter-free photonic scheme with four DP-MZMs**

Author(s): Yu-bo Shang, Xiao-Dong Lin, Guang-Qiong Xia, Southwest Univ. (China); Zheng-Mao Wu, Southwest Univ (China)

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**Optimization of 2.X μm type-I GaSb laser grown by MBE**

Author(s): Hongguang Yu, Chengao Yang, Yihang Chen, Tianfang Wang, Jianmei Shi, Yu Zhang, Yingqiang Xu, Zhichuan Niu, Institute of Semiconductors (China)

**On-chip tunable high-contrast gain-switched comb source**

Author(s): Artem E. Shitikov, Nikita Dmitriev, Russian Quantum Ctr. (Russian Federation); Nikita M. Kondratiev, Directed Energy Research Ctr., Technology Innovation Institute (United Arab Emirates), Russian Quantum Ctr. (Russian Federation); Valery E. Lobanov, Russian Quantum Ctr. (Russian Federation); Igor A. Bilenko, Lomonosov Moscow State Univ. (Russian Federation)

**Advanced Laser Processing and Manufacturing VI****Proceedings of SPIE Vol. 12312**

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**ULTRAFAST LASER PROCESSING/LASER MICRO AND NANO FABRICATION**

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**Research progress of ultrafast laser micro/nano fabricating and its application in the manufacture of functional devices** (*Invited Paper*)

Author(s): Jianfeng Yan, Tsinghua Univ. (China)

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**Ultrashort pulse laser drilling of the ceramic substrate**

Author(s): Hao Wang, Yutao Wang, Li Wang, Shanghai Institute of Laser Technology (China); Qingchuan Guo, Anhui Univ. (China); Kun Liu, Gongxu Luo, Shanghai Institute of Laser Technology (China)

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**Facile preparation of MoS<sub>2</sub> core-shell nanospheres through one-step femtosecond-laser liquid-phase ablation for highly sensitive SERS**

Author(s): Pei Zuo, Lifei Hu, Fang Li, Wuhan Institute of Technology (China)

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**Blind-zone formation in laser shockwave nano-cleaning**

Author(s): Shuowen Zhang, Qingyu Yan, Jianhua Yao, Lisha Fan, Zhejiang Univ. of Technology (China)

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**Multiscale modeling of femtosecond laser processing quartz crystal**

Author(s): Yinghao Dai, You Wang, Yun Wang, Kaiyan Luo, Yuwei Yang, Yutang Dai, Wuhan Univ. of Technology (China)

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**Fluence dependence of periodic nanostructures interspaces on 304 stainless steel surface by femtosecond laser pulses**

Author(s): Yuan Li, Institute of Applied Electronics, CAEP (China)

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**Properties of femtosecond laser modified e-beam deposited SiO<sub>2</sub> films and their resistance to nanosecond ultraviolet lasers**

Author(s): Kaixin Yuan, Feng Geng, Qinghua Zhang, Yaguo Li, Chengdu Fine Optical Engineering Research Ctr. (China)

**LASER SOURCES AND OPTICAL COMPONENTS**

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**Intra-cavity mode control in a Nd:YAG laser by optimizing the single-mode power factor with a spatial light modulator**

Author(s): Cong Hu, Yu Xiao, Yuhang He, Xiahui Tang, Huazhong Univ. of Science and Technology (China)

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**Direct generation of orthogonally polarized dual-wavelength at 639 nm and 721 nm in blue diode-pumped Pr:YLF lasers**

Author(s): Qinyun Yuan, Huazhong University of Science and Technology (China); Ran Xia, Yu Xiao, Gang Xu, Xiahui Tang, Huazhong Univ. of Science and Technology (China)

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**Design of an adjustable working distance Bessel lens for femtosecond laser cutting**

Author(s): Chen Guan, Xiaolei Zhang, Xiaofei Wang, Hua Fan, Qilu Univ. of Technology (China)

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**Tight focusing properties of vector polarized partially coherent vortex beams**

Author(s): Yaodan Hu, Xiahui Tang, Chenhao Wan, Yu Xiao, Gang Xu, Youyou Hu, Cong Hu, Jie Cheng, Ping Wang, Huazhong Univ. of Science and Technology (China)

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**The spherical-aberration-free 3D beam forming inside materials via the modified Ewald cap**

Author(s): Huaizhi Zhang, Yingxiong Qin, Jiaming Xu, Hengyang Li, Xiahui Tang, Huazhong Univ. of Science and Technology (China)

**LASER POLISHING, PEENING AND SURFACE MODIFICATION**

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**Processing window of laser polishing based on molten pool dynamics** (*Invited Paper*)

Author(s): Du Wang, Wuhan Univ. (China)

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**Effect of laser surface desensitization on phase evolution and corrosion properties of 5XXX aluminum alloy**

Author(s): Zijing Yang, Leimin Deng, Wei Xiong, Huazhong Univ. of Science and Technology (China)

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**Surface hardness and corrosion behavior and of laser-surface alloyed Ti6Al4V with copper**

Author(s): Qian Qiao, C.T. Kwok, Univ. of Macau (Macao, China); L.M. Tam, Institute of Applied Physics and Materials Engineering (Macao, China)

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**Improvement of residual stress on metal surface and fatigue properties by laser peening with microchip laser mounted on robotic arm**

Author(s): Yoshio Mizuta, SANKEN, Osaka Univ. (Japan); Satoshi Tamaki, LAcubed Co., Ltd. (Japan); Kiyotaka Masaki, National Institute of Technology, Okinawa College (Japan); Tomoharu Kato, Yoshihiro Sakino, Kindai Univ. (Japan); Tomonao Hosokai, SANKEN, Osaka Univ. (Japan); Yuji Sano, Institute for Molecular Science (Japan)

**LASER ADDITIVE MANUFACTURING AND 3D PROCESSING**

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**Oscillating laser-arc hybrid additive manufacturing of AZ31 magnesium alloy**

Author(s): Ling Cen, Mengcheng Gong, Ming Gao, Huazhong Univ. of Science and Technology (China)

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**Effect of electroshock treatment on the microstructure and mechanical properties of laser melting deposited near- $\beta$  Ti-55531 thin-wall**

Author(s): Lechun Xie, Wuhan Univ. of Technology (China); Haojie Guo, Shanghai Aircraft Manufacturing (China); Pu Liu, Yupeng Yao, Wuhan Univ. of Technology (China)

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**Research on laser selective intelligent processing based on coaxial spectral monitoring**

Author(s): Guiyang Yang, Huazhong Univ. of Science and Technology (China); Wei Xiong, Huazhong Univ. of Science and Technology (China); Leimin Deng, Huazhong Univ. of Science and Technology (China)

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**The preparation and properties studies for Ti-25Ta alloy fabricated by laser powder bed fusion technology**

Author(s): Mu Gao, Dingyong He, Xingye Guo, Beijing Univ. of Technology (China)

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**A freeform surface division algorithm for high-efficiency 3D laser processing**

Author(s): Le Liu, Meng Shen, Leimin Deng, Wei Xiong, Huazhong Univ. of Science and Technology (China)

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**Burnout mechanism and control methods in laser soldering**

Author(s): Suning Zhao, Mengcheng Gong, Ming Gao, Wuhan National Laboratory for Optoelectronics (China)

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**Method for determining the rational shape of the front surface of cutting inserts for computer-aided manufacturing system of laser ablation**

Author(s): Petr M. Pivkin, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

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**System of a laser ablation machine using computer-aided design of three-tooth drills**

Author(s): Petr M. Pivkin, Artem A. Ershov, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

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**Evaluation of surgical laser optical feedback on uneven surfaces using robotic manipulator**

Author(s): Dmitrii B. Smirnov, Elena A. Melnichenko, Semen V. Bushuev, Andrei A. Vorotnikov, Yuri V. Poduraev, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

**POSTER SESSION**

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**Metal-doped laser induced graphene for high-performance supercapacitors**

Author(s): Liu Liguu, Lisha Fan, Liguu Liu, Jianhua Yao, Zhejiang Univ. of Technology (China)

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**Numerical research on Inconel718 laser additive repairing**

Author(s): Shengyuan Sun, Yangzhou Univ. (China); Zifa Xu, Ningbo Institute of Materials Technology and Engineering (China); Jihao Xu, Yangzhou Univ. (China); Haolei Ru, Ningbo Institute of Materials Technology and Engineering (China); Kun Zeng, Yangzhou Hanjiang Yangzi Automobile Interior Decoration Co., Ltd. (China); Yongyue Liu, Ningbo Heli Mould Technology Co., Ltd. (China); Hongbo Xia, Yangzhou Univ. (China)

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**Dynamic system: construction to intelligent manufacturing**

Author(s): Hua Liu, Science and Technology on Electro-optic Control Lab. (China)

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**The research on the laser additive manufacturing of diamond-titanium alloy composite implant materials based on titanium-coated diamond powder**

Author(s): Yongqian Chen, Shanghua Zhang, Jialin Liu, Zhongyuan Univ. of Technology (China)

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**Effect of secondary aberration induced by actual objective lens on 3D direct laser writing**

Author(s): Shi Qiao, Jingpei Hu, Aijun Zeng, Huijie Huang, Shanghai Institute of Optics and Fine Mechanics (China), Univ. of Chinese Academy of Sciences (China)

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**Monitoring of temperature field in Selective Laser Melting (SLM) molding**

Author(s): Che Liu, Changchun Univ. of Science and Technology (China), Shanghai Aerospace Control Technology Institute (China); Wei Zhu, Zheng Yan, Shanghai Aerospace Control Technology Institute (China)

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**Weld characteristics of narrow gap oscillating laser welding of dissimilar aluminum alloys with hot wire**

Author(s): Laihege Jiang, Yunzhong Xiang, Ming Gao, Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology (China)

12312-34

**Research on the formation mechanism of thermal crack for laser welding of IC 10 alloy**

Author(s): Jianmin Li, Dongyun Zhang, Xingtao Feng, Shuo Geng, Denghao Yi, Institute of Laser Engineering, Beijing Univ. of Technology (China); Yujing Chi, Institute of Laser Engineering, Faculty of Materials and Manufacturing (China)

12312-37

**Microstructure and mechanical properties of TiB2 reinforced Al2319 matrix composites produced using laser-arc hybrid additive manufacturing**

Author(s): Yang Lu, Laihege Jiang, Ling Shi, Ming Gao, Huazhong Univ. of Science and Technology (China)

12312-31

**A computer-aided design system based on spline interpolation of micromills for high-speed processing of products manufactured by laser ablation and grinding**

Author(s): Petr M. Pivkin, Ilya V. Minin, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

*Conference Chairs:* **Haizheng Zhong**, 2022 Organizing Chair, Beijing Institute of Technology (China); **Rui Zhu**, Peking Univ. (China); **Samuel D. Stranks**, Univ. of Cambridge (United Kingdom); **Jianpu Wang**, Nanjing Univ. of Technology (China)

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**PHOTONICS FOR ENERGY I**

12313-1

**High-efficiency inverted perovskite solar cells** (*Invited Paper*)

Author(s): Junfeng Fang, Xiaodong Li, East China Normal Univ. (China)

12313-2

**Perovskite solar cells: charge transport, interfacial modification and safety** (*Invited Paper*)

Author(s): Fei Zhang, Tianjin Univ. (China)

12313-3

**Charged-exciton formation in compact polycrystalline perovskite thin films** (*Invited Paper*)

Author(s): Qin Hu, Univ. of Science and Technology of China (China)

12313-4

**The stabilizing strategies for efficient perovskite solar cells** (*Invited Paper*)

Author(s): Yanbo Wang, Shanghai Jiao Tong Univ. (China)

12313-5

**Ultrafast laser induced carbonization with high precision for fabricating flexible supercapacitors**

Author(s): Heng Guo, Jianfeng Yan, Tsinghua Univ. (China); Lan Jiang, Beijing Institute of Technology (China)

12313-20

**Application of machine-learning techniques for characteristic analysis of refractory materials**

Author(s): Sumbel Ijaz, Sadia Noureen, Information Technology Univ. of the Punjab (Pakistan); Bacha Rehman, Namal Univ. (Pakistan); Muhammad Zubair, Muhammad Qasim Mehmood, Information Technology Univ. of the Punjab (Pakistan); Yehia Massoud, King Abdullah Univ. of Science and Technology (Saudi Arabia)

**PHOTONICS FOR ENERGY II**

12313-6

**Efficient and stable all-perovskite tandem solar cells and modules** (*Invited Paper*)

Author(s): Hairen Tan, Nanjing Univ. (China)

12313-7

**Vacuum evaporation for high efficiency large-area perovskite solar cells** (*Invited Paper*)

Author(s): Chenyi Yi, Tsinghua Univ. (China)

12313-8

**Efficient perovskite solar cells built on metal** (*Invited Paper*)

Author(s): Jixian Xu, Tieqiang Li, Univ. of Science and Technology of China (China)

12313-10

**Study on polarized light based on controlling CsPbBr<sub>3</sub> nanowires by alternating electric field**

Author(s): Xiaojian Zhou, Sheng Xu, Yun Ye, Enguo Chen, Tailiang Guo, Hongxing Xie, Fuzhou Univ. (China), Fujian Science & Technology Innovation Lab. for Optoelectronic Information of China (China)

12313-11

**Research progress of ternary organic photovoltaics** (*Invited Paper*)

Author(s): Fujun Zhang, Beijing Jiaotong Univ. (China)

**PHOTONICS FOR ENERGY III**

12313-9

**high-performance perovskite solar modules** (*Invited Paper*)

Author(s): Shangshang Chen, Nanjing Univ. (China)

12313-12

**Electrode interlayer materials for organic solar cells** (*Invited Paper*)

Author(s): Bowei Xu, Beijing Univ. of Chemical Technology (China)

12313-13

**Doping-related weak hydrogen in a-Si:H and its implication on silicon solar cells** (*Invited Paper*)

Author(s): Wenzhu Liu, Shanghai Institute of Microsystem and Information Technology (China)

**PHOTONICS FOR ENERGY IV**

12313-14

**Quantum dots enhanced stability of in-situ fabricated perovskite nanocrystals based light-emitting diodes: electrical field distribution effects** (*Invited Paper*)

Author(s): Xulan Xue, Wenyu Ji, Jilin Univ. (China)

12313-15

**Interface-assisted perovskite modulations for high-performance near-infrared light-emitting diodes** (*Invited Paper*)

Author(s): Chaoyang Kuang, Linköping Univ. (Sweden); Feng Gao, Linköping Univ. (Sweden); Sai Bai, Univ. of Electronic Science and Technology of China (China), Linköping Univ. (Sweden)

12313-16

**Photoelectrochemical and photovoltaic approaches for artificial photosynthesis** (*Invited Paper*)

Author(s): Jingshan Luo, Nankai Univ. (China)

12313-18

**High-efficiency quantum-dot-sensitized solar cells** (*Invited Paper*)

Author(s): Zhenxiao Pan, South China Agricultural Univ. (China)

12313-25

**Bioinspired composite optical structure materials**  
(Invited Paper)

Author(s): Mingzhu Li, Institute of Chemistry (China)

**POSTER SESSION**

**Some posters may have an accompanying preview video from the presenter.**

12313-21

**Global optimization to improve integrated configurations**

Author(s): Hua Liu, Science and Technology on Electro-Optic Control Lab. (China)

12313-22

**The growth of three-dimensional ZnO crosslinked nanowire structure**

Author(s): Lilin Wang, Fujian Institute of Research on the Structure of Matter (China); Lingya Yu, Fujian Normal Univ. (China); Wenhan Cai, Nanzheng Ji, He Chen, Fuzhou Univ. (China); Chun-Yu Lee, shujing sun, Fujian Institute of Research on the Structure of Matter (China); Kun-Ching Shen, Fuzhou Univ. (China); Chenlong Chen, Fujian Institute of Research on the Structure of Matter (China)

12313-23

**Light harvesting by perovskite solar cells with dielectric resonant nanostructures**

Author(s): Aleksandra Furasova, ITMO Univ. (Russian Federation)

12313-24

**A broadband hyperbolic metasurface absorber**

Author(s): Kun-Ching Shen, National Taiwan Univ. (Taiwan, China), Fuzhou Univ. (China); qiao wu, School of Physics and Information Engineering (China); Chen-Ta Ku, Chieh Hsieh, National Taiwan Univ. (Taiwan, China)

*Conference Chairs:* **Xuping Zhang**, Nanjing Univ. (China); **Baojun Li**, Jinan Univ. (China); **Changyuan Yu**, The Hong Kong Polytechnic Univ. (Hong Kong, China); **Xinliang Zhang**, Wuhan National Research Ctr. for Optoelectronics (China)

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#### OPTICAL COMMUNICATIONS AND OPTICAL SIGNAL PROCESSING

12314-1

##### **Fabrication and sensing applications of optical fiber microstructured devices** (*Invited Paper*)

Author(s): Yiping Wang, Shenzhen Univ. (China)

12314-3

##### **Amplifier limited information rates in high-speed optical fiber communication systems**

Author(s): Ji Qi, Tianjin Univ. (China); Tianhua Xu, Tianjin Univ. (China), The Univ. of Warwick (United Kingdom), Univ. College London (United Kingdom); Zheng Liu, Tianjin Univ. (China); Cenqin Jin, The Univ. of Warwick (United Kingdom); Tongyang Xu, Univ. College London (United Kingdom), Newcastle Univ. (United Kingdom); Lingbo Li, Leslie Kanthan, Turing Intelligence Technology Ltd. (United Kingdom); Jian Zhao, Tiegeng Liu, Tianjin Univ. (China)

#### INTEGRATED OPTICAL DEVICES

12314-4

##### **Hybrid dual-comb emission spectroscopy based on soliton microcomb** (*Invited Paper*)

Author(s): Chi Zhang, Huazhong Univ. of Science and Technology (China), Optic Valley Lab. (China)

12314-5

##### **Highly confined light guiding in a low-loss hybrid Bloch surface waveguide**

Author(s): Qinyu Liu, Rongguo Yin, Weijing Kong, Tianjin Univ. of Technology and Education (China)

12314-6

##### **Photonic integrated circuit microchip design of two-wave mixing interferometer for FBG acoustic emission sensor signal demodulation**

Author(s): Hao Wang, Chuanyi Tao, Yubing Liu, Yiran Wu, Cheng Feng, Zhengquan Qian, Jianjun Xiao, Yan Zhao, Chongqing Univ. of Technology (China); Jingke Li, Chongqing Medical and Pharmaceutical College (China)

12314-7

##### **High-efficiency thermo-optic phase shifter with segment heating electrodes based on high index contrast silicon oxide waveguide**

Author(s): YuJie Ye, Jie Li, JingYe Chen, Yaocheng Shi, Zhejiang Univ. (China)

12314-20

##### **Twelve-channel detection of spin and orbital angular momenta via dielectric metasurface**

Author(s): Jiaqi Qu, Zhi Cheng, Zhuo Wang, Changyuan Yu, The Hong Kong Polytechnic Univ. (Hong Kong, China)

#### OPTOELECTRONIC MATERIALS AND DEVICES

12314-8

##### **Discriminating linear and nonlinear absorption of semiconductors with phase-modulated femtosecond lasers**

Author(s): Chuanliang Wang, Jinyang Cai, Khadga Karki, Guangdong Technion-Israel Institute of Technology (China)

12314-9

##### **Grain boundary passivation with sulfonated graphene to enhance perovskite photodetector performance**

Author(s): Silei Wang, Mengyao Li, Chunyu Song, Chenglong Zheng, Jitao Li, Yating Zhang, Jianquan Yao, Tianjin Univ. (China)

12314-10

##### **Polymer optical waveguide vertical couplers and mode division multiplexers on optical printed circuit boards** (*Invited Paper*)

Author(s): Xiaobei Zhang, Chuanlu Deng, Yi Huang, Tingyun Wang, Shanghai Univ. (China)

12314-21

##### **Micro-LEDs at low current densities to improve efficiency based on the considerations of carrier matching**

Author(s): Guang-Zhi Tang, Wei-An Lin, Shen-Fu Tseng, ZhiTing Ye, National Chung Cheng Univ. (Taiwan, China)

12314-22

##### **Gold nanostructures for plasmon-enhanced visible photocatalysis** (*Invited Paper*)

Author(s): Xuming Zhang, The Hong Kong Polytechnic Univ. (Hong Kong, China)

#### OPTICAL SENSORS AND APPLICATIONS

12314-14

##### **Planar metasurface enabled polarization optics and chiroptical response** (*Invited Paper*)

Author(s): Xiangping Li, Zi-Lan Deng, Jinan Univ. (China)

12314-15

##### **Modeling and simulation of photonic crystal switching devices for high computational applications**

Author(s): Sandip Swarnakar, Rachana Maddala, SathooriSai Krishna Goud, Paitipalli Mohan Kumar, Moksha Naga Chandra Sekhar, G. Pullaiah College of Engineering & Technology (India); Shaik Nawaz Basha, G. Pullaiah College of Engineering & Technology (India); Santosh Kumar, Liaocheng Univ. (China)

12314-18

**Research on fault identification technology of sound barrier based on distributed optical fiber sensing**

Author(s): Yuanyuan Yao, Nanjing Univ. (China), Nanjing Univ. (China); Ningmu Zou, Texas State Univ. (United States); Chi Zhang, Qianyi Gao, Yiming Wan, Ruofan Wang, Nanjing Univ. (China); Shisong Zhao, Nanjing Fiber Photonics Technology Co., Ltd. (China); Feng Wang, Nanjing Univ. (China); Yixin Zhang, Xuping Zhang, Nanjing Univ. (China), Shenzhen Research Institute, Nanjing Univ. (China)

12314-19

**High-efficiency Brillouin random fiber laser based on dynamic fiber grating-incorporated half-open linear cavity**

Author(s): Zizhou Wei, Haozhe Shou, Han Wang, Yichun Li, Yikun Jiang, Jilin Zhang, Haoran Xie, Fufei Pang, Liang Zhang, Shanghai Univ. (China)

12314-23

**The use of two-dimensional scales for displacement measurements**

Author(s): Yuri V. Filatov, Aleksander N. Korolev, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation); Alexander N. Lukin, Peter the Great Saint-Petersburg Polytechnic Univ. (Russian Federation)

12314-25

**Performance analysis of DAST material assisted electro-optically tuned Bloch surface wave sensor**

Author(s): Amit Goyal, Yehia Massoud, King Abdullah Univ. of Science and Technology (Saudi Arabia)

**POSTER SESSION**

**Some posters may have an accompanying preview video from the presenter.**

12314-2

**Progress of 800Gb/s optical module and optoelectronic chips technology**

Author(s): Bingbing Wu, Wenyu Zhao, Haiyi Zhang, China Academy of Information and Communications Technology (China)

12314-39

**Resonant modes analysis of a FP cavity under different laser alignment conditions**

Author(s): Fanchao Meng, Shanghai Institute of Optics and Fine Mechanics (China), Hangzhou Institute for Advanced Study, Univ. of Chinese Academy of Sciences (China); Lingqiang Meng, Wei Bian, Hongxing Qi, Univ. of Chinese Academy of Sciences (China); Jianjun Jia, Univ. of Chinese Academy of Sciences (China), Key Lab. of Space Active Opto-Electronics Technology (China), Chinese Academy of Sciences (China)

12314-26

**Improvement of underwater ranging accuracy in turbid medium by using a spiral phase plate**

Author(s): Yingqi Liao, SuHui Yang, Hao Yan, Jian Song, Xinyu Liu, Zhen Xu, Beijing Institute of Technology (China)

12314-27

**Light regulation of organic light-emitting diodes with conductive distributed Bragg reflectors**

Author(s): Yun Hu, Jing-song Huang, Oxford Suzhou Ctr. for Advanced Research (China); Paul N. Stavrinou, Univ. of Oxford (United Kingdom), Oxford Suzhou Ctr. for Advanced Research (China); Donal D. C. Bradley, Oxford Suzhou Ctr. for Advanced Research (China)

12314-28

**Benefits of trihedral reflectors with two cylindrical surfaces for three-dimensional autocollimation measurements**

Author(s): Mikhail Nikitin, Igor Konyakhin, ITMO Univ. (Russian Federation); Renpu Li, Han Xiao, Chongqing Univ. of Posts and Telecommunications (China)

12314-29

**Experimental investigation on mode instability phenomenon of a fiber ring laser**

Author(s): Mingxiang Ma, Fufang Xu, Yubo Xie, Hui Cao, Yingying Li, National Innovation Institute of Defense Technology (China)

12314-30

**Theoretical investigation of ultrafast binary data patterns recognition based on VCSEL-SA**

Author(s): Fan Ma, Fei Wang, Ying-Ke Xie, Xiao-Dong Lin, Li Fan, Zi-Ye Gao, Zhi-Fei Duan, Xiao-Rui Du, Si-Yan Zhang, Tao Deng, Southwest Univ. (China)

12314-31

**Lens-assisted beam steering chip based on micro-ring optical switch array**

Author(s): Langlin Cui, Pengfei Wang, Insitute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Guangzhen Luo, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Pengfei Ma, Lei Yu, Yejin Zhang, Jiao-Qing Pan, Insitute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China)

12314-32

**High precision wavelength measurement system based on FP cavity and saturation absorption peaks**

Author(s): Jinpeng Peng, Zhanchao Liu, Beihang Univ. (China)

12314-33

**Integrated temperature sensor and closed-loop control circuit for silicon microring modulator**

Author(s): Hao Zhang, Chang'an Univ. (China); Ye Yuan, Ningxia Hui Autonomous Region Radio Management Committee Office (China), Xi'an Jiaotong Univ. (China); Zan Zhang, Chang'an Univ. (China); Beiju Huang, Hongda Chen, Institute of Semiconductors (China)

12314-34

**SDRAM timing design based on retina-like distributed CMOS sensor**

Author(s): Chao Fan, Fengmei Cao, Beijing Institute of Technology (China)

12314-35

**Products assembly technology: connotation, configurations, and solutions**

Author(s): Hua Liu, Science and Technology on Electro-Optic Control Lab. (China)

12314-36

**Large group delay based on spiral tapered antisymmetric Bragg grating waveguide**

Author(s): Yaoshuai Li, Qingzhong Huang, Chi Zhang, Xinliang Zhang, Huazhong Univ. of Science and Technology (China), Optics Valley Lab. (China)

12314-37

**A mode-locked fiber laser simulation platform for self-tuning algorithm optimization**

Author(s): Qiuying Ma, Tsinghua Univ. (China); Haoyang Yu, Central South Univ. (China); Qian Zhou, Xinghui Li, Guanhao Wu, Kai Ni, Tsinghua Univ. (China)

12314-38

**Self-calibrated frequency response measurement of photodetectors based on photonic sampling**

Author(s): Chao Jing, Yutong He, Yali Zhang, Zhiyao Zhang, Shangjian Zhang, Yong Liu, Univ. of Electronic Science and Technology of China (China)

12314-40

**Research on quantitative correlation between performance and structure parameters fluctuation of InGaAs(P)/InP Gm-APD**

Author(s): Jie Deng, Southwest Institute of Technical Physics (China), Beijing Institute of Technology (China); Jian Chen, Xiumin Xie, Liu Yuan, Guoling Luo, Yong Liu, Qian Dai, Southwest Institute of Technical Physics (China); Haizhi Song, Southwest Institute of Technical Physics (China), Univ. of Electronic Science and Technology of China (China)

12314-43

**Acousto-optic dispersive delay line for high-resolution laser pulse shaping**

Author(s): Vladimir Y. Molchanov, Konstantin B. Yushkov, National Univ. of Science and Technology MISIS (Russian Federation)

12314-44

**A ring core fiber sensor based on Mach-Zehnder interferometer for lateral pressure sensing**

Author(s): Weihao Yuan, Changyuan Yu, The Hong Kong Polytechnic Univ. (Hong Kong, China)

12314-41

**Separated-cavity Fabry-Perot interferometric gas pressure sensor based on hollow core Bragg fiber and Vernier effect**

Author(s): Zongru Yang, Weihao Yuan, Changyuan Yu, The Hong Kong Polytechnic Univ. (Hong Kong, China)

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### PRODUCTS & PROCESSES



#### Etch

- GaN etch
- GaAs etch
- InP etch
- SiC etch
- Si Deep etch



#### Depo

- PECVD
- PEALD
- Thermal ALD
- DLC coating



#### Surface Treatment

- Aqua Plasma™
- Plasma Cleaning
- UV/O<sub>3</sub> Cleaning



#### Customer Support

- Service
- Spares
- Upgrades
- Training

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As the Semiconductor and Materials COmpany, Samco is dedicated to the innovation of material processing and device manufacturing. Over the last 44 years, Samco has provided over 4,400 thin film solutions to our global partners in 35 countries.

### KEY FACT

Founded: September 1979  
Employee: 173 (As of July 31, 2022)  
Stock code: 6387 Tokyo Stock Exchange Prime Market

### GLOBAL OPERATIONNS

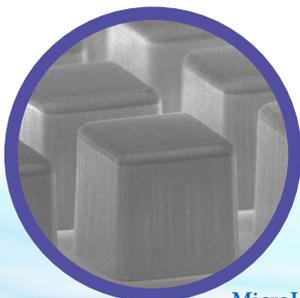
Headquarters, R&D, and Manufacturing: Kyoto, Japan  
OPTO Films Research Laboratory: Santa Clara, U.S.A.  
Beijing Office and Shanghai Office: China

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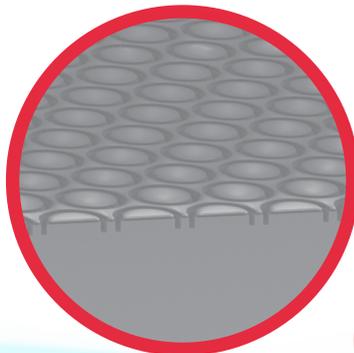
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## GaN

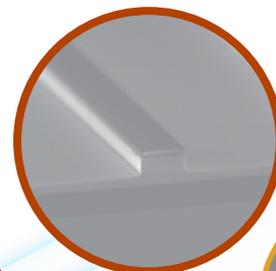
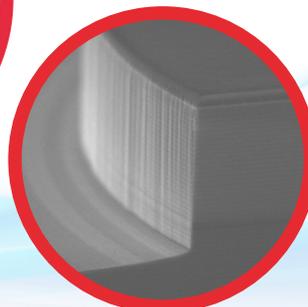


MicroLEDs



VCSELs

## GaAs



EELs

## InP



Photodiodes

**Optical Design and Testing XII****Proceedings of SPIE Vol. 12315**

*Conference Chairs:* **Yongtian Wang**, Beijing Institute of Technology (China); **Tina E. Kidger**, Kidger Optics Associates (United Kingdom); **Rengmao Wu**, Zhejiang Univ. (China)

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**OPTICAL DESIGN METHODS**

12315-1

**Design of a wide field-of-view, compact head-mounted display based on free-form prisms tiling** (*Invited Paper*)

Author(s): Danyang Li, Beijing Engineering Research Ctr. of Mixed Reality and Advanced Display (China); Dewen Cheng, Beijing Engineering Research Ctr. of Mixed Reality and Advanced Display (China); Hailong Chen, Cheng Yao, Qiwei Wang, Beijing Institute of Technology (China); Yongtian Wang, School of Optics and Photonics, Beijing Institute of Technology (China)

12315-2

**Design of quantum-dot color conversion film for mini-LED backlights** (*Invited Paper*)

Author(s): Xinpei Hu, Yu Chen, Zibin Lin, Enguo Chen, Yun Ye, Sheng Xu, Tailiang Guo, Fuzhou Univ. (China)

12315-3

**Optical design for SiTian project**

Author(s): Zhengyang Li, Chao Chen, Nanjing Institute of Astronomical Optics & Technology (China); Jifeng Liu, National Astronomical Observatories (China); Zijian Han, Xiangyan Yuan, Nanjing Institute of Astronomical Optics & Technology (China)

12315-4

**Optical triangular filter based on chalcogenide long-period fiber grating**

Author(s): Chengliang Zhu, Lei Wang, Yong Zhao, Northeastern Univ. (China); Hongpu Li, Shizuoka Univ. (Japan)

12315-23

**Recent progress of AI in lens design** (*Invited Paper*)

Author(s): Simon Thibault, Julie Buquet, Geoffroi Coté, Jean-Francois Lalonde, Univ. Laval (Canada)

12315-24

**Optical design of a compact continuous zoom MWIR lens for surveillance UAVs**

Author(s): Thanh Dat Vu, Xuan Du Dang, Van Dat Nguyen, Viettel High Technology Industries Corp. (Vietnam)

12315-25

**Use of two-level geometry representation for the ray tracing acceleration in optical systems with aspheric surfaces**

Author(s): Dmitry Zhdanov, Andrey Zhdanov, Igor Potemin, Yan Wang, ITMO Univ. (Russian Federation)

**ADVANCED OPTICAL SYSTEMS**

12315-5

**Functional metamaterials and metasurfaces for practical applications** (*Invited Paper*)

Author(s): Yaoguang Ma, Zhejiang Univ. (China)

12315-6

**Freeform irradiance tailoring in three-dimensional space using freeform lenses**

Author(s): Fanqi Shen, Rengmao Wu, Zhejiang Univ. (China)

12315-7

**Design of infrared sub-aperture polarization imaging system based on freeform surface**

Author(s): Jie Chen, Hongbo Xie, Tong Yang, Lei Yang, Tianjin Univ. (China)

12315-8

**Desensitization design of the off-axis three-mirror anastigmat freeform systems**

Author(s): Chengming Ren, Changchun Institute of Optics, Fine Mechanics and Physics (China), Univ. of Chinese Academy of Sciences (China); Qingyu Meng, Changchun Institute of Optics, Fine Mechanics and Physics (China); Zichang Qin, Changchun Institute of Optics, Fine Mechanics and Physics (China), Univ. of Chinese Academy of Sciences (China)

12315-9

**The design of catadioptric-stabilized zoom system based on deformable mirrors**

Author(s): Yuxuan Tian, Jindong Wang, Xuemin Cheng, Tsinghua Univ. (China); Qun Hao, Beijing Institute of Technology (China)

12315-27

**Optical design of first time right imaging systems** (*Invited Paper*)

Author(s): F. Duerr, H. Thienpont, Vrije Univ. Brussel (Belgium)

12315-28

**Analysis of image quality requirements for multispectral mirror systems**

Author(s): Alla Uvarova, Alexey Bakhholdin, ITMO Univ. (Russian Federation)

**WAVEFRONT MODULATION AND TESTING**

12315-10

**Fabrication of large CGH for interference measurement and alignment** (*Invited Paper*)

Author(s): Donglin Xue, Changchun Institute of Optics, Fine Mechanics and Physics (China); Zhiyu Zhang, Changchun Institute of Optics, Fine Mechanics and Physics (China)

12315-11

**Defect and deformation comprehensive measurement method based on dual-wavelength speckles**

Author(s): Tianshuang Han, Yao Hu, Xi Xu, Qun Hao, Beijing Institute of Technology (China)

12315-12

**Phase retrieval wavefront measurement model based on the numerical Fourier theory**

Author(s): Yuejia Li, Yingzhe Yang, Jian Bai, Lei Zhao, Zhejiang Univ. (China)

12315-13

**The curvature wavefront sensing system for the Multi-channel Photometric Survey Telescope (Mephisto)**

Author(s): Zhixu Wu, Yiming Zhang, Nanchang Univ. (China); Zhengyang Li, Xiangyan Yuan, Nanjing Institute of Astronomical Optics & Technology (China); Yong Xia, Nanchang Univ. (China); Hua Bai, Nanjing Institute of Astronomical Optics & Technology (China)

12315-14

**Instantaneous grating signal subdivision system with nonlinear Kalman filters**

Author(s): Yifeng Wang, Ningning Shi, Kai Ni, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

12315-29

**Portable setup for effective measurement of the surface light-scattering properties**

Author(s): Vadim Sokolov, Igor Potemin, Dmitry Zhdanov, ITMO Univ. (Russian Federation); Sergey Ershov, M. V. Keldysh Institute of Applied Mathematics (Russian Federation); Andrey Zhdanov, Yan Wang, ITMO Univ. (Russian Federation)

**NOVEL DISPLAY SYSTEMS**

12315-15

**Micro- and nano-optics for 3D display** (*Invited Paper*)

Author(s): Wen Qiao, Soochow Univ. (China)

12315-16

**Preparation and performance test based on the quantum-dot diffusion plate**

Author(s): Sijie Li, Fuzhou Univ. (China)

12315-17

**Low divergence tapered laser diode with integrated metalens**

Author(s): Kai Gong, Qufu Normal Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China); Yufei Wang, Institute of Semiconductors (China), Weifang Academy of Advanced Opto-Electronic Circuits (China); Yongzheng Zhang, Qufu Normal Univ. (China); Xuyan Zhou, Weifang Academy of Advanced Opto-Electronic Circuits (China), Institute of Semiconductors (China); Jianxin Zhang, Weifang Academy of Advanced Opto-Electronic Circuits (China), Weifang Univ. (China); Run Zhang, Xiaoqin Jia, Qufu Normal Univ. (China), Weifang Academy of Advanced Opto-Electronic Circuits (China)

12315-18

**Improving the luminescence performance of quantum dot masterbatch to optimize the white-light emission of diffusion plate**

Author(s): Zhenyu Zeng, Fuzhou Univ. (China); Yun Ye, Hongxing Xie, Sijie Li, Yaqian Zheng, Sheng Xu, Enguo Chen, Tailiang Guo, Fuzhou Univ. (China)

12315-30

**Optical design and simulation for waveguided AR glasses** (*Invited Paper*)

Author(s): Li-Ce Hu, Ming-Hsuan Lu, Chun-Shun Chen, Hui-Ching Liu, Synopsys Taiwan Co., Ltd. (Taiwan, China); Ying Zhou, Synopsys, Inc. (United States)

12315-31

**Using multicriteria for ray propagation to analyze scattered light in optical devices**

Author(s): Dmitry Zhdanov, Igor Kinev, Andrey D. Zhdanov, Igor Potemin, Yan Wang, ITMO Univ. (Russian Federation)

**NOVEL IMAGING AND LIGHTING TECHNIQUES**

12315-19

**Learned NIR&VIS-CAM: multi-spectral fusion for large depth-of-field computational imaging** (*Invited Paper*)

Author(s): Tingdong Kou, Junfei Shen, Qican Zhang, Wenjing Chen, Sichuan Univ. (China)

12315-20

**An in-orbit correction method based on CNN for the figure errors and component misalignments of TMA telescope**

Author(s): Bingdao Li, Xiaofang Zhang, Yun Gu, Xinqi Hu, Beijing Institute of Technology (China)

12315-21

**Development of the Sun Yat-Sen University 1.2-m Multi-Terminal Telescope**

Author(s): Tingting Liu, Zhengyang Li, Kai Zhang, Nanjing Institute of Astronomical Optics and Technology (China); Bo Ma, School of Physics and Astronomy, Sun Yat-Sen University (China); Zijian Han, Nanjing Institute of Astronomical Optics and Technology (China)

12315-22

**Experimental study on the focal length of Alvarez lens actuated by dielectric elastomer with different pre-stretched ratios and diameters**

Author(s): Yang Cheng, Chuanxun Chen, Zhikuo Li, Beijing Institute of Technology (China); Zhengang Yan, Xi'an Modern Control Technology Research Institute (China); Jie Cao, Qun Hao, Beijing Institute of Technology (China)

12315-68

**Lightweight design and analysis of primary mirror structure for space camera based on peripheral support**

Author(s): QiaoYue Dong, JiCai Rui, LinBao Hou, Wen Gao, SiSi Cheng, Shanghai Aerospace Control Technology Institute (China), Shanghai Key Lab. of Aerospace Intelligent Control Technology (China)

12315-76

**Generation, evolution and detection of high-order Poincaré sphere beams**

Author(s): Junna Yao, An-Ting Wang, Univ. of Science and Technology of China (China)

12315-33

**Optical design for multi-functional IRST system using high-definition detector**

Author(s): Dat Nguyen-Van, Xuan Du Dang, Thanh Dat Vu, Viettel High-Tech Industrial Corp. (Vietnam)

**POSTER SESSION**

**Some posters may have an accompanying preview video from the presenter.**

12315-34

**Research on partial null compensator with double-sided switching off-axial reflector**

Author(s): Tong Yang, Lei Yang, Jie Chen, Hongbo Xie, Tianjin Univ. (China)

12315-35

**Identification method of microplastics based on Raman-infrared spectroscopy fusion**

Author(s): Zong-Qi Cai, Wei-Wei Feng, Yantai Institute of Coastal Zone Research (China); Huan-Qing Wang, Xing-Hui Liang, Jian-Lian Yang, Xue Wu, Qing Wang, Yantai Institute of Coastal Zone Research (China)

12315-36

**Design and simulation of the lens hood for space target detection camera system**

Author(s): Jianguo Tian, Linbao Hou, Shaowei Zhang, Mingqian Shi, Qiaoyue Dong, Shanghai Aerospace Control Technology Institute (China)

12315-37

**Investigation and evaluation of 25 Gb/s MWDM optical modules for G.owdm2**

Author(s): Lu Liu, Junjie Xie, Xiaohua Tang, Bingbing Wu, Rui Tang, Wenyu Zhao, China Academy of Information and Communications Technology (China)

12315-38

**Optical design of a wide-angle pinhole lens for VR and AR inspection**

Author(s): Yang Li, Dewen Cheng, Beijing Institute of Technology (China); Xueliang Shi, Jiangxi Optical Lens Product Quality Supervision and Inspection Center (China); Yongtian Wang, Beijing Institute of Technology (China)

12315-39

**Classification algorithm for motor imagery EEG signals based on parallel DAMSCN-LSTM**

Author(s): Yuan Luo, Jingfan Zhou, Libujie Chen, Chongqing Univ. of Posts and Telecommunications (China)

12315-40

**Design of detection optical system with large relative aperture**

Author(s): Yingzhe Yang, Yuejia Li, Jia Wang, Jian Bai, Zhejiang Univ. (China)

12315-41

**Optimizations to improve multiple configurations**

Author(s): Hua Liu, Science and Technology on Electro-Optic Control Lab. (China)

12315-42

**Design of metasurface skin cloak based on a low-complexity monitoring model and deep learning**

Author(s): Shuai Zhu, Xiaojian Zhou, Sheng Xu, Enguo Chen, Yun Ye, Qun Yan, Tailiang Guo, Fuzhou Univ. (China), Fujian Science and Technology Innovation Lab. for Optoelectronic Information of China (China)

12315-43

**A star extraction method of dynamic star image for low signal-to-noise ratio based on joint probability estimation of optical flow-trajectory**

Author(s): Yingxue Han, Ting Sun, Shijie Yu, Kang Yang, Siyao Wu, Beijing Information Science & Technology Univ. (China)

12315-44

**Design of a compact infrared panoramic optical system for unmanned aerial vehicles**

Author(s): Yingzhe Yang, Jia Wang, Yuejia Li, Jian Bai, Zhejiang Univ. (China)

12315-45

**Research on pre-trained movie recommendation algorithm based on user behavior sequence**

Author(s): Kevin Zou, Xiaohui Hou, Tian Li, Fuzhou Univ. (China); Xu Sheng, Fuzhou Univ (China)

12315-46

**Design of imaging spectrometer with large aperture and high resolution**

Author(s): Jing Gao, Xianggup Xiao, Lu Zhan, Xi'an Institute of Applied Optics (China)

12315-47

**The study of broadband circular polarizer based on double helical long period fiber grating**

Author(s): Kexin Yao, Xi'an University of Posts & Telecommunications (China); Dongdong Han, Xi'an Univ. of Posts & Telecommunications (China); Kaili Ren, Xi'an Univ. of Posts & Telecommunications (China)

12315-48

**Varifocal liquid lens driven by dielectric elastomer with different pre-stretched ratios**

Author(s): Yang Cheng, Zhikuo Li, Chuanxun Chen, Beijing Institute of Technology (China); Yan Ning, Xi'an Modern Control Technology Research Institute (China); Jie Cao, Lin Liu, Qun Hao, Beijing Institute of Technology (China)

12315-49

**Simulation of external stray light in airborne off-axis four mirrors telescope system**

Author(s): Kaiyu Yang, Ning Jin, Dan Yang, Long Pu, Man Xu, Shulin Dong, Kunming Institute of Physics (China)

12315-50

**Design of the measurement system of lens group center deviation based on liquid lens**

Author(s): Qiang Liu, Soochow Univ. (China); Tao Ma, Soochow University (China)

12315-51

**An approach for the measurement of focal lengths of a weak thermally-induced negative lens**

Author(s): Ruina Fang, Weijiang Wang, Zhendong Shi, Jiao Yang, Hao Xing, Southwest Institute of Technical Physics (China); Yun Huang, Univ. of Electronic Science and Technology of China (China); Juhong Han, Qing Luo, He Cai, Guofei An, Meng Zhang, Xi Yang, You Wang, Southwest Institute of Technical Physics (China)

12315-52

**Aspheric surface design based on compensation detection principle**

Author(s): Xinyue Zeng, Tao Ma, Tingting Huang, Soochow Univ. (China)

12315-53

**Optical designs for space ultraviolet telescope**

Author(s): Zhengyang Li, Jianan Cong, Zijian Han, Tingting Liu, Chao Chen, Xin Jiang, Nanjing Institute of Astronomical Optics & Technology (China)

12315-54

**Optical design of a wide linear field-of-view, high resolution, and compact f-theta laser scanning system**

Author(s): Tian Zhang, Hailong Chen, School of Optics and Photonics, Beijing Institute of Technology (China), Beijing Engineering Research Center of Mixed Reality and Advanced Display, School of Optics and Phot (China); Wenfang Luo, Hongye Du, Jiangxi Optical Lens Product Quality Supervision and Inspection Ctr. (China); Dewen Cheng, Yongtian Wang, School of Optics and Photonics, Beijing Institute of Technology (China), Beijing Engineering Research Center of Mixed Reality and Advanced Display, School of Optics and Phot (China)

12315-55

**Dynamic wavefront coding technology using deformable mirror**

Author(s): XueLin Ding, Beijing Institute of Technology (China)

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**Fabrication of a micro lens array-grating for a miniature spectrometer**

Author(s): Shuonan Shan, Peiyuan Liu, Jingwen Li, Jiao Bai, Xiaohao Wang, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

12315-57

**Full polarization calibration of suspended particle measurement equipment**

Author(s): Tenghui Liu, Nan Zeng, Tsinghua Univ. Shenzhen International Graduate School (China); Hui Ma, Tsinghua Univ. Shenzhen International Graduate School (China)

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**Design and implementation of a fast circumferential scanning imaging optical system**

Author(s): Xiaohu Guo, Weiwei Zhu, Jingjing Zhu, China North Vehicle Research Institute (China)

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**Asymmetric double-sided electrochromic device based on metal-dielectric structured electrode**

Author(s): Yao Zhang, Soochow Univ. (China)

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**Orbital angular momentum-based Fizeau interferometer measurement system**

Author(s): Huali Lu, Chenji Guo, Xunhua Huang, Hua Zhao, Nanjing Normal Univ. (China)

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**Parametric spectro-temporal analyzer based on asynchronous optical sampling**

Author(s): Danlu Wang, Huazhong Univ. of Science and Technology (United States); Chi Zhang, Xinliang Zhang, Huazhong Univ. of Science and Technology (China)

12315-69

**Suppression and simulation of stray radiation in infrared optical system**

Author(s): Jianguo Tian, Mingqian Shi, Linbao Hou, Wen Gao, Jikai Rui, Bin Zhou, Shanghai Aerospace Control Technology Institute (China), Shanghai Key Lab. of Aerospace Intelligent Control Technology (China)

12315-70

**Optimization Method of One-Dimensional Standard Calibration Based on Laser Tracking Interferometry**

Author(s): Xiaolei Hu, Feng Zhang, Yu Ren, Shanghai Institute of Measurement and Testing Technology (China)

12315-71

**Optical system for wide visible spectrum with passive optical athermalization**

Author(s): Peng Liu, Yujiao Liu, Che Liu, Linbao Hou, Jikai Rui, Jianguo Tian, Shaowei Zhang, Shanghai Aerospace Control Technology Institute (China), Shanghai Key Lab. of Aerospace Intelligent Control Technology (China)

12315-72

**Design of a space optical system with wide-band based on the optical passive athermalization**

Author(s): Che Liu, Changchun Univ. of Science and Technology (China), Shanghai Aerospace Control Technology Institute (China); Wei Zhu, Zheng Yan, Peng Liu, Shanghai Aerospace Control Technology Institute (China)

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**The development of automatic feedback control of laser beam alignment system in Thomson scattering diagnostic on HL-2A Tokamak**

Author(s): Chunhua Liu, Southwestern Institute of Physics (China)

12315-74

**Dual-wavelength interferometry based on dispersion**

Author(s): Yimiao Chai, Weirui Zhao, Beijing Institute of Technology (China)

12315-75

**Multi-tip/tilt errors simultaneous detection for segmented telescopes based on coherent diffraction**

Author(s): Lu Zhang, Weirui Zhao, Yuejin Zhao, Beijing Institute of Technology (China)

12315-62

**Program for synthesis and ranking of two-lens and three-lens objectives**

Author(s): Duy Hung Nguyen, Alexey Bakholdin, ITMO Univ. (Russian Federation)

12315-65

**Design of optical systems with aplanatic and quasi-aplanatic components**

Author(s): Evgenia B. Soshnicova, Elena Tsyganok, Lev Andreev, ITMO Univ. (Russian Federation)

**Advanced Optical Imaging Technologies V****Proceedings of SPIE Vol. 12316**

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**NOVEL IMAGING MODALITIES BASED ON FIELD ENGINEERING**

12316-1

**Tip engineering in nanospectroscopy and near-field microscopy** (*Invited Paper*)

Author(s): Ting Mei, Wending Zhang, Fanfan Lu, Northwestern Polytechnical Univ. (China)

12316-2

**Metalens array: from wide-field microscope to wide-angle imaging** (*Invited Paper*)

Author(s): Tao Li, Nanjing Univ. (China)

12316-3

**Single-objective Bessel light-sheet microscopy for large-scale 3D super-resolution imaging of live cells** (*Invited Paper*)

Author(s): Peng Fei, Huazhong Univ. of Science and Technology (China)

12316-4

**Photonic-hook enhanced microsphere-assisted label-free super-resolution imaging**

Author(s): Ran Ye, Nanjing Normal Univ. (China)

12316-20

**Biaxial AOTF transfer functions for spatial image filtering**

Author(s): Maxim Kupreychik, National Univ. of Science and Technology MISIS (Russian Federation), M. V. Lomonosov Moscow State Univ. (Russian Federation); Alexander Chizhikov, Konstantin B. Yushkov, National Univ. of Science and Technology MISIS (Russian Federation)

**COMPUTATIONAL IMAGING**

12316-5

**Imaging through a scattering layer using the physics-enhanced deep neural network** (*Invited Paper*)

Author(s): Zhiwei Tang, Fei Wang, Guohai Situ, Shanghai Institute of Optics and Fine Mechanics (China)

12316-6

**Computational quantitative phase imaging** (*Invited Paper*)

Author(s): Chao Zuo, Nanjing Univ. of Science and Technology (China)

12316-7

**Single-shot recognition of three-dimensional phase images by deep learning** (*Invited Paper*)

Author(s): Weiru Fan, Tianrun Chen, Dawei Wang, Delong Zhang, Zhejiang Univ. (China)

12316-8

**Transport of intensity diffraction tomography for three-dimensional label-free microscopy under arbitrary non-matched illumination condition**

Author(s): Jiayi Li, Chao Zuo, Qian Chen, Nanjing Univ. of Science and Technology (China)

**SUPER-RESOLUTION IMAGING**

12316-9

**Extending resolution of structured illumination microscopy with sparse deconvolution** (*Invited Paper*)

Author(s): Weisong Zhao, Haoyu Li, Harbin Institute of Technology (China)

12316-10

**Single-molecule localization super-resolution microscopy and its applications on cytoskeleton** (*Invited Paper*)

Author(s): Lei-Ting Pan, Nankai Univ. (China)

12316-11

**Fast long-term super-resolution imaging with Hessian structured illumination microscopy** (*Invited Paper*)

Author(s): Xiaoshuai Huang, Peking Univ. (China)

12316-12

**Super-resolved identification of nanoscale defects in low-dimensional materials by near-field photoluminescence mapping**

Author(s): Huang Jiatai, Cui Tong, Bai Benfeng, Tsinghua Univ. (China)

12316-13

**Compressive imaging-based structured illumination microscopy: towards high-speed super-resolution imaging**

Author(s): Yunhua Yao, Yilin He, Dalong Qi, Shian Zhang, East China Normal Univ. (China)

12316-14

**Resolution-enhanced imaging for endoscopy using diffractive optics**

Author(s): Ning Xu, Tsinghua Univ. (China), Univ. of Cambridge (United Kingdom); Calum Williams, Graham Spicer, Sarah E. Bohndiek, Univ. of Cambridge (United Kingdom); Qiaofeng Tan, Tsinghua Univ. (China)

TISSUE IMAGING

12316-15

**Optical evanescent wave-sensing enables fast photoacoustic histopathological imaging** *(Invited Paper)*

Author(s): Wei Song, Shenzhen Univ. (China)

12316-16

**All-optical interrogation of neural circuits across layers in cortical columns in vivo** *(Invited Paper)*

Author(s): Lingjie Kong, Tsinghua Univ. (China)

12316-17

**Surgical polarimetric imaging for cancer detection** *(Invited Paper)*

Author(s): Ji Qi, Zhejiang Lab. (China)

12316-18

**Multispectral endoscopic imaging studies on the tissue components of gastrointestinal mucosa** *(Invited Paper)*

Author(s): Zhisheng Wu, Zhejiang Univ. (China); Xingjun Gao, Zhejiang Lab. (China); Bo Yuan, Qing Yang, Liqiang Wang, Zhejiang Univ. (China)

12316-21

**In-process OCT monitoring to control holographic laser processing**

Author(s): Satoshi Hasegawa, Yoshio Hayasaki, Utsunomiya Univ. (Japan)

POSTER SESSION

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12316-22

**Building extraction algorithm for remote sensing image based on improved DeepLabv3+ network**

Author(s): Jiapeng Han, Hebei Univ. of Science and Technology (China); Zhenzhou Wang, Institute of Information Science and Engineering (China); Weimin Hou, Hebei Univ. of Science and Technology (China)

12316-23

**Single-shot spectral-volumetric compressed ultrafast photography (SV-CUP)**

Author(s): Pengpeng Ding, East China Normal Univ. (China)

12316-24

**Single-shot real-time imaging of ultrafast light springs**

Author(s): Chengzhi Jin, Dalong Qi, Yunhua Yao, Fengyan Cao, Li Deng, East China Normal Univ. (China); Shixiang Xu, Shenzhen Univ. (China); Zhenrong Sun, Shian Zhang, East China Normal Univ. (China)

12316-25

**Nanoscale imaging of optical near-field distribution by detecting induced force of photothermal expansion**

Author(s): Yuxiao Han, Benfeng Bai, Hong-Bo Sun, Tsinghua Univ. (China)

12316-26

**High-performance imaging based on full-path optical diffraction calculation in two-dimensional space**

Author(s): Yingli Liu, Zhejiang Univ. (China)

12316-27

**Imaging of ultrafast laser induced cavitation bubble generation at the solid-water interface**

Author(s): Jiachen Yu, Jianfeng Yan, Tsinghua Univ. (China)

12316-28

**Super-resolution reconstruction of medical image via depth residual network**

Author(s): JinRong Ding, Yefeng Shu, Nanjing Univ. of Science and Technology (China); Jiasong Sun, Nanjing University of Science and Technology (China); Chao Zuo, Qian Chen, Nanjing University of Science & Technology (China)

12316-29

**Coherence retrieval by transport of intensity stack**

Author(s): Runnan Zhang, Zewei Cai, Jiasong Sun, Ning Zhou, Chao Zuo, Nanjing Univ. of Science and Technology (China)

12316-30

**Three-frame reconstruction for structured illumination microscopy using Fourier ptychographic procedure**

Author(s): Ying Bi, Jiaming Qian, Yu Cao, Nanjing Univ. of Science and Technology (China)

12316-31

**A fast 2+1 phase-shifting algorithm for structured illumination microscopy**

Author(s): Yu Cao, Jiaming Qian, Kailong Xu, Ying Bi, Nanjing Univ. of Science and Technology (China)

12316-32

**Visualization of nanoscale high-order vortex beam generation by phase-resolved near-field imaging**

Author(s): Pengyi Feng, Benfeng Bai, Hong-Bo Sun, Tsinghua Univ. (China)

12316-33

**OCT-measured retinal vasculature and intrinsic optical responses to transcorneal electrical stimulation**

Author(s): Tianyang Zhao, Shanghai Institute of Technology (China); Zhengyang Liu, Shanghai Jiao Tong Univ. (China); Chen Niu, Xueqing Ding, Shanghai Institute of Technology (China); Liming Li, Shanghai Jiao Tong Univ. (China); Cuixia Dai, Shanghai Institute of Technology (China)

12316-34

**Integrated multimodal and fluorescence imaging microscope based on LED illumination**

Author(s): Zeyu Zhang, Nanjing Univ. of Science and Technology (China)

12316-35

**Perceptual resolution improvements in far-field Fourier ptychography imaging**

Author(s): Sheng Li, Nanjing Univ. of Science and Technology (China); Yan Zou, Military Representative Office of army equipment department in Nanjing (China); Bowen Wang, Nanjing Univ. of Science and Technology (China)

12316-36

**The artificial intelligence (AI) assisted turbidity prediction and compensation**

Author(s): Yangyundou Wang, Hao Wang, Univ. of Shanghai for Science and Technology (China); Min Gu, Institute of Photonic Chips, Univ. of Shanghai for Science and Technology (China)

12316-37

**Learning-based quantitative phase microscopy via a single-shot defocused intensity image with pixels aliasing**

Author(s): Jie Zhou, Yanbo Jin, Lingpeng Lu, Jiaji Li, Chao Zuo, Nanjing Univ. of Science and Technology (China)

12316-38

**Super-resolved image reconstruction by structured illumination microscopy**

Author(s): Weiyi Xia, Ying Bi, Yu Cao, Kailong Xu, Nanjing Univ. of Science and Technology (China); Pengfei Fan, Department of Intelligent Science, School of Advanced Technology, Xi'an Jiaotong-Liverpool Universit (China)

12316-39

**Transport-of-intensity Fourier ptychographic diffraction tomography**

Author(s): Shun Zhou, Jiayi Li, Jiasong Sun, Qian Chen, Chao Zuo, Nanjing Univ. of Science and Technology (China)

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**Portable imaging system based on dual-line fiber optic sensor array**

Author(s): Shun Qin, Yangtze Delta Region Institute of Tsinghua Univ., Zhejiang (China); Jinchuang Lai, Xiaodong Zhang, Songbai Hu, Tingwen Gan, Honmax Technology Ltd. (China)

12316-41

**Temperature-robust learned image recovery for shallow-designed imaging systems**

Author(s): Wei Chen, Bingyun Qi, Xu Liu, Haifeng Li, Xiang Hao, Zhejiang Univ. (China); Yifan Peng, The Univ. of Hong Kong (Hong Kong, China)

12316-42

**Improved 2D target detection with YoloV5 based on attention mechanism**

Author(s): Yong Zhou, Shandong High-speed Construction Management Group Co., Ltd. (China); Mei Zhang, Lanzhou Jiaotong Univ. (China); Fujin Hou, Shandong Hi-Speed Construction Management Group Co., Ltd. (China); Bin Lv, Lanzhou Jiaotong Univ. (China); Jianqing Wu, Shandong Univ. (China)

12316-43

**3D label-free microscopy based on color-multiplexed intensity diffraction tomography**

Author(s): Ning Zhou, Jiayi Li, Jiasong Sun, Runnan Zhang, Chao Zuo, Nanjing Univ. of Science and Technology (China)

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**Imaging of excitons and free charges in semiconductors by phase modulated light beams**

Author(s): Chunfeng Chen, Jinyang Cai, Khadga Jung Karki, Guangdong Technion-Israel Institute of Technology (China)

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**A new synthetic aperture method for super-resolution imaging**

Author(s): Haitao Guan, Yan Hu, Nanjing Univ. of Science and Technology (China)

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**Efficient Fourier ptychographic microscopy with hybrid coherent and incoherent illumination**

Author(s): Yao Fan, Jiasong Sun, Qian Chen, Chao Zuo, Nanjing Univ. of Science and Technology (China)

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**Zero-order suppression in slightly off-axis holography based on Fourier ptychographic reconstruction**

Author(s): Qian Shen, Jiasong Sun, Zhuoshi Li, Qian Chen, Chao Zuo, Nanjing Univ. of Science and Technology (China)

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**High-resolution lensless imaging with the photon sieve mask and incoherent illumination**

Author(s): GongYu Song, XiaoFeng Cai, FuYang Xu, ZhiJun Ren, Zhejiang Normal Univ. (China)

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**Efficiency-optimized Fourier ptychographic microscopy based on spectrum overlap percentage analysis**

Author(s): Yuzhou Chen, Yao Fan, Qian Chen, Chao Zuo, Nanjing Univ. of Science and Technology (China)

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**Fast illumination parameter estimation of structured illumination microscopy**

Author(s): Jiaming Qian, Nanjing Univ. of Science and Technology (China)

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**Application of FPGA hardware acceleration in image processing**

Author(s): Wenhao Zhao, Key Lab. of Computational Optical Imaging Technology (China), Aerospace Information Research Institute (China); Min Huang, Lulu Qian, Zhanchao Wang, Academy of Opto-Electronics (China), Aerospace Information Research Institute (China)

12316-53

**Three-dimensional high-precision mineral mapping using confocal controlled LIBS microscope**

Author(s): Chunjing He, Angze Li, Lirong Qiu, Weiqian Zhao, Beijing Institute of Technology (China)

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**In-situ topographic characterization and mechanical mapping by divided-aperture confocal Brillouin microscopy**

Author(s): Yunhao Su, Beijing Institute of Technology (China); Weiqian Zhao, Beijing institute of technology university (China); Lirong Qiu, Beijing Institute of Technology (China)

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**Miniaturized confocal Raman microscopy based on MEMS mirror scanning**

Author(s): Guozhuo Zhang, Xu Wang, Han Cui, Weiqian Zhao, Beijing Institute of Technology (China)

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**Enhanced single-beam multiple-intensity reconstruction via unequal interval measurement and weighted feedback**

Author(s): Cheng Xu, Univ. of Electronic Science and Technology of China (China); Hui Pang, Institute of Optics and Electronics, Chinese Academy of Sciences (China); Huijun Yang, Univ. of Electronic Science and Technology of China (China)

12316-52

**Using time-correlated single-photon counting technique on SPAD sensors to enhance acquisition time and dynamic range**

Author(s): Victor Moro, Sergio Moreno, Oscar Alonso, Anna Vilà, Juan D. Prades, Angel Diéguez, Univ. de Barcelona (Spain)

**Optoelectronic Imaging and Multimedia Technology IX****Proceedings of SPIE Vol. 12317**

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*Program Committee:* **Moshe Ben-Ezra**, MIT Media Lab. (United States); **Liheng Bian**, Beijing Institute of Technology (China); **Xudong Chen**, National Univ. of Singapore (Singapore); **Ya Cheng**, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **Jingtao Fan**, Tsinghua Univ. (China); **Jinwei Gu**, SenseTime Research (United States); **Yo-Sung Ho**, Gwangju Institute of Science and Technology (Korea, Republic of); **Bormin Huang**, Univ. of Wisconsin-Madison (United States); **Ivo Ihrke**, Institut National de Recherche en Informatique et en Automatique (France); **Yoshiaki Kanamori**, Tohoku Univ. (Japan); **C. C. Jay Kuo**, The Univ. of Southern California (United States); **Kyros N. Kutulakos**, Univ. of Toronto (Canada); **Wanqing Li**, Univ. of Wollongong (Australia); **Xing Lin**, Univ. of California, Los Angeles (United States); **Yuan Luo**, National Taiwan Univ. (Taiwan); **Yifan Peng**, Stanford Univ. (United States); **Imari Sato**, National Institute of Informatics (Japan), Tokyo Institute of Technology (Japan); **Yoichi Sato**, The Univ. of Tokyo (Japan); **Yoav Yosef Schechner**, Technion-Israel Institute of Technology (Israel); **John T. Sheridan**, Univ. College Dublin (Ireland); **Guangming Shi**, Xidian Univ. (China); **Guohai Situ**, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **Jinli Suo**, Tsinghua Univ. (China); **Lei Tian**, Boston Univ. (United States); **Gordon Wetzstein**, Stanford Univ. (United States); **Feng Wu**, Univ. of Science and Technology of China (China); **Bo Yang**, Univ. of Shanghai for Science and Technology (China); **Jingyi Yu**, ShanghaiTech Univ. (China); **Xiaolin Zhang**, Shanghai Institute of Microsystem and Information Technology (China)

**COMPUTATIONAL IMAGING**

12317-1

**Recent advances of deep learning for spectral snapshot compressive imaging** (*Invited Paper*)

Author(s): Jinli Suo, Tsinghua Univ. (China); Zongliang Wu, Zhangyuan Li, Xin Yuan, Westlake Univ. (China)

12317-2

**Large-scale single-pixel imaging via deep learning**

Author(s): Siyu Xie, Lintao Peng, Liheng Bian, Beijing Institute of Technology (China)

12317-3

**Efficient sparse Fourier single-pixel imaging**

Author(s): Rong Yan, Daoyu Li, Liheng Bian, Beijing Institute of Technology (China)

12317-4

**A novel calibration method for a uniaxial MEMS-based 3D reconstruction system**

Author(s): Min Han, Tsinghua Univ. Shenzhen International Graduate School (China); Fengxiao Lei, Tsinghua Univ. Shenzhen International Graduate School (China); Yihao Tao, Weijian Shi, Shihao Lu, Tsinghua Univ. Shenzhen International Graduate School (China); Haoyang Tian, Guangxi Guihua Intelligent Manufacturing Co. Ltd. (China); Chengwei Liao, Guilin Han Smart Instrument Co., Ltd (China); Peiyuan Zhu, Shidong Zhu, Shenzhen Han Industrial Technologies Co., Ltd. (China); Xiaohao Wang, Tsinghua Univ. Shenzhen International Graduate School (China); Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China), Tsinghua-Berkeley Shenzhen Institute, Tsinghua Univ. (China)

12317-5

**Structured illumination microscopy with uncertainty quantification**

Author(s): Xiaoqin Zhu, Xuyang Chang, Rifa Zhao, Ze Wu, Liheng Bian, Beijing Institute of Technology (China)

12317-6

**Self-supervised learning exposure correction via histogram equalization prior**

Author(s): Lu Li, Daoyu Li, Beijing Institute of Technology (China); Shuai Wang, Beihang University (China); Qiang Jiao, Ministry of Public Security Information and Communication Center (China); Liheng Bian, Beijing Institute of Technology (China)

12317-7

**Conditional GAN-based deep network for seamless large-FOV imaging by camera array**

Author(s): Weihang Zhang, Lianglong Li, Jinli Suo, Qionghai Dai, Tsinghua Univ. (China)

**HYPERSPECTRAL IMAGING**

12317-8

**Deep calibration for broadband multispectral filter array** (*Invited Paper*)

Author(s): Yuzhe Zhang, Liheng Bian, Beijing Institute of Technology (China)

12317-9

**Deep-learning enables single-pixel spectral imaging**

Author(s): Zhangyuan Li, Westlake Univ. (China); Gang Qu, School of Engineering, Westlake University (China); Jinli Suo, Tsinghua Univ. (China); Xin Yuan, Westlake Univ. (China)

12317-10

**Continuous-zoom bifocal metalens at visible wavelength**

Author(s): Chang Wang, Qiangbo Zhang, Zeqing Yu, Xinyu Liu, Yang Zhang, Zhou Xu, Zhenrong Zheng, Zhejiang Univ. (China)

12317-11

**ADHHI airborne hyperspectral imager: imaging principles and geometric processing**

Author(s): Jieke Dong, Qi Zhou, Xinbo Zhao, Wuhan Univ. (China)

**COMPUTER VISION AND MACHINE LEARNING**

12317-12

**Passive imaging through dynamic scattering media using deep learning assisted by electronic ink displays**

Author(s): Haishan Liu, Shanghai Institute of Optics and Fine Mechanics (China); Fei Wang, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); Guohai Situ, Shanghai Institute of Optics and Fine Mechanics (China)

12317-13

**Infrared small target detection method based on multidirectional derivative and local contrast difference**

Author(s): Yunkai Xu, Xueqi Chen, Minjie Wan, Yili Chen, Ajun Shao, Xiaofang Kong, Guohua Gu, Nanjing Univ. of Science and Technology (China)

12317-14

**A multi-source transfer learning-based weighted network for small sample defect inspection**

Author(s): Yue Hong, Tsinghua Univ. Shenzhen International Graduate School (China); Chen Li, Tsinghua Univ. (China); Haoxin Yan, Tsinghua Univ. Shenzhen International Graduate School (China); Erik Valle, Tsinghua Univ. (China); Yi Dou, Guangxi Guihua Intelligent Manufacturing Co., Ltd. (China); Chengwei Liao, Guilin Han Smart Instrument Co., Ltd. (China); Peiyuan Zhu, Shidong Zhu, Shenzhen Han Industrial Technologies Co., Ltd. (China); Xiu Li, Xiang Qian, Xiaohao Wang, Tsinghua Univ. Shenzhen International Graduate School (China); Xinghui Li, Tsinghua Univ. (China)

12317-15

**Learning-based ray sampling strategy for computation efficient neural radiance field generation**

Author(s): Yuqi Han, Jinli Suo, Qionghao Dai, Tsinghua Univ. (China)

12317-16

**3D imaging of asphalt pavement texture by integrating multi-scale image information**

Author(s): Xinglin Zhou, Lu Liu, Jing Yuan, Jiayi Guan, Wuhan Univ. of Science and Technology (China)

12317-17

**Lightweight visible light camera technology for weak space target detection**

Author(s): Jianchao Jiao, Chao Wang, Yue Yu, Chenhui Guan, Wenyu Zhang, Mingyang Hou, Beijing Institute of Space Mechanics & Electricity (China)

**POSTER SESSION**

**Some posters may have an accompanying preview video from the presenter.**

12317-18

**Optical component damage diagnosis technology based on machine-learning algorithm**

Author(s): Yin Chenxuan, Aerospace Information Research Institute (China)

12317-19

**Visual-inertial odometry based on tightly-coupled encoder**

Author(s): Zhangfang Hu, Zhenqian Guo, Yuan Luo, Jian Chen, Chongqing Municipal Level Key Lab. of Photoelectronic Information Sensing and Transmitting Technology (China)

12317-20

**Super-resolution reconstruction for extremely low-light imaging by using intensified CCD or CMOS camera**

Author(s): Hui Zhao, Xi'an Institute of Optics and Precision Mechanics (China); Xuewu Fan, Mingyang Yang, Yue Pan, Xi'an Institute of Optics and Precision Mechanics (China); Baopeng Li, Minrui Zhang, Xi'an Institute of Optics and Precision Mechanics (China)

12317-22

**Inpainting Inspired Video Compressive Sensing**

Author(s): Miao Cao, Zhangyuan Li, Westlake Univ. (China); Jinli Suo, Tsinghua Univ. (China); Xin Yuan, Westlake Univ. (China)

12317-23

**A fast facial expression recognition algorithm in the teaching and learning environments**

Author(s): Xiaohong Xie, Minjiang Univ. (China)

12317-24

**Efficient algorithms to enhance multiple configurations**

Author(s): Hua Liu, Science and Technology on Electro-Optic Control Lab. (China)

12317-25

**Point cloud projection based light-to-medium G-PCC-1 hole distortion repair method for colored point cloud**

Author(s): Wenxu Tao, Gangyi Jiang, Mei Yu, Haiyong Xu, Yang Song, Ningbo Univ. (China)

12317-26

**A video-rate hyperspectral imager for monitoring dynamic targets**

Author(s): Conghui Zhu, Yan Yuan, Lijuan Su, Hongyang Zheng, Beihang Univ. (China)

12317-27

**Research on vehicle detection algorithm based on autonomous learning**

Author(s): Jihui Wang, Xiangle Yang, Yifan Huang, Beijing Institute of Technology (China); Ziyu Zhao, The High School Affiliated to Renmin Univ. (China)

12317-28

**Study on vehicle color detection and recognition based on deep learning**

Author(s): Jihui Wang, XiaoLei Zhang, XiangLe Yang, Beijing Institute of Technology (China); Ziyu Zhao, The High School Affiliated to Renmin Univ. (China)

12317-29

**Head radiographic detection of feature aggregation networks with coordinated attention**

Author(s): Xinwang Shao, Zhihong Chen, Jia Lu, Haiwei Zhang, Yiping Miao, Wenhao Song, Tianjin Univ. of Technology (China)

12317-30

**Snapshot compressive hyperspectral imaging via dual spectral filter array**

Author(s): Yang Zhang, Xinyu Liu, Chang Wang, Zhou Xu, Qiangbo Zhang, Zhenrong Zheng, Zhejiang Univ. (China)

12317-31

**Inverse design of metasurfaces for end-to-end computational imaging**

Author(s): Qiangbo Zhang, Zeqing Yu, Xinyu Liu, Yang Zhang, Zhou Xu, Chang Wang, Zhengrong Zheng, Zhejiang Univ. (China)

12317-32

**Accurate wave propagation model for 3D holographic display based on Fraunhofer diffraction**

Author(s): Lingmei Chen, Zhenrong Zheng, Zhejiang Univ. (China)

12317-33

**An end-to-end deep convolutional neural network for image restoration of sparse aperture imaging system in geostationary orbit**

Author(s): Wenxiu Zhao, Xiaofang Zhang, Jing Wang, Yun Gu, Beijing Institute of Technology (China)

12317-35

**Infrared image super-resolution reconstruction based on high-frequency prior convolutional neural network**

Author(s): Yunpei Qi, Liqun Dong, Ming Liu, Lingqin Kong, Mei Hui, Yuejin Zhao, Beijing Institute of Technology (China)

12317-36

**A compact compressive hyperspectral imaging system based on metasurface**

Author(s): Xinyu Liu, Chang Wang, Yang Zhang, Qiangbo Zhang, Zeqing Yu, Yan Sun, Zhenrong Zheng, Zhejiang Univ. (China)

12317-37

**Single-pixel multispectral imaging based on broadband spectrum multispectral filter arrays**

Author(s): Zhou Xu, Xinyu Liu, Chang Wang, Yang Zhang, Qiangbo Zhang, Zeqing Yu, Zhenrong Zheng, Zhejiang Univ. (China)

12317-38

**Efficient cosine similarity-based image correlation algorithm for object detection and localization**

Author(s): Shun Qin, Yangtze Delta Region Institute of Tsinghua Univ., Zhejiang (China); Hang Shao, Zhejiang Future Technology Institute (China); Zongyu Wang, Yangtze Delta Region Institute of Tsinghua Univ. (China); Kejun Shi, Chengtao Gao, Yangtze Delta Region Research Institute, Tsinghua Univ. (China)

12317-39

**Railway tunnel inspection technology based on catadioptric system**

Author(s): Yixin Duan, Su Qiu, Beijing Institute of Technology (China)

12317-40

**Array camera crowd counting method based on Yolov5**

Author(s): Xinzhen Zhang, Ming Liu, Mei Hui, Lingqin Kong, Beijing Institute of Technology (China)

12317-41

**Moving target detection and spatial localization based on bionic compound-eye system**

Author(s): Xingsheng Li, Su Qiu, Beijing Institute of Technology (China)

12317-42

**Relational-based transfer learning for automatic optical inspection based on domain discrepancy**

Author(s): Erik I. Valle Salgado, Haoxin Yan, Yue Hong, Tsinghua-Berkeley Shenzhen Institute, Tsinghua Univ. (China); Peiyuan Zhu, Shidong Zhu, Shenzhen Han Industrial Technologies Co., Ltd. (China); Chengwei Liao, Guilin Han Smart Instrument Co., Ltd. (China); Yanxiang Wen, Guangxi Guihua Intelligent Manufacturing Co. (China); Xiu Li, Xiang Qian, Xiaohao Wang, Tsinghua Univ. Shenzhen International Graduate School (China); Xinghui Li, Tsinghua-Berkeley Shenzhen Institute, Tsinghua Univ. (China)

12317-43

**A feature-based transfer-YOLOv5 model for rapid defect inspection in large mass magnetic tile manufacturing**

Author(s): Haoxin Yan, Yue Hong, Tsinghua Univ. Shenzhen International Graduate School (China); Peiyuan Zhu, Shenzhen Han Industrial Technologies Co., Ltd. (China); Chengwei Liao, Guilin Han Smart Instrument Co., Ltd. (China); Xiu Li, Xiaohao Wang, Xiang Qian, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

12317-44

**Geometric measurement error tests on full information of nanoscale surface with the use of scanning electron microscope**

Author(s): Sen Zhou, Lei Tao, Ying Li, Cong Yue, Chongqing Academy of Metrology and Quality Inspection (China)

12317-45

**Deep learning in tasks of interior objects recognition and 3D reconstruction**

Author(s): Maksim Sorokin, Dmitry Zhdanov, Andrey Zhdanov, Igor Potemin, Yan Wang, ITMO Univ. (Russian Federation)

12317-46

**Adaptive scanning methods for 3D scene reconstruction**

Author(s): Oleg Mirski, Sergei Bykovskii, Aleksei Denisov, Dmitry Zhdanov, Andrey Zhdanov, Igor Potemin, Yan Wang, ITMO Univ. (Russian Federation)

12317-47

**Adaptive vergence reconstruction method for mixed reality systems**

Author(s): Andrey Zhdanov, Dmitry Zhdanov, Nariman Esedov, Igor Potemin, Yan Wang, ITMO Univ. (Russian Federation)

12317-48

**Deep learning approach for creating the natural vergence-accommodation conditions in virtual and mixed reality systems**

Author(s): German Gebel, Andrey Zhdanov, Igor Kinev, Dmitry Zhdanov, Igor Potemin, Yan Wang, ITMO Univ. (Russian Federation)

12317-49

**Optical correlator-based parallel computing: an alternate approach to LIGO data processing**

Author(s): Srinath R. Patti, Indian Institute of Astrophysics (India)

12317-50

**Preprocessing and data fusion of a complex image obtained by a pair of sensors with a free arrangement**

Author(s): Evgenii Semenishchev, Tula State University (Russian Federation); Viacheslav Voronin, Aleksandr Zelensky, Marina Zhdanova, Roman Sizyakin, Moscow State Technical University (STANKIN) (Russian Federation)

12317-51

**Parametric Evaluation of Observed Objects from Images Based on Perspective Geometry Methods and Convolutional Neural Networks**

Author(s): M. L. Kazaryan, North Ossetian State Medical Academy (Russian Federation); A. A. Richter, AEROCOSMOS Research Institute for Aerospace Monitoring (Russian Federation); A. B. Murynin, Federal Research Center "Computer Science and Control" of the Russian Academy of Sciences (Russian Federation), Federal Research Center "Computer Science and Control" of the Russian Academy of Sciences (Russian Federation); O. G. Gvozdev, AEROCOSMOS Research Institute for Aerospace Monitoring (Russian Federation), State University of Geodesy and Cartography (Russian Federation); V. A. Kozub, D. Yu. Pukhovskiy, AEROCOSMOS Research Institute for Aerospace Monitoring (Russian Federation); A. Zelensky, E. Semenishchev, Moscow State Univ. of Technology (Russian Federation)

12317-52

**SOA-based nonlinear reservoir for echo-state networks**

Author(s): D. A. Ivoilov, A. E. Bednyakova, I. S. Terekhov, Novosibirsk State Univ. (Russian Federation); S. K. Turitsyn, Aston Univ. (United Kingdom)

**Holography, Diffractive Optics, and Applications XII****Proceedings of SPIE Vol. 12318**

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**META-OPTICS**

12318-1

**Metalens array for intergral-imagining-based near-eye display** (*Invited Paper*)

Author(s): Jian-Wen Dong, Zong Qin, Wei-Shi Zheng, Zhi-Bin Fan, Ze-Ming Chen, Yan Liu, Xia Liu, Wen-Long Lu, Kun-Yuan Xin, Sun Yat-Sen Univ. (China)

12318-2

**Holographic-assisted multiplexing optical metasurfaces**

Author(s): Xin Li, Lingling Huang, Yongtian Wang, Beijing Institute of Technology (China)

12318-47

**Multicolor metasurface holographic movie based on a cinematographic approach** (*Invited Paper*)

Author(s): Kentaro Iwami, Tokyo Univ. of Agriculture and Technology (Japan)

12318-48

**Novel design strategy for three-channel meta-holography and meta-nanoprinting**

Author(s): Muhammad Ashar Naveed, Isma Javed, Muhammad Qasim Mehmood, Muhammad Zubair, Yehia Massoud, King Abdullah Univ. of Science and Technology (Saudi Arabia)

12318-49

**Polarization-controlled wavefront modulation using all-dielectric multifunctional metasurface in the Ultraviolet regime**

Author(s): Sabiha Latif, Nasir Mahmood, Muhammad Qasim Mehmood, Yehia Massoud, King Abdullah Univ. of Science and Technology (Saudi Arabia)

12318-50

**Helicity multiplexed broadband meta-holography for ultraviolet regime**

Author(s): Aqsa Asad, Hafiz Saad Khaliq, Nasir Mahmood, Yehia Massoud, King Abdullah Univ. of Science and Technology (Saudi Arabia)

12318-51

**Independent multichannel wavefront modulation for angle and polarization multiplexing through planar metasurfaces**

Author(s): Sabiha Latif, Nasir Mahmood, Yehia Massoud, Muhammad Qasim Mehmood, King Abdullah Univ. of Science and Technology (Saudi Arabia)

**OPTICAL NEURAL NETWORK**

12318-3

**Deep-learning-based optical scanning cryptography** (*Invited Paper*)

Author(s): Aimin Yan, Xusheng Zhuang, Liu Lv, Heming Tian, Shanghai Normal Univ. (China)

12318-4

**Impact of common fabrication errors on the performance of diffractive neural networks** (*Invited Paper*)

Author(s): Elena Goi, Mengxiang Chen, Steffen Schoenhardt, Min Gu, Univ. of Shanghai for Science and Technology (China)

12318-5

**Progress of the computer-generated holography based on deep learning**

Author(s): Yixin Zhang, Kexuan Liu, Liangcai Cao, Tsinghua Univ. (China)

12318-6

**Versatile spectrum processing based on a compact diffractive neural network**

Author(s): Yinfei Zhu, Jinlei Fei, Bolin Li, Min Gu, Jian Lin, Univ. of Shanghai for Science and Technology (China)

12318-7

**Noise2Noise self-supervised deep-learning holographic despeckling method**

Author(s): Chenghua Shen, Wenjing Zhou, Shanghai Univ. (China); Hongbo Zhang, Middle Tennessee State Univ. (United States); Yingjie Yu, Shanghai Univ. (China)

12318-8

**Bilayer diffractive neural networks integrated on quartz substrate for handwritten digital recognition**

Author(s): Yibo Dong, Xinyuan Fang, Dajun Lin, Haitao Luan, Xi Chen, Qiming Zhang, Min Gu, Institute of Photonic Chips, Univ. of Shanghai for Science and Technology (China)

12318-52

**Real-time quantitative phase imaging through a multicore fiber using deep learning**

Author(s): Jiawei Sun, Nektarios Koukourakis, Jürgen W. Czarske, TU Dresden (Germany)

12318-53

**Investigation of expressive power of a neural network architecture suited for optical neural networks**

Author(s): Gekko Budiutama, Sergei Manzhos, Manabu Ihara, Tokyo Institute of Technology (Japan)

**DIFFRACTIVE OPTICS**

12318-72

**Phase-only spatial light modulator for holographic displays and projection devices** (*Invited Paper*)

Author(s): Xue Xiao, Yoshitomo Isomae, Nariyasu Sugawara, Nobuo Iwasaki, Tomoaki Honda, Koichi Amari, Sony Group Corp. (Japan)

12318-9

**Recent advances of laser interference lithography** (*Invited Paper*)

Author(s): Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

12318-10

**High-efficiency two-dimensional diffraction grating**

Author(s): Bin Zhou, Wei Jia, Changhe Zhou, Jinan Univ. (China)

12318-12

**A polygon geometry type 2D grating structure for diffractive wave-guide display**

Author(s): Sen Ma, Xiaoming Guo, Qiang Song, Shenzhen Lochn Optics Technology Co., Ltd. (China)

12318-13

**Polarization-independent high diffraction efficiency two-dimensional grating based on frustum array**

Author(s): YiHan Wang, YuDa Chen, Wei Jia, Jin Wang, ChangHe Zhou, Jinan Univ. (China)

12318-14

**A novel polarization manipulation method for high-throughput submicron array structure patterning**

Author(s): Xinghui Li, Liyu Lin, Tsinghua Univ. Shenzhen International Graduate School (China); Gaopeng Xue, Harbin Institute of Technology (China); Chuang Zeng, Tsinghua Univ. Shenzhen International Graduate School (China); Qihang Zhai, Tsinghua-Berkeley Shenzhen Institute (China); Qian Zhou, Tsinghua Univ. Shenzhen International Graduate School (China); Xiaohao Wang, Tsinghua Univ. Shenzhen International Graduate School (China), Tsinghua-Berkeley Shenzhen Institute (China)

12318-54

**3D propagation-invariant space-time wave packets**

Author(s): Murat Yessenov, CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States); Justin Free, Clemson Univ. (United States); Zhaozhong Chen, Univ. of Glasgow (United Kingdom); Eric G. Johnson, Martin P. J. Lavery, Clemson Univ. (United States); Ayman F. Abouraddy, CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States)

12318-56

**Increasing the spatial resolution of direct laser writing by using a non-Gaussian intensity distribution in the writing laser spot**

Author(s): Roman I. Kuts, Institute of Automation and Electrometry (Russian Federation); Ekaterina O. Mandrusova, Institute of Automation and Electrometry (Russian Federation), Novosibirsk State Technical University (Russian Federation); Andrew G. Sedukhin, Ekaterina V. Bronnikova, Victor P. Korolkov, Institute of Automation and Electrometry (Russian Federation)

**IMAGING**

12318-15

**Generalized convolutional model for restricted lensless imaging**

Author(s): Yuchen Ma, Jiachen Wu, Liangcai Cao, Tsinghua Univ. (China)

12318-16

**Pixel super-resolution quantitative phase imaging based on modulation diversity**

Author(s): Yunhui Gao, Liangcai Cao, Tsinghua Univ. (China)

12318-17

**Three-wavelength-based quantitative phase decoupling imaging**

Author(s): Junwei Min, Xi'an Institute of Optics and Precision Mechanics (China); Jinwei Song, Xi'an Institute of Optics and Precision Mechanics (China); Xun Yuan, Yuge Xue, Xi'an Institute of Optics and Precision Mechanics (China); Baoli Yao, Xi'an Institute of Optics and Precision Mechanics (China)

12318-57

**Applications of diffractive optical elements for biomedical imaging** (*Invited Paper*)

Author(s): Yuan Luo, National Taiwan Univ. (Taiwan, China)

12318-58

**Differentiable diffraction imaging** (*Invited Paper*)

Author(s): Ni Chen, King Abdullah Univ. of Science and Technology (Saudi Arabia); Congli Wang, Univ. of California, Berkeley (United States); Wolfgang Heidrich, King Abdullah Univ. of Science and Technology (Saudi Arabia)

**MEASUREMENT**

12318-18

**Instrumentation and reconstruction algorithm for subwavelength interferometric characterization of vectorial focal fields**

Author(s): Dong Yang, Haifeng Hu, Qiwen Zhan, Univ. of Shanghai for Science and Technology (China)

12318-19

**The binocular structured light three-dimensional imaging method for measurement of high-reflective objects**

Author(s): Lidan He, Rui Min, Liangcai Cao, Tsinghua Univ. (China)

12318-20

**Single-shot lensless imaging based on iterative denoising phase retrieval**

Author(s): Jiahao Wei, Nanjing Univ. of Science and Technology (China), BGI-Shenzhen (China); Mengzhe Shen, BGI Shenzhen (China); Chao Zuo, Nanjing Univ. of Science and Technology (China)

12318-21

**Detection and evaluation of surface defect for large-size grating**

Author(s): Xingxue Li, Bin Zhou, Mengqing Xu, Yuda Chen, Jinan Univ. (China); Yihan Wang, Jinan Univ. (China); Jin Wang, Changhe Zhou, Jinan Univ. (China)

12318-22

**Traceable and flexible measurement of grating period with double-period grating**

Author(s): Yongfang Xie, Wei Jia, Jinan Univ. (China); Chunlong Wei, Shanghai Institute of Optics and Fine Mechanics (China); Changhe Zhou, Jinan Univ. (China)

12318-23

**Snapshot on-axis Fizeau polarization phase-shifting interferometer**

Author(s): Hanzi Liu, Xingpeng Du, Kaiquan Chen, Vinu R.V., Ziyang Chen, Jixiong Pu, Huaqiao Univ. (China)

12318-24

**A new high-precision device for one-dimensional grating period measurement**

Author(s): YuDa Chen, ChangHe Zhou, YiHan Wang, XingXue Li, Wei Jia, Jin Wang, Jinan Univ. (China)

**DISPLAY**

12318-25

**Floating aerial 3D light field display (Invited Paper)**

Author(s): Xinzhu Sang, Xunbo Yu, Xin Gao, Binbin Yan, Beijing Univ. of Posts and Telecommunications (China)

12318-26

**Weighted constraint stochastic gradient descent algorithm for computational holographic near-eye display**

Author(s): Lizhi Chen, Tsinghua Univ. (China); Runze Zhu, Tsinghua University (China); Songzhi Tian, Hao Zhang, Tsinghua Univ. (China)

12318-27

**Phase space analysis of sampling in the diffraction fields for holographic near-eye displays**

Author(s): Jiasheng Xiao, Tsinghua Univ. (China); Wenhui Zhang, CFEL, DESY (Germany); Hao Zhang, Tsinghua Univ. (China)

12318-28

**Wirtinger-derivative-based tilted plane diffraction propagation for holographic near-eye displays**

Author(s): Weisen Wang, Furong Yang, Xinghua Shui, Shanghai Univ. (China); Yunqing Guan, Singapore Institute of Technology (Singapore); Huadong Zheng, Yingjie Yu, Xinxing Xia, Shanghai Univ. (China)

12318-29

**An optimized Gerchberg-Saxton algorithm for speckle suppression with double amplitude freedom**

Author(s): Kexuan Liu, Zehao He, Liangcai Cao, Tsinghua Univ. (China)

12318-30

**Method of speckle noise suppression for holographic 3D display based on the spatial light modulator**

Author(s): Qiong-Hua Wang, Nan-Nan Li, Di Wang, Yi-Long Li, Beihang Univ. (China)

12318-31

**Full-color VHG holographic waveguide display based on wide-band sensitive acrylate photopolymer**

Author(s): Zhongwen Shen, Xin Su, Chuang Tian, Yi Jiang, Yan Yang, Nanjing Vocational Univ. of Industry Technology (China)

12318-32

**A survey of full-color holographic 3D display based on single SLM**

Author(s): Shufeng Lin, Dayong Wang, Lu Rong, Yunxin Wang, Jie Zhao, Beijing Univ. of Technology (China)

12318-33

**A high-efficiency color sequential SLM for holography display**

Author(s): Yixing Chen, Southeast Univ. (China), Nanjing Smartvision Electronics Co., Ltd. (China); Jun Xia, Southeast Univ (China)

12318-34

**Holographic retinal projection near-eye display**

Author(s): Zi Wang, Guoqiang Lv, Hefei Univ. of Technology (China)

12318-93

**Visual comfort evaluation for stereoscopic videos with different binocular color allocation scheme**

Author(s): Dandan Chen, Zaiqing Chen, Ting Yang, Xiaoqiao Huang, Lijun Yun, Yunnan Normal Univ. (China)

12318-61

**Complex-valued holograms displayed onto phase-only spatial light modulators: encoding technique and evaluation (Invited Paper)**

Author(s): Ignacio Moreno, Esther Nabadda, Univ. Miguel Hernández (Spain); Pascuala García-Martínez, Univ. de València (Spain); María del Mar Sánchez-López, Univ. Miguel Hernández (Spain)

12318-62

**Real-time generation of full-color 4K rainbow hologram (Invited Paper)**

Author(s): Hiroshi Yoshikawa, Takeshi Yamaguchi, Nihon Univ. (Japan)

12318-63

**Aberration and distortion correction method by using camera-projector calibration for a display based on holographic optical element**

Author(s): Hoonjong Kang, Younghun Kim, Heemin Choi, Wonkwang Univ. (Korea, Republic of)

12318-64

**Volume-reduced floating display based on a holographic optical element**

Author(s): Heemin Choi, Younghun Kim, Hoonjong Kang, Wonkwang Univ. (Korea, Republic of); Nam Kim, Chungbuk National University (Korea, Republic of)

**MICROSCOPY**

12318-35

**Lens-free 3D imaging based on wavelength scanning**

Author(s): Xuejuan Wu, Jiasong Sun, Linpeng Lu, Yang Chen, Chao Zuo, Nanjing Univ. of Science and Technology (China)

12318-36

**Improved reconstruction with Butterworth-weighted transfer function for Fourier ptychographic microscopy**

Author(s): Jie Zhao, Dayong Wang, Yaqian Han, Shufeng Lin, Yunxin Wang, Lu Rong, Beijing Univ. of Technology (China)

12318-37

**Lensfree single-frame phase imaging microscopy based on partially coherent LED-illumination**

Author(s): Yang Chen, Xuejuan Wu, Linpeng Lu, Chao Zuo, Nanjing Univ. of Science and Technology (China)

12318-66

**Two-dimensional acousto-optic SLM**

Author(s): Alexander I. Chizhikov, Vladimir Y. Molchanov, Natalya F. Naumenko, Konstantin B. Yushkov, National Univ. of Science and Technology MISIS (Russian Federation)

**HOLOGRAPHY**

12318-38

**Preparing optical elements based on polarization holography (Invited Paper)**

Author(s): Zhiyun Huang, Lu Huang, Shujun Zheng, Tian Ye, Ayuan Lin, Peiliang Qi, Xianmiao Xu, Yi Yang, Yuanying Zhang, Xiaodi Tan, Fujian Normal Univ. (China)

12318-39

**Optical tomography in coherent off-axis scanning holography**

Author(s): Yongwei Yao, Yaping Zhang, Kunming Univ. of Science and Technology (China); Ting-Chung Poon, Virginia Polytechnic Institute and State Univ. (United States)

12318-40

**Vortex grating-encrypted orbital angular momentum multiplexed holography**

Author(s): Fajing Li, Shouping Nie, Caojin Yuan, Nanjing Normal Univ. (China)

12318-42

**Digital holography for real-time detection based on femtosecond laser**

Author(s): Yiqian Yang, Tsinghua Univ. (China); Minglie Hu, Tianjin Univ. (China); Liangcai Cao, Tsinghua Univ. (China)

12318-43

**Variation of initial exposure response coefficient in linear polarization holography**

Author(s): Xinyi Yuan, Jinyu Wang, Ayuan Lin, Peiliang Qi, Jinhong Li, Zhiyun Huang, Xiaodi Tan, Fujian Normal Univ. (China)

12318-44

**Single-shot dual-wavelength lensless digital holography using a dichroic mirror**

Author(s): Dingnan Deng, Bingfu Huang, Jiaying Univ. (China); Qijian Tang, Wenqi He, Shenzhen Univ. (China)

12318-45

**Producing half-wave plate by polarization holography**

Author(s): Tian Ye, Jinyu Wang, Jie Liu, Peiliang Qi, Ayuan Lin, Zhiyun Huang, Xiaodi Tan, Fujian Normal Univ. (China)

12318-46

**Fast texture mapping for analytical polygon-based computer generated holography**

Author(s): Wenlong Qin, Yaping Zhang, Bing Zhang, Qingyang Fu, Kunming Univ. of Science and Technology (China); Ting-Chung Poon, Virginia Polytechnic Institute and State Univ. (United States)

12318-67

**Imaging acoustic field with multicolor digital holography (Invited Paper)**

Author(s): Pascal Picart, Saoucène Hassad, Le Mans Univ. (France)

12318-68

**Holographic beam-shaping optimized in a laser processing system (Invited Paper)**

Author(s): Yoshio Hayasaki, Satoshi Hasegawa, Honghao Zhang, Ryo Onodera, Takefumi Kosugi, Nami Kuroo, Fumiya Ishita, Utsunomiya Univ. (Japan)

12318-69

**Strategies for the next generation of special-purpose computers for holography (Invited Paper)**

Author(s): Tomoyoshi Shimobaba, Takayuki Takahashi, Ikuo Hoshi, Fan Wang, Harutaka Shiomi, Takayuki Hara, Yogi Udjaja, Taira Suzuki, Chiba Univ. (Japan); Takashi Nishitsuji, Tokyo Metropolitan Univ. (Japan); Takashi Kakue, Atsushi Shiraki, Tomoyoshi Ito, Chiba Univ. (Japan)

12318-70

**Single-shot in-line Fresnel incoherent correlation holography using a dual-focus checkerboard lens (Invited Paper)**

Author(s): Takanori Nomura, Wakayama Univ. (Japan)

12318-71

**Generation of enhanced optimal sampled phase-only hologram (Invited Paper)**

Author(s): P. W. M. Tsang, City Univ. of Hong Kong (Hong Kong, China)

12318-73

**Using a single computer-generated hologram for white-light illumination (Invited Paper)**

Author(s): Phoebe X. Gao, Yuanbo Deng, Daping Chu, Univ. of Cambridge (United Kingdom)

12318-41

**High-speed computing of binary computer-generated holograms**

Author(s): Xiang Li, Jung-Ping Liu, Feng Chia Univ. (Taiwan, China)

**POSTER SESSION**

**Some posters may have an accompanying preview video from the presenter.**

12318-74

**Speckle de-noising via deep learning in digital holographic interferometry**

Author(s): Qiang Fang, Haiting Xia, Qinghe Song, Peigen Li, Kunming Univ. of Science and Technology (China)

12318-76

**Phase-shift reconstruction imaging analysis in off-axis digital holographic microscopy with structured illumination**

Author(s): Yang Han, Meng Huang, Zhuqing Jiang, Beijing Univ. of Technology (China)

12318-78

**Exploring the field-of-view of scattering imaging system in the presence of a moving object**

Author(s): Jiapeng Cai, Dajiang Lu, Wenqi He, Shenzhen Univ. (China)

12318-79

**Adaptive algorithms optimize computational imaging system**

Author(s): Hua Liu, Science and Technology on Electro-Optic Control Lab. (China)

12318-80

**Generation of phase-only hologram with specific encoding based on convolutional neural networks**

Author(s): Liu Xinlei, Wang Xi, Jing Tao, Jiang Xiaoyu, Xingpeng Yan, The Academy of Armored Forces Engineering of PLA (China)

12318-81

**Digital holography-based phase postprocessing and cell three-dimensional morphology analysis system**

Author(s): Zhuoshi Li, Qian Shen, Qian Chen, Chao Zuo, Nanjing Univ. of Science and Technology (China)

12318-82

**Research on autofocus critical function in digital holography based on the discrete cosine transform**

Author(s): Yuanyuan Chen, Zhuoshi Li, Qian Shen, Chao Zuo, Nanjing Univ. of Science and Technology (China)

12318-83

**Research on three-dimensional topography measurement method of tumor cells based on lensless imaging**

Author(s): Lulu He, Xiaochen Meng, Jiaqi Cui, Beijing Information Science & Technology Univ. (China)

12318-84

**Phase-only holographic retinal projection display based on GS iterative algorithm**

Author(s): Kefeng Tu, Zi Wang, Xu Zhang, Yujian Pang, Tao Chen, Hefei Univ. of Technology (China)

12318-85

**Color holographic HUD with eyebox expansion using a folding optical path module**

Author(s): Yujian Pang, Yumeng Su, Tao Chen, Zi Wang, Guoqiang Lv, Qibin Feng, Hefei Univ. of Technology (China)

12318-86

**Multi-channel acousto-optic modulators based on apodization electrode**

Author(s): Li Liang, Kefeng Tu, Yucong Wang, Zi Wang, Hefei Univ. of Technology (China)

12318-87

**Design and simulation comparison of terahertz surface wave based on grating coupling method**

Author(s): Kunlun Li, Dayong Wang, Lu Rong, Jie Zhao, Shufeng Lin, Yunxin Wang, Tong Zhang, Beijing Univ. of Technology (China)

12318-88

**Multi-channel acousto-optic modulator based on crossed trapezoid array electrodes**

Author(s): Liang Li, Yonglin Yin, Kefeng Tu, Yucong Wang, Hefei Univ. of Technology (China); Kunying Li, CASTECH Inc (China); Zi Wang, Guoqiang Lv, Hefei Univ. of Technology (China)

12318-89

**Real-time interactive computer-generated hologram using Fresnel zone plate extension method**

Author(s): Zhi Sun, Xinzhu Sang, Chongli Zhong, Hui Li, Xiujuan Qin, Rui Xiao, Yu Dong, Beijing Univ. of Posts and Telecommunications (China)

12318-90

**Objective function for minimizing optical pathlength difference in design of flat-field holographic concave gratings**

Author(s): Siyu Chen, Lijiang Zeng, Lifeng Li, Tsinghua Univ. (China)

12318-91

**Amplitude compensated Gerchberg-Saxton algorithm for generation of phase-only hologram in multiple-plane holographic displays**

Author(s): Tao Chen, Zi Wang, Xu Zhang, Kefeng Tu, Hefei Univ. of Technology (China)

12318-92

**A four-step laser interference lithography for patterning pixelated micro-polarizer array**

Author(s): Fuyuan Deng, Tianshi Lu, Tsinghua Univ. Shenzhen International Graduate School (China); Qihang Zhai, Tsinghua-Berkeley Shenzhen Institute (China); Linbin Luo, Tsinghua Univ. Shenzhen International Graduate School (China); Gaopeng Xue, Harbin Institute of Technology (China); Qian Zhou, Xiaohao Wang, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

12318-55

**Analyzing the tolerances on direct laser writing of two-dimensional Dammann gratings and performing the software correction of writing modes**

Author(s): Victor P. Korolkov, Andrey G. Sedukhin, Roman I. Kuts, Vadim V. Cherkashin, Sergey K. Golubtsov, Anatoly I. Malyshev, Dmitriy A. Belousov, Institute of Automation and Electrometry (Russian Federation)

12318-94

**Analysis of longitudinal strain wave evolution in polystyrene waveguides using digital holography and spectral decomposition**

Author(s): Anna A. Zhikhoreva, Andrey V. Belashov, Irina V. Semenova, Yaroslav M. Beltukov, Ioffe Institute (Russian Federation)

12318-95

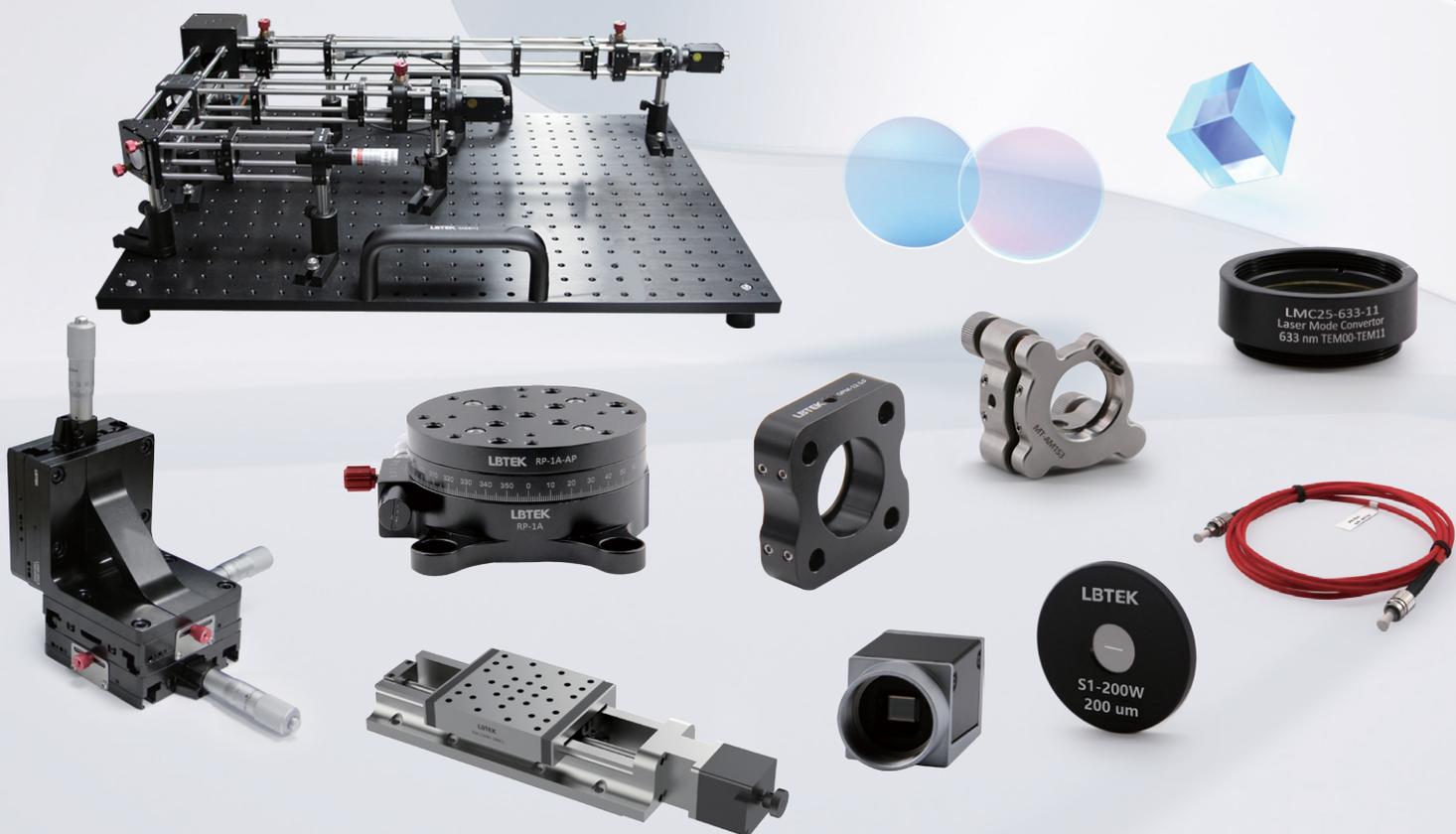
**Analysis of cellular response to photodynamic treatment with Radachlorin photosensitizer by means of quantitative phase microscopy using highly coherent and partially coherent light sources**

Author(s): Anna A. Zhikhoreva, Andrey V. Belashov, Ioffe Institute (Russian Federation); Anna V. Salova, Tatyana N. Belyaeva, Ilia K. Litvinov, Elena S. Kornilova, Cytology Institute (Russian Federation); Irina V. Semenova, Oleg S. Vasyutinskii, Ioffe Institute (Russian Federation)

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**OPTICAL METROLOGY METHODS I**

12319-1

**Learning-based fringe analysis with uncertainty quantification** (*Invited Paper*)

Author(s): Shijie Feng, Nanjing Univ. of Science and Technology (China)

12319-2

**Probability-distribution-based gamma correction method in fringe projection profilometry**

Author(s): Long Ma, Lingxuan Tang, Xin Pei, Benyuan Sun, Civil Aviation Univ. of China (China); Ruijie Qian, Beijing Jingwei Hirain Technologies Co., Inc. (China); Yuan Zhao, Civil Aviation Univ. of China (China)

12319-3

**A flexible and robust telecentric camera pose estimation method**

Author(s): Bin Li, Huazhong Univ. of Science and Technology (China)

12319-4

**Mathematical model establishment of the rotating laser vertical error using spherical triangles method** (*Invited Paper*)

Author(s): Weidong Zhang, Qinglei Su, Henan Institute of Metrology (China); Jiajun Zhang, Virginia Tech (United States); Bo Li, Henan Institute of Metrology (China)

12319-5

**Variation mode-decomposition based surface recovery algorithm for white light interferometry**

Author(s): Long Ma, Fengyu Yang, Yuan Zhao, Xin Pei, Fengming Sun, Lingxuan Tang, Civil Aviation Univ. of China (China)

**OPTICAL METROLOGY METHODS II**

12319-6

**High-accuracy digital volume correlation-based point cloud registration for 3D reconstruction** (*Invited Paper*)

Author(s): Wei Shi, Shanghai Univ. (China); Lianpo Wang, Northwestern Polytechnical Univ. (China)

12319-7

**FPGA-enabled accurate angle-power matching method in MEMS mirrors-based structure light projection system**

Author(s): Weijian Shi, Shihao Lu, Yihao Tao, Tsinghua Univ. Shenzhen International Graduate School (China); Gaopeng Xue, Tsinghua Univ. Shenzhen International Graduate School (China); Harbin Institute of Technology (China); Fengxiao Lei, Tsinghua Univ. Shenzhen International Graduate School (China); Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China), Tsinghua-Berkeley Shenzhen Institute (China)

12319-8

**Automatic 3D measurement method with small field-of-view based on telecentric lens**

Author(s): Xiaobo Jin, Bin Li, Huazhong Univ. of Science and Technology (China); Feng Zhang, Kaiwen Li, SAIC-GM-Wuling Automobile Co., Ltd. (China); Pan Zhang, Huazhong Univ. of Science and Technology (China); Kai Zhong, Huazhong Univ. of Science and Technology (China), Research Institute of Huazhong Univ. of Science and Technology in Shenzhen (China); Zhongwei Li, Huazhong Univ. of Science and Technology (China)

12319-80

**Freeform surface measurement by virtual differential confocal based on reference planes monitoring**

Author(s): Wenbin Wang, Lirong Qiu, Weiqian Zhao, Beijing Institute of Technology (China)

12319-26

**Measurement of temperature and temperature profile of nanoparticle additive liquid fuel by interferometry**

Author(s): Shilpi Agarwal, Jawaharlal Nehru Univ. (India)

**OPTICAL METROLOGY METHODS III**

12319-9

**Structured light 3D imaging and its applications** (*Invited Paper*)

Author(s): Yan Hu, Kaijie Zheng, Zhongwei Liang, Shijie Feng, Chao Zuo, Nanjing Univ. of Science and Technology (China)

12319-10

**Deep learning-enabled single-shot fringe projection profilometry with composite coding strategy**

Author(s): Yixuan Li, Jiaming Qian, Shijie Feng, Qian Chen, Chao Zuo, Nanjing Univ. of Science and Technology (China)

12319-11

**Evaluation of atmospheric temperature measurement uncertainty of a Rayleigh scattering lidar by the GUM method**

Author(s): Xinqi Li, Kai Zhong, Xianzhong Zhang, Yijian Zhang, Yu Wang, Jianquan Yao, Degang Xu, Tianjin Univ. (China)

12319-12

**An ultra-precision error estimation for a multi-axes grating encoder using quadrant photodetectors**

Author(s): Linbin Luo, Lyuye Gao, Shengtong Wang, Fuyuan Deng, Tsinghua Univ. Shenzhen International Graduate School (China); Yonggui Wu, Guangxi Guihua Intelligent Manufacturing Co. (China); Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China), Tsinghua-Berkeley Shenzhen Institute (China)

**OPTICAL METROLOGY METHODS IV**

12319-13

**Theoretical analysis and experimental research on verification of steel tape by laser tracker *(Invited Paper)***

Author(s): Peng Wang, Xinjiang Uygur Autonomous Region Research Institute of Measurement & Testing (China), Shihezi Univ. (China); Ningxia Yang, Xinjiang Agricultural Univ. (China), Hohai Univ. (China); Hongliang Zhao, Xinjiang Uygur Autonomous Region Research Institute of Measurement & Testing (China); Guoying Ren, National Institute of Metrology (China)

12319-14

**Research on contactless electroluminescence for micro-LED epitaxial wafers based on low power plasma discharge**

Author(s): Yu Peng, Kun Wang, ChaoXing Wu, Yun Ye, TaiLiang Guo, Fuzhou Univ. (China)

12319-15

**Modeling and test of an absolute four-degree-of-freedom (DOF) grating encoder**

Author(s): Shengtong Wang, Junhao Zhu, Ningning Shi, Linbin Luo, Tsinghua Univ. Shenzhen International Graduate School (China); Yanxiang Wen, Guangxi Guihua Intelligent Manufacturing Co., Ltd. (China); Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

12319-16

**Towards scalable scenarios human pose estimation via two-stage hierarchical network**

Author(s): QiKun Yang, Ming Liu, Lingqin Kong, Yuejin Zhao, Liqun Dong, Mei Hui, Zhongyi Fan, Beijing Institute of Technology (China)

**OPTICAL METROLOGY APPLICATIONS I**

12319-17

**Laser line interferometric sensor for multipoint velocity and distance measurements with camera based 3D calibrations *(Invited Paper)***

Author(s): Hao Zhang, Dalian Maritime Univ. (China)

12319-18

**Calibration of digital speckle pattern interferometry based on three-axis angle motions measurement theory**

Author(s): Yang Yan, Sijin Wu, Lili Shi, Weixian Li, Juanning Si, Haisha Niu, Beijing Information Science & Technology Univ. (China)

12319-19

**Voxel grid performer: efficient radiance fields generalization for human novel view synthesis**

Author(s): Zhongyi Fan, Ming Liu, Yuejin Zhao, Liqun Dong, Mei Hui, Lingqin Kong, Qikun Yang, Beijing Institute of Technology (China)

12319-20

**A practical approach to perform stereo rectification using a structured light patter**

Author(s): Xuan-Li Chen, Beijing Mainline Technology Co., Ltd. (China); Zheng Zhu, Guan Huang, PhiGent Robotics Technology Co., Ltd. (China); Luc Van Gool, KU Leuven (Belgium)

12319-21

**The influence of phase-shifting algorithms on the instrument transfer function in a Fizeau interferometer**

Author(s): Xu Zhang, Shanghai Institute of Optics and Fine Mechanics (China), Univ. of Chinese Academy of Sciences (China); Qi Lu, Shanghai Institute of Optics and Fine Mechanics (China), Fudan Univ. (China); Tianzhu Xu, Ying Sun, Shijie Liu, Shanghai Institute of Optics and Fine Mechanics (China); Dmitry Silin, Institute of Applied Physics (Russian Federation); Ilya Kozhevator, Efim Khazanov, Institute of Applied Physics (Russian Federation)

**OPTICAL METROLOGY APPLICATIONS II**

12319-22

**Structured illumination using deep learning: with applications to high-speed 3D surface imaging *(Invited Paper)***

Author(s): Chao Zuo, Nanjing Univ. of Science and Technology (China)

12319-23

**Geometric measurement error tests on multi-regular particle shapes with the use of scanning electron microscope *(Invited Paper)***

Author(s): Sen Zhou, Jian Xu, Ying Li, Cong Yue, Chongqing Institute of Metrology and Quality Inspection (China)

12319-24

**Automatic robotic trajectory planning based by laser projection measurement**

Author(s): Lihong Zhou, Xiangchao Zhang, Qiangang Zhang, Fudan Univ. (China); Shaoliang Li, Wanliang Zhao, Shanghai Institute of Spaceflight Control Technology (China)

12319-25

**An evaluation scheme design about the vertical rotating function of rotating laser**

Author(s): Weidong Zhang, Qinglei Su, Pengli Cheng, Bo Li, Henan Institute of Metrology (China)

12319-27

**Non-contact surface roughness measurement with a light-field camera *(Invited Paper)***

Author(s): Yoshitaka Igarashi, Sumitomo Heavy Industries, Ltd. (Japan); Toshiyasu Mitsunari, Kazunori Yamazaki, Sumitomo Heavy Industries (Japan)

12319-28

**In-plane coplanarity measurement by Talbot interferometer *(Invited Paper)***

Author(s): Shilpi Agarwal, Jawaharlal Nehru Univ. (India); Chandra Shakher, Instrument Design and Development Ctr. (India)

12319-29

**Measurement of fuel flow behavior of diffusion flame under magnetic field application**

Author(s): Anand Prakash Singh, Ashish Kumar Singh, IIMT College of Engineering (India)

**POSTER SESSION**

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12319-30

**Design of optical field polarization detection system**

Author(s): Jiaqin Li, Beijing Institute of Technology (China); Wang Cheng, Aerospace Information Research Institute (China); Yunfeng Ma, Aerospace Information Research Institute (China), Univ. of Chinese Academy of Sciences (China); Guangyan Guo, Peng Zhao, Can Cao, Aerospace Information Research Institute (China); Lifan Liao, Aerospace Information Research Institute (China), Univ. of Chinese Academy of Sciences (China); Xuebo Yang, Yong Bai, Fang Bai, Zhe Wang, Aerospace Information Research Institute (China); Tao Zhong, Yasong Zhou, Chongqing Normal Univ. (China); Jiawei Zhou, China Jiliang Univ. (China); Zhongwei Fan, Aerospace Information Research Institute (China)

12319-31

**Research on method of avoiding phase unwrapping error in 3D measurement of Gray code**

Author(s): Jilong Xia, Xiaofei Wang, Hua Fan, Qilu Univ. of Technology (China)

12319-32

**Methodologies on computational processes in intelligent manufacturing**

Author(s): Hua Liu, Luoyang Electro-optical Equipment Research Institute of AVIC (China)

12319-33

**Deep-learning profilometry for single-frame absolute 3D shape reconstruction**

Author(s): Zhiyi Xu, Jiaming Qian, Yin Li, Yuheng Jiang, Nanjing Univ. of Science and Technology (China)

12319-34

**High precision calibration method of laser projection turntable**

Author(s): Yuzhang Yan, Ming Liu, Mei Hui, Yuejin Zhao, Liquan Dong, Lingqin Kong, Beijing Institute of Technology (China)

12319-35

**Real-time 3D measurement system based on infrared light projection**

Author(s): Buyuan Miao, Jiaming Qian, Yixuan Li, Suwan Yang, Yuzhen Zhang, Nanjing Univ. of Science and Technology (China)

12319-36

**Research on infrasonic directional simulation technology based on phased parametric array**

Author(s): Qing Li, Huihui Zheng, Shaanxi Institute of Metrology (China); Weidong Qiao, Xi'an Univ. of Technology (China); Jie Bai, Shaanxi Institute of Metrology (China); Ying Hu, Chan Tian, Xi'an Univ. of Technology (China)

12319-37

**Fourier ptychography transmission color imaging in the far-field based on wavelength multiplexing**

Author(s): Jiatong Li, Yufei Jin, Xinyu Wu, Sheng Li, Bowen Wang, Chao Zuo, Nanjing Univ. of Science and Technology (China)

12319-38

**An efficient speckle matching network based on deep learning**

Author(s): Hang Zhao, Wei Yin, Nanjing Univ. of Science and Technology (China)

12319-39

**Fast 3D measurement based on fringe projection profilometry and deep learning**

Author(s): Yuxuan Che, Wei Yin, Nanjing Univ. of Science and Technology (China)

12319-40

**High-precision 3D sensors based on multiple infrared speckle projection modules**

Author(s): Mingyu Li, Wei Yin, Nanjing Univ. of Science and Technology (China)

12319-41

**A stereo camera self-calibration method using DIC-based planar feature matching**

Author(s): Yifan Ji, Wei Yin, Nanjing Univ. of Science and Technology (China)

12319-42

**The defect detection method for automobile surfaces based on a lighting system with light fields**

Author(s): Han Yu, Wei Yin, Nanjing Univ. of Science and Technology (China)

12319-43

**Photon flux calibration of LED in horticulture lighting**

Author(s): Jinyun Yan, Hui Liu, Weiqiang Zhao, Ying Su, National Institute of Metrology (China)

12319-44

**Simulation research of illumination system with coherent noise suppression**

Author(s): Xianhao Qi, Univ. of Shanghai for Science and Technology (China); Sen Han, Univ. of Shanghai for Science and Technology (China), Suzhou H&L Instruments LLC (China); Linghua Zhang, Xianyu Wu, Jun Cheng, Univ. of Shanghai for Science and Technology (China); Erhui Qi, Haixiang Hu, Changchun Institute of Optics, Fine Mechanics and Physics (China)

12319-45

**Interferometric measurement of thickness variation of double-sided polished wafer**

Author(s): Xiaoyue Bian, Suzhou H&L Instruments LLC (China), Suzhou University of Science and Technology (China); Sen Han, Jun Cheng, Linghua Zhang, Suzhou H&L Instruments LLC (China), Univ. of Shanghai for Science and Technology (China); Quanzhao Wang, Xueyuan Li, Suzhou H&L Instruments LLC (China); Quanying Wu, Suzhou Univ. of Science and Technology (China)

12319-46

**Algorithm for local nonlinear error calibration of displacement sensor based on C2 continuous interpolation**

Author(s): Bin Mao, Jingfan Wang, Shaanxi Institute of Metrology Science (China); Hui Liu, Xi'an Univ. of Posts & Telecommunications (China); Fei Feng, Wei Zhou, Shaanxi Institute of Metrology Science (China)

12319-47

**Simulation verification for the cause of overlapped interference fringes in homogeneity measurement of quartz substrate**

Author(s): Xianyu Wu, Sen Han, Xianhao Qi, Jun Cheng, Univ. of Shanghai for Science and Technology (China); Bo Zhang, Suzhou H&L Instruments LLC (China); Xuefeng Zeng, Xiao Luo, Changchun Institute of Optics, Fine Mechanics and Physics (China)

12319-48

**Research on subaperture stitching optimization algorithm for large flat mirror testing**

Author(s): Zhixuan Zhou, Sen Han, Chunfeng Xu, Quanquan Wang, Univ. of Shanghai for Science and Technology (China)

12319-49

**Research on interferometric inspection of surface topography of ring elements**

Author(s): Jun Cheng, Sen Han, Univ. of Shanghai for Science and Technology (China), Suzhou H&L Instruments LLC (China); Xiaoyue Bian, Suzhou H&L Instruments LLC (China), Suzhou Univ. of Science and Technology (China); Xianyu Wu, Xianhao Qi, Linghua Zhang, Univ. of Shanghai for Science and Technology (China), Suzhou H&L Instruments LLC (China); Qiang Cheng, Changchun Institute of Optics, Fine Mechanics and Physics (China)

12319-50

**Design of wireless control system for dual-beam interferometer**

Author(s): Xu Jia, Suzhou H&L Instruments LLC (China), Suzhou Univ. of Science and Technology (China); Sen Han, Suzhou H&L Instruments LLC (China), Univ. of Shanghai for Science and Technology (China); Quanying Wu, Suzhou Univ. of Science and Technology (China); Linghua Zhang, Univ. of Shanghai for Science and Technology (China); Xueyuan Li, Quanzhao Wang, Suzhou H&L Instruments LLC (China)

12319-51

**End-to-end active object tracking football game via reinforcement learning**

Author(s): Haobin Qin, Ming Liu, Liqun Dong, Lingqin Kong, Mei Hui, Yuejin Zhao, Beijing Institute of Technology (China)

12319-52

**3D human pose estimation based on multi view information fusion**

Author(s): Shuo Zhang, Ming Liu, Yuejin Zhao, Liqun Dong, Lingqin Kong, Beijing Institute of Technology (China)

12319-53

**3D observation of grain pile based on projection light and dual cameras**

Author(s): Yuanyue Zhang, Yulong Qi, Xiangju Qu, Wenhao Fan, Chang Liu, Xuzhou Univ. of Technology (China)

12319-54

**Simulation of stress deformation in 600mm flat mirror measurement with interferometer**

Author(s): Quanquan Wang, Sen Han, Chunfeng Xu, Zhixuan Zhou, Wujun Lv, Ying Yang, Univ. of Shanghai for Science and Technology (China)

12319-55

**Autocollimator for measuring three angular and three linear deformations of industrial structures**

Author(s): Ding Duan Dang, Igor Konyakhin, ITMO Univ. (Russian Federation); Renpu Li, Han Xiao, Chongqing Univ. of Posts and Telecommunications (China)

12319-56

**3D reconstruction of typical entities based on multi-perspective images**

Author(s): Haiyun Liang, Ming Liu, Mei Hui, Yuejin Zhao, Liqun Dong, Lingqin Kong, Beijing Institute of Technology (China)

12319-57

**Modal shape reconstruction method for deflectometry based on deep learning**

Author(s): Jingtian Guan, Ji Li, Juntong Xi, Shanghai Jiao Tong Univ. (China)

12319-58

**Tracking and shooting system based on trajectory prediction**

Author(s): Yifan Chen, Ming Liu, Liqun Dong, Mei Hui, Yuejin Zhao, Lingqin Kong, Beijing Institute of Technology (China)

12319-59

**A polarization adjustment module for frequency aliasing of heterodyne grating interferometer**

Author(s): Lyuye Gao, Junhao Zhu, Tsinghua Univ. Shenzhen International Graduate School (China); Guangyao Huang, Tsinghua Univ. Shenzhen International Graduate School (China); Guochao Wang, National Univ. of Defense Technology (China); Shengtong Wang, Kai Ni, Xiaohao Wang, Tsinghua Univ. Shenzhen International Graduate School (China); Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China), Tsinghua Univ. (China)

12319-60

**A method for multi-target human behavior recognition in small and medium scenes**

Author(s): Tao Yang, Liqun Dong, Lingqin Kong, Xuhong Chu, Yuejin Zhao, Ming Liu, Beijing Institute of Technology (China)

12319-61

**Metrology and calibration system of ophthalmic optical standard models based on time-domain OCT**

Author(s): Wenli Liu, Junbang Zhao, Liangcheng Duan, Zhixiong Hu, National Institute of Metrology (China)

12319-62

**Measuring orbital angular momentum of vortex beams with double multipoint and ring slit interferometer**

Author(s): Qi Zhao, Univ. of Electronic Science and Technology of China (China), Southwest Institute of Technical Physics (China); Hao Zhang, Southwest Institute of Technical Physics (China); Yuanjie Yang, Univ. of Electronic Science and Technology of China (China)

12319-63

**Research on field calibration device of Femto-Joule level laser energy**

Author(s): Qing'an Meng, Hongying Fan, Zhewei Jiang, Liangping Xue, Xun Wang, Southwest Institute of Technical Physics (China)

12319-64

**An inline fiber Mach-Zehnder interferometer based on core-offset and peanut-shape for refractive index sensing**

Author(s): Yanfei Zhou, Yuan Liu, Jie Zheng, Jilin Univ. (China)

12319-65

**Dynamic systems: data, configurations, and solutions**

Author(s): Hua Liu, Science and Technology on Electro-Optic Control Lab. (China)

12319-66

**Global optimization for complex system smart manufacturing**

Author(s): Hua Liu, Science and Technology on Electro-Optic Control Lab. (China)

12319-67

**Simulation of space environment for near Sun orbiter**

Author(s): Hu Jiang, Lei Deng, Shanghai Engineering Ctr. for Microsatellites (China)

12319-79

**An algorithm for thickness profile restoration of transparent parallel plates with special cavity length**

Author(s): Ruonan Ren, Huazhong University of Science and Technology (China); Shijie Liu, Shanghai Institute of Optics and Fine Mechanics (China); Luming Zhao, Huazhong University of Science and Technology (China); Qi Lu, Precision Optical Manufacturing and Testing Ctr. (China)

12319-69

**Preprocessing to improve the accuracy of recognition of radioelement components in automated assembly devices**

Author(s): Evengii Semenishchev, Aleksandr Zelensky, Marina Zdanova, Yuriy Ilukhin, Viacheslav Voronin, Roman Sizyakin, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

12319-70

**Algorithm for the automated identification of the accuracy requirements set in the detail drawing**

Author(s): A. Glubokov, A. Shulepov, D. Ananov, A. Zelensky, E. Semenishchev, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

12319-71

**Automated measuring system for straightness and flatness deviations of extended surfaces**

Author(s): A. Glubokov, S. Glubokova, I. Afonina, A. Zelensky, E. Semenishchev, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

12319-72

**Fabric image inspection using deep learning approach**

Author(s): R. Sizyakin, V. Voronin, N. Gapon, E. Semenishchev, A. Zelensky, Yu. Ilyukhin, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

12319-73

**Development of an approach to automated design and measurement of the front surface of ceramic cutters with a system for modifying the original design**

Author(s): Petr M. Pivkin, Vladimir A. Grechishnikov, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

12319-74

**Identification of new indicators for recognition of wear and clogging of the grinding wheel based on image recognition**

Author(s): Petr M. Pivkin, Vladimir A. Grechishnikov, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

12319-75

**A new approach of modeling micromachining parts with a shaped generatrix by remote the product from the image processing**

Author(s): Petr M. Pivkin, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

12319-76

**New Optical Imaging System for Determining Wear Criteria for Cutting Inserts**

Author(s): Petr M. Pivkin, Moscow State Univ. of Technology "STANKIN" (Russian Federation); Vladimir A. Grechishnikov, Artem A. Ershov, Moscow State Univ. of Technology (Russian Federation)

12319-77

**New image processing algorithm to recognition of the profile of micro-mills**

Author(s): Petr M. Pivkin, Moscow State Univ. of Technology "STANKIN" (Russian Federation); Artem A. Ershov, Moscow State Univ. of Technology (Russian Federation)

12319-78

**New Promising Approaches to the Design of Cutting Tools Based on the Search for Optimal Control Indicators**

Author(s): Petr M. Pivkin, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

*Conference Chairs:* **Qingming Luo**, Hainan Univ. (China); **Xingde Li**, Johns Hopkins Univ. (United States); **Ying Gu**, Chinese PLA General Hospital (China)

*Conference Co-Chair:* **Dan Zhu**, Huazhong Univ. of Science and Technology (China)

*Program Committee:* **Defu Chen**, Beijing Institute of Technology (China); **Shih-Chi Chen**, The Chinese Univ. of Hong Kong (Hong Kong, China); **Wei R. Chen**, The Univ. of Oklahoma (United States); **Yu Chen**, Univ. of Maryland, College Park (United States); **Zhihua Ding**, Zhejiang Univ. (China); **Hui Li**, Fujian Normal Univ. (China); **Huafeng Liu**, Zhejiang Univ. (China); **Hui Ma**, Tsinghua-Berkeley Shenzhen Institute (China); **Paras N. Prasad**, Univ. at Buffalo (United States); **Jun Qian**, Zhejiang Univ. (China); **Junle Qu**, Shenzhen Univ. (China); **Kebin Shi**, Peking Univ. (China); **Ke Si**, Zhejiang Univ. (China); **Valery V. Tuchin**, Saratov State Univ. (Russian Federation); **Ruikang K. Wang**, Univ. of Washington (United States); **Xueding Wang**, Univ. of Michigan (United States); **Xunbin Wei**, Peking Univ. Health Science Ctr. (China); **Da Xing**, South China Normal Univ. (China); **Kexin Xu**, Tianjin Univ. (China); **Xibin Yang**, Suzhou Institute of Biomedical Engineering and Technology, Chinese Academy of Sciences (China); **Zhenxi Zhang**, Xi'an Jiaotong Univ. (China)

#### ADVANCED OPTICAL TECHNOLOGY

12320-1

##### **Tissue optical clearing imaging: from in vitro to in vivo**

*(Invited Paper)*

Author(s): Dan Zhu, Huazhong Univ. of Science and Technology (China)

12320-2

##### **Dual-tapered optical fiber structure-based LSPR sensor for cholesterol detection**

Author(s): Wen Zhang, Zhi Wang, Ragini Singh, Bingyuan Zhang, Santosh Kumar, Liaocheng Univ. (China)

12320-3

##### **Evaluation of Young's modulus of ex vivo porcine liver during microwave ablation based on reduced scattering coefficient**

Author(s): Xiaofei Jin, Nanjing Univ. of Aeronautics and Astronautics (China)

12320-4

##### **A study on the identification of types of cerebral edema by using multi-parametric imaging system**

Author(s): Yameng Zhang, Nanjing Institute of Technology (China), Nanjing Univ. of Aeronautics and Astronautics (China); Weitao Li, Xiping Qi, Zhiyu Qian, Nanjing Univ. of Aeronautics and Astronautics (China)

12320-5

##### **3D shape sensing measurements using distributed fiber Bragg gratings**

Author(s): Yiran Wu, Chuanyi Tao, Chongqing Univ. of Technology (China); Jingke Li, Chongqing Medical and Pharmaceutical College (China); Xiaofeng Gao, Jingnan Zhang, Pinsheng Huang, Fuxiang Peng, Chongqing Univ. of Technology (China)

12320-6

##### **Modified commercial endoscope for polarimetric imaging**

Author(s): Jiawei Song, Ji Qi, Qing Yang, Zhejiang Lab. (China)

12320-7

##### **Polarization imaging of biological samples with spatial filtering**

Author(s): Zhidi Liu, Nan Zeng, Jiawei Song, Hui Ma, Tsinghua Univ. Shenzhen International Graduate School (China)

12320-8

##### **Characterization of fiber content in biological tissues based on Stokes polarization imaging during dehydration process**

Author(s): Qiqi Fu, Jiawei Song, Nan Zeng, Hui Ma, Tsinghua Univ. Shenzhen International Graduate School (China)

12320-9

##### **Optimal combinations of fluorescent vessel labeling and tissue clearing methods for 3D visualization of vasculature**

Author(s): Jingtang Zhu, Yating Deng, Xiaomei Liu, Tingting Yu, Dan Zhu, Huazhong Univ. of Science and Technology (China)

12320-10

##### **Reflection matrix image reconstruction method based on low coherence interferometer**

Author(s): Xiaowen Zhou, Pinghe Wang, Univ. of Electronic Science and Technology of China (China)

12320-11

##### **Analyzing the influence of imaging resolution on tissue polarimetry basis parameters**

Author(s): Conghui Shao, Honghui He, Hui Ma, Tsinghua Univ. Shenzhen International Graduate School (China)

12320-45

##### **Simultaneous blood vessel and Mueller-matrix imaging of zebrafish embryos**

Author(s): Alexander S. Machikhin, Anastasia V. Guryleva, Scientific and Technological Ctr. of Unique Instrumentation (Russian Federation); Valerya I. Bukova, Scientific and Technological Ctr. of Unique Instrumentation (Russian Federation), Bauman Moscow State Technical Univ. (Russian Federation); Demid D. Khokhlov, Scientific and Technological Ctr. of Unique Instrumentation (Russian Federation); Alexander B. Burlakov, Scientific and Technological Ctr. of Unique Instrumentation (Russian Federation), Lomonosov Moscow State Univ. (Russian Federation)

#### NOVEL MICROSCOPY

12320-83

##### **Super-resolution imaging in deep tissue based on two-photon multi-focal structured illumination microscopy**

*(Invited Paper)*

Author(s): Junle Qu, Shenzhen Univ. (China)

12320-13

##### **Evaluation of deep learning approaches for dermoscopic evaluation of vascular features of port-wine stain birthmarks**

Author(s): Sen Wang, Cheng Ke, Shengdong Cui, Chunfa Wu, Zheng Huang, Fujian Normal Univ. (China); Yuanbo Huang, Jun Yang, Lichao Zhang, Mingye Bi, Nanjing Medical Univ. (China)

12320-14

##### **Identification of perineural invasion in pancreatic cancer using multiphoton microscopy**

Author(s): Jikui Miao, Shichao Zhang, Ying Feng, Jianxin Chen, Fujian Normal Univ. (China); Linying Chen, Fujian Medical Univ. (China); Lianhuang Li, Fujian Normal Univ. (China)

12320-31

**From molecular and cellular level to whole body: Cross-scale application of label-free optical detection methods** *(Invited Paper)*

Author(s): Wenqi Lyu, Rongxin Fu, Tsinghua Univ. (China); Xiangyu Jin, Tsinghua Univ (China); Han Yang, Hao Zhong, Guoliang Huang, Tsinghua Univ. (China)

12320-16

**Differences in the spatial distribution of tumor cells at breast cancer borders based on multiphoton imaging**

Author(s): Shichao Zhang, Ying Feng, Jikui Miao, Liqin Zheng, Xiahui Han, Lianhuang Li, Fujian Normal Univ. (China); Deyong Kang, Fujian Medical Univ. (China); Jianxin Chen, Fujian Normal Univ. (China)

12320-17

**Cable-free brain imaging with miniature wireless microscopes**

Author(s): Zhongtian Ma, Wenzhao Li, Peking Univ. (China); Yangzhen Wang, Tsinghua Univ. (China); Chen Zhang, Capital Medical Univ. (China); Changhui Li, Peking Univ. (China)

12320-79

**The role of altered lipid composition and distribution in liver fibrosis revealed by multimodal nonlinear optical microscopy**

Author(s): Hao Jia, Beihang Univ. (China); Juan Liu, Beijing Tsinghua Changgung Hospital (China); Tinghe Fang, Xun Chen, Beihang Univ. (China); Yunfang Wang, Beijing Tsinghua Changgung Hospital (China); Shuhua Yue, Beihang Univ. (China)

12320-69

**Monitoring adipose tissue invasion in breast cancer by multiphoton microscopy**

Author(s): Ying Feng, Jikui Miao, Shichao Zhang, Liqin Zheng, Xiahui Han, Lianhuang Li, Fujian Normal Univ. (China); Deyong Kang, Fujian Medical Univ. (China); Jianxin Chen, Fujian Normal Univ. (China)

12320-46

**Digital holographic microscopy for bactericidal analysis by anti-microbial peptides**

Author(s): Shilpi Agarwal, Vijay Goel, Jawaharlal Nehru Univ. (India)

**OCT AND APPLICATIONS**

12320-80

**Application of IVOCT to coronary atherosclerotic plaque** *(Invited Paper)*

Author(s): Yukang Wei, Xingkang Lin, Mingliang Zheng, Xiao Zhang, Qin Li, Beijing Institute of Technology (China)

12320-20

**Identification of gastric cancer tissue using depth-resolved attenuation coefficient maps based on optical coherence tomography**

Author(s): Chao Zhao, Yukang Shu, Jun Ma, Ocean Univ. of China (China)

12320-21

**Development and application of a portable boom-type UHR-OCT with integrated imaging probe for pediatric retinal imaging**

Author(s): Peng Xiao, Zhengyu Duan, Jin Yuan, ZhongShan Ophthalmic Ctr. (China)

12320-24

**Effects of different interpolation methods on imaging quality of SS-OCT system**

Author(s): Xiao Liang, Heping Li, Pinghe Wang, Univ. of Electronic Science and Technology of China (China)

12320-25

**A physics-based noise formation model for optical coherence tomography system denoising**

Author(s): Jingsi Chen, Zhengyu Qiao, Yong Huang, Qun Hao, Beijing Institute of Technology (China)

12320-26

**Classification of white and gray matter using two-parameter model based on polarization-sensitive optical coherence tomography**

Author(s): Danting Meng, Yong Huang, Qun Hao, Beijing Institute of Technology (China)

12320-47

**Optical coherence elastography measurements on tissue-mimicking phantoms: a pilot study**

Author(s): Amandeep Singh, Renu John, Indian Institute of Technology Hyderabad (India)

**BIOMEDICAL SPECTROSCOPY**

12320-27

**Ultrafast and label-free microfluidic nucleic acid detection based on hyperspectral interferometry**

Author(s): Rongxin Fu, Tianqi Zhou, Beijing Institute of Technology (China); Xiangyu Jin, Anni Deng, Zeyin Mao, Wenqi Lv, Han Yang, Hao Zhong, Leyang Huang, Tsinghua Univ. (China); Xuesong Wang, Beijing Glopro Optoelectronic Technology Co., Ltd. (China); Guoliang Huang, Tsinghua Univ. (China)

12320-28

**Probing molecular nano-environment by vibrational dephasing using time-resolved coherent Raman scattering spectroscopy**

Author(s): Hanlin Zhu, Zhejiang Univ. (China); Vladislav V. Yakovlev, Texas A&M Univ. (United States); Delong Zhang, Zhejiang Univ. (China)

12320-29

**Hyperspectral spatial frequency domain imaging for label-free non-contact and wide-field monitoring of tissue optical properties and chromophore concentrations**

Author(s): Yanyu Zhao, Beihang Univ. (China)

12320-30

**Integrated extracellular vesicle enrichment and ultrasensitive detection using interferometric imaging**

Author(s): Hao Zhong, Guoliang Huang, Xiangyu Jin, Rongxin Fu, Zeyin Mao, Anni Deng, Han Yang, Wenqi Lv, Wenli Du, Tsinghua Univ. (China)

12320-48

**IR and Raman spectra modeling for pathogenic bacteria cell-wall components using DFT**

Author(s): Andrey Zyubin, Immanuel Kant Baltic Federal Univ. (Russian Federation); Anna Kundalevich, Immanuel Kant Baltic Federal Univ. (Russian Federation), Saratov State Univ. (Russian Federation); Ilya Samusev, Immanuel Kant Baltic Federal Univ. (Russian Federation)

**NANOBIOPHOTONICS**

12320-32

**A photothermal plasmonic tweezer for single-cell manipulation** *(Invited Paper)*

Author(s): Siyu Kang, Southeast Univ. (China); Muhammad Shemyal Nisar, The Sino-British College (China); Ning Chang, Yan Huang, Southeast Univ. (China); Haibin Ni, Nanjing Univ. of Information Science & Technology (China); Qinyu Ge, Xiangwei Zhao, Southeast Univ. (China)

12320-33

**Stable plasmonic coloration of versatile surfaces via colloidal monolayer transfer printing**

Author(s): Ning Chang, Delong Wang, Bing Liu, Da He, Xiangwei Zhao, Southeast Univ. (China)

12320-34

**stimulus-cleavable linkers for effective cancer therapy**

Author(s): Bo Peng, Lin Li, Wei Huang, Northwestern Polytechnical Univ. (China)

12320-35

**Unsupervised spectral denoising and classification for spectroscopic single-molecule localization**

Author(s): Dandan Xu, Jun Lu, Lei Xu, Biqin Dong, Fudan Univ. (China)

**TRANSLATIONAL OPTICAL TECHNIQUES**

12320-36

**An illumination system for screening the light and oxygen dependence in photodynamic therapy**

Author(s): Yuewu Li, Rui Dong, Zhiyu Qian, Yamin Yang, Nanjing Univ. of Aeronautics and Astronautics (China)

12320-37

**Preliminary study on photodynamic effect of intense pulsed light (IPL) excitation of porphyrin photosensitizer**

Author(s): Xin Wang, Zheng Zou, Weijin Peng, Cheng Ke, Zheng Huang, Fujian Normal Univ. (China); Min Li, Zhejiang Institute of Medical Device Testing (China)

12320-38

**Rapid antibiotic susceptibility testing of bacteria by single-field tracking centrifugation of bacteria solution**

Author(s): Xiaonan Zhang, Xuenian Wang, Tsinghua Univ. Shenzhen International Graduate School (China); Zhiyuan Shen, Research Institute of Tsinghua Univ. in Shenzhen (China); Yang Xu, Bei Wang, Haowei Zhang, Tian Guan, Yonghong He, Tsinghua Univ. Shenzhen International Graduate School (China)

12320-39

**A non-mydratric fundus camera designed with two-channel illumination**

Author(s): Wenchao Zhang, Jun Chang, Weilin Chen, Xuehui Zhao, Bingqing Xie, Beijing Institute of Technology (China)

12320-40

**Study on contamination problem in cavity enhanced breathing gas diagnosis technology**

Author(s): Zhongqi Tan, National Univ. of Defense Technology (China)

12320-49

**High-speed adaptive optics ophthalmoscopy for investigation of retinal hemodynamics in the living human eye**

Author(s): Ruixue Liu, Xiaolin Wang, Doheny Eye Institute (United States); Sujin Hoshi, Doheny Eye Institute (United States), Univ. of California, Los Angeles (United States), Univ. of Tsukuba (Japan); Yuhua Zhang, Doheny Eye Institute (United States), Univ. of California, Los Angeles (United States)

12320-50

**Investigating the sclera fluorescence in order to obtain AGE related diagnostic information**

Author(s): Dmitriy V. Kornilin, Vladimir N. Grishanov, Samara Univ. (Russian Federation); Igor V. Malov, Samara State Medical Univ. (Russian Federation)

**PHOTOACOUSTIC IMAGING**

12320-42

**Non-contact ultrasound sensing for biomedical imaging**

Author(s): Xing Long, Changhui Li, Peking Univ. (China)

12320-43

**Developing a real-time dual-modal photoacoustic and fluorescence small animal imaging system**

Author(s): Yu Sun, Wenzhao Li, Yibing Wang, Changhui Li, Peking Univ. (China)

12320-44

**Double speed-of-sound photoacoustic image reconstruction at ten frames-per-second with automatic segmentation**

Author(s): Tong Yue, Tsinghua Univ. (China); Wen Jiang, Tsingpai Co., Ltd. (China); Yan Luo, Tsinghua Univ. (China); Hongfei Song, Xiaojun Wang, Tsingpai Co., Ltd. (China); Handi Deng, Cheng Ma, Tsinghua Univ. (China)

12320-51

**Multiphysics simulation to mitigate critical design challenges of a photoacoustic system**

Author(s): Uttam M. Pal, Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram (India)

**POSTER SESSION**

**Some posters may have an accompanying preview video from the presenter.**

12320-12

**High-throughput and real-time cell contraction monitoring based on optical Fourier transform**

Author(s): Wenqiang Fan, Fan Zhang, Hongmei Xu, Xiaohan Du, Beijing Information Science & Technology Univ. (China); Guanqi Zhao, Capital Medical Univ. (China); Jiang Zhu, Beijing Information Science & Technology Univ. (China)

12320-15

**Dynamic light scattering imaging for cell detection of HER-2 positive and triple negative breast cancer**

Author(s): Ting Liu, Xiangyuan Ma, Shanhang Luo, Wencong Zhang, Zequan Lin, Meiai Lin, Shantou Univ. (China)

12320-18

**DSGAN: a generative model for speckle noise reduction in retinal optical coherence tomography images**

Author(s): Zongqing Ma, Qiaoxue Xie, Fan Fan, Jiang Zhu, Beijing Information Science & Technology Univ. (China)

12320-19

**Noncontact coagulation monitoring based on blood dynamics analysis using optical coherence tomography**

Author(s): Yun Tang, Jiang Zhu, Fan Fan, Zongqing Ma, Fan Zhang, Beijing Information Science & Technology Univ. (China)

12320-22

**Unsupervised speckle reduction of retinal optical coherence tomography images via edge-enhanced generative adversarial network**

Author(s): Zongqing Ma, Jiawei Ma, Xudong Chen, Xiaochen Meng, Jiang Zhu, Beijing Information Science & Technology Univ. (China)

12320-23

**Imaging depth expansion for optical coherence elastography with acoustic radiation force excitation**

Author(s): Xinyun Chen, Fan Fan, Jisheng Zhang, Xiaochen Meng, Zhongqing Ma, Jiang Zhu, Beijing Information Science & Technology Univ. (China)

12320-41

**Acoustic radiation force optical coherence elastography based on acousto-optic coupling for elasticity measurements**

Author(s): Chongyang Wang, Jiang Zhu, Fan Fan, Xiaochen Meng, Zongqing Ma, Beijing Information Science & Technology Univ. (China)

12320-52

**Fluorescence pharmacokinetic parametric imaging method based on dynamic diffuse fluorescence tomography and deep learning**

Author(s): Yanqi Zhang, Tianjin Medical Univ. (China); Limin Zhang, Tianjin Univ. (China); Han Liu, Civil Aviation Univ. of China (China); Ping Wang, Ailin Hou, Guohe Wang, Shaokai Sun, Tianjin Medical Univ. (China)

12320-53

**Handheld fluorescence test strip reader for rapid on-site biochemical detection**

Author(s): Huachuan Huang, Southwest Univ. of Science and Technology (China); Yu-Nan Lu, Yanke Shan, Fei Liu, Nanjing Agricultural Univ. (China); Shouyu Wang, OptiX+ Lab. (China)

12320-54

**Photoacoustic qualitative classification of blood glucose with multiple factors based on BP neural network**

Author(s): Chengxin Xiong, Wenping Peng, Junli Wu, Gaoqiang Liang, Bingheng Sun, Tao Liu, Zhong Ren, Jiangxi Science and Technology Normal Univ. (China)

12320-55

**Simplifying intensity variance analysis for optical coherence tomography-based angiography**

Author(s): Chaojiang Yang, Jiang Zhu, Fan Fan, Zongqing Ma, Fan Zhang, Beijing Information Science & Technology Univ. (China)

12320-56

**Configurations on flexible imaging optimization**

Author(s): Hua Liu, Science and Technology on Electro-Optic Control Lab. (China)

12320-57

**Ultrasound-modulation of near infrared light is used to detect foreign bodies buried in dense turbid media**

Author(s): Yao Liu, Huihuang Deng, Juan Xie, Xiangying Chen, Lili Zhu, Fujian Normal Univ. (China)

12320-58

**Optical clearing agent enhanced multimodal photoacoustic microscopy and optical coherence tomography imaging of rabbit eyes**

Author(s): Wei Qin, Fengxian Du, Yuchen Wang, Xueqing Ding, Tianyang Zhao, Cuixia Dai, Shanghai Institute of Technology (China)

12320-59

**Identification of refractive index for label-free single cells based on 2D light scattering technology**

Author(s): Rui Xu, Zhen Jin, Xiangyu Wei, Xuming Sun, Linyan Xie, Xinxiang Medical Univ. (China)

12320-60

**Study on the effectiveness of infrared thermal imaging method in evaluating microwave ablation curative effect**

Author(s): Lu Qian, Xiaofei Jin, Zhiyu Qian, Chunxiao Chen, Nanjing Univ. of Aeronautics and Astronautics (China)

12320-61

**Application and development of phototherapy for metabolic associated disease**

Author(s): Yunqi Li, Ying Gu, Chinese PLA General Hospital (China)

12320-62

**High-throughput detection and characterization of red blood cells deformability based on optical tweezers and microfluidic technique**

Author(s): Xiaochen Meng, Jiaqi Cui, Lulu He, Beijing Information Science & Technology Univ. (China)

12320-63

**A flat-field Mueller matrix imaging system with large field of view**

Author(s): Jiawei Song, Huibin Yang, Nan Zeng, Hui Ma, Tsinghua Univ. Shenzhen International Graduate School (China)

12320-64

**Assessment of pilot stress based on functional near-infrared techniques**

Author(s): Lu Zhou, Bing Qin, Biao Wu, QiaoQiao Zhu, Zhiyu Qian, Nanjing Univ. of Aeronautics and Astronautics (China)

12320-65

**Design of pharmacokinetic analysis system based on fluorescence detection**

Author(s): Yiran Li, Nanjing Univ. of Aeronautics and Astronautics (China)

12320-66

**KNN-based classification on Alzheimer's disease data after dimensionality reduction using principal component analysis**

Author(s): Hanxing Gao, Fujian Normal Univ. (China); Xuemei Ding, Fujian Medical Univ. Union Hospital (China); Shuheng Zhang, Jianzhong Yu, Xiaolong Zhu, Yuhua Wang, Hongqin Yang, Fujian Normal Univ. (China)

12320-67

**Development of geometric parameters metrology system for contact lens based on spectral-domain OCT**

Author(s): Liangcheng Duan, Wenli Liu, Zhixiong Hu, National Institute of Metrology (China); Xiang Ma, China Jiliang Univ. (China); Fei Li, Baoyu Hong, Junbang Zhao, National Institute of Metrology (China)

12320-68

**A model-driven deep unfolding network for fluorescence molecular tomography reconstruction**

Author(s): Yi Yang, Wenbo Wan, Huilin Zhou, Nanchang Univ. (China)

12320-70

**Comparison of measurement results of multiple transfer standards in different non-contact tonometers**

Author(s): Ruidan Xue, Wenli Liu, Baoyu Hong, Zhixiong Hu, National Institute of Metrology (China)

12320-71

**3D printed microfluidics-based droplet generation for single cell encapsulation and optical imaging**

Author(s): Zequan Lin, Wencong Zhang, Ting Liu, Shanhang Luo, YuMei Wu, Yeqian Liu, Yiya Qiu, Jing Song, Jiale Chen, Meiai Lin, Shantou Univ. (China)

12320-72

**Multifocal systems: configuration, optimization, and methodologies**

Author(s): Hua Liu, Science and Technology on Electro-Optic Control Lab. (China)

12320-74

**Dynamic evolution of liquid plasma induced by femtosecond laser pulse**

Author(s): Yichun Wang, Han Wu, Huazhong Univ. of Science and Technology (China); Wenkang Lu, Huazhong Univ. of Science And Technology (China); Ling Tao, Xijing Hospital (China); Xiuquan Ma, Huazhong Univ. of Science and Technology (China)

12320-81

**Improved detection and counting performance of microplastics in common carp whole blood by an attention-guided deep learning method**

Author(s): Yue Hao, Liang Zhu, Xin Wang, Peng Wang, Wen-ting Hu, Yan Zeng, Ting-ting Cao, Yi-xi Li, Lin Lin, Guangdong Medical Univ. (China)

12320-82

**Identification of adulterated extra virgin olive oil based on three-dimensional fluorescence characteristic peaks**

Author(s): Zhiqun Ding, Ningbo Univ. of Technology (China); Peihong Cheng, Ningbo Univ. of Technology (China), Zhejiang Univ. (China); Hongxia Zhao, Zhuoyuan Wang, Ligang Wu, Ningbo Univ. of Technology (China)

12320-75

**Photonics of oxygen saturated biopolymer solutions of *Viburnum opulus* L. extract in the presence of plasmonic energy of gold nanoparticles**

Author(s): Anna V. Tcibulnikova, Evgeniya Zemlyakova, Ilya Samusev, Dmitry Artamonov, Maxim Demin, Valery Bryukhanov, Vasily Slezhkin, Immanuel Kant Baltic Federal Univ. (Russian Federation)

12320-76

**Experimental identification of arterial and venous vessels of the skin by 3D optical coherence tomography**

Author(s): Ksenia S. Petrova, Maksim G. Ryabkov, Galina A. Petrova, Svetlana V. Nemirova, Petr V. Peretyagin, Elena N. Derpalyuk, Artem A. Karpenko, Privolzhsky Research Medical Univ. (Russian Federation)

12320-77

**OCT of the visceral pleura and subpleural lung tissue**

Author(s): Ksenia S. Petrova, Svetlana V. Nemirova, Maksim G. Ryabkov, Karpenko Artem, Privolzhsky Research Medical Univ. (Russian Federation); Gelikonov Grigorii, Institute of Applied Physics (Russian Federation)

12320-78

**High-frequency photoacoustic microscopy of hematoxylin and eosin stained slides for veterinary oncology applications**

Author(s): Mindaugas Tamošiūnas, Blaž Cugmas, Univ. of Latvia (Latvia); Renaldas Raišutis, Kaunas Univ. of Technology (Lithuania)

*Conference Chairs:* **Minghong Yang**, Wuhan Univ. of Technology (China); **Gang-Ding Peng**, The Univ. of New South Wales (Australia); **Xinyu Fan**, Shanghai Jiao Tong Univ. (China)

*Program Committee:* **Xiaoyi Bao**, Univ. of Ottawa (Canada); **Kevin P. Chen**, Univ. of Pittsburgh (United States); **Kin-Seng Chiang**, City Univ. of Hong Kong (Hong Kong, China); **Brian Culshaw**, Univ. of Strathclyde (United Kingdom); **Xudong Fan**, Univ. of Michigan (United States); **Claire Gu**, Univ. of California, Santa Cruz (United States); **Bai-Ou Guan**, Jinan Univ. (China); **Tuan Guo**, Jinan Univ. (China); **Zuyuan He**, Shanghai Jiao Tong Univ. (China); **Huizhu Hu**, Zhejiang Univ. (China); **Shibin Jiang**, AdValue Photonics, Inc. (United States); **Wei Jin**, Shenzhen Research Institute (China); **Deming Liu**, Huazhong Univ. of Science and Technology (China); **Huilian Ma**, Zhejiang Univ. (China); **Yosuke Mizuno**, Yokohama National Univ. (Japan); **Niels Neumann**, Technische Univ. Clausthal (Germany); **Qingwen Liu**, Shanghai Jiao Tong Univ. (China); **Tiegen Liu**, Tianjin Univ. (China); **Li Pei**, Beijing Jiaotong Univ. (China); **Tingyun Wang**, Shanghai Univ. (China); **Xueguang Qiao**, Northwest Univ. (China); **Hai Xiao**, Clemson Univ. (United States); **Yunjiang Rao**, Univ. of Electronic Science and Technology of China (China); **Tobias Schuster**, Evonik Industries AG (Germany); **X. Steve Yao**, General Photonics Corp. (United States); **Shizhuo Yin**, The Pennsylvania State Univ. (United States); **Kwang-Yong Song**, Chung-Ang Univ. (Korea, Republic of); **Paul Kit-Lai Yu**, Univ. of California, San Diego (United States); **Anbo Wang**, Virginia Polytechnic Institute and State Univ. (United States); **Libo Yuan**, Harbin Engineering Univ. (China); **Jianzhong Zhang**, Harbin Engineering Univ. (China)

**BIOLOGICAL AND CHEMICAL SENSORS I**

12321-1

**Fiber-optic electrochemical sensing** (*Invited Paper*)

Author(s): Tuan Guo, Jinan Univ. (China)

12321-2

**Plasmon-based SMSMS optical fiber sensor structure for creatinine detection in aquaculture industry**

Author(s): Xuecheng Liu, Muiyang Li, Ragini Singh, Bingyuan Zhang, Santosh Kumar, Liaocheng Univ. (China)

12321-3

**Detection of streptavidin using liquid crystal based whispering gallery mode microbubble**

Author(s): Haonan Wang, Tianjin Univ. (China); Tianhua Xu, Tianjin Univ. (China), The Univ. of Warwick (United Kingdom); Ziyihui Wang, Tianjin Univ. (China), Nanyang Technological Univ. (Singapore); Junfeng Jiang, Tiegeng Liu, Tianjin Univ. (China)

12321-4

**All fiber human heart-rate sensor based on the evanescent field disturbance in no-core fiber**

Author(s): Yao Feng, Mingda Zhao, Haiwei Zhang, Rong Tian, Youkui Zhang, Zhihong Chen, Lifang Xue, Tianjin Univ. of Technology (China); Wei Shi, Jianquan Yao, Tianjin Univ. (China)

**BIOLOGICAL AND CHEMICAL SENSORS II**

12321-5

**Ultrasensitive optofluidic laser biosensors** (*Invited Paper*)

Author(s): Yuan Gong, Univ. of Electronic Science and Technology of China (China)

12321-6

**Optofluidic laser immunosensor for rapid and ultrasensitive dual biomarker detection**

Author(s): Yiling Liu, Univ. of Electronic Science and Technology of China (China); Chaoqin Wang, Xi Yang, Peking Univ. (China); Yanqiong Wang, Yuan Gong, Univ. of Electronic Science and Technology of China (China)

12321-7

**The design of miniaturized in-situ shadow photographic imaging system for plankton research**

Author(s): Guangde Hao, Buyu Guo, Peiliang Li, Qingyan Jiang, Zhejiang Univ. (China); Gensheng Guo, Huaihai Industry Group Co., Ltd. (China)

12321-16

**2D pressure sensing map based on distributed sensing approach for biomedical application**

Author(s): Zhanerke Katrenova, Shakhriyat Alisherov, Turar Abdol, Madina Yergibay, Zhanat Kappasov, Nazarbayev Univ. (Kazakhstan); Daniele Tosi, Nazarbayev Univ. (Kazakhstan), National Lab. Astana (Kazakhstan); Carlo Molardi, Nazarbayev Univ. (Kazakhstan)

**MICRO- AND NANO-STRUCTURE SENSORS**

12321-8

**Chip-based microwave-photonic LiDAR for high-speed ranging and velocimetry**

Author(s): Bin Shao, Qinggui Tan, Wu Zhang, Dong Liang, Xiangke Deng, Bo Zhang, China Academy of Space Technology (China); Wei Zhang, Peng Cheng Lab. (China)

12321-9

**Sensitivity dependence of single nanoparticle mass detection based on mechanical oscillations in optical microcavities**

Author(s): Yuting He, Yanyan Zhi, Jiancong Li, Jinan Univ. (China); Xiao-Chong Yu, Beijing Normal Univ. (China); Jie Li, Bai-Ou Guan, Jinan Univ. (China)

12321-17

**Analysis of factors affecting the accuracy of the rotation angle measurement using nanostructured metasurfaces**

Author(s): U. V. Prokhorova, E. V. Shalymov, V. I. Shoen, V. Yu. Venediktov, A. S. Kukaev, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation)

12321-18

**Potentialities of RR imaging S-lidar with Si/InGaAs arrays under environmental variability**

Author(s): Ravil R. Agishev, Kazan State Power Engineering Univ. (Russian Federation); Zhenzhu Wang, Dong Liu, Anhui Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China)

**CURRENT AND MAGNETIC SENSORS**

12321-10

**Magnetic field sensing technique based on lab-on-fiber**

Author(s): Shengli Pu, Chencheng Zhang, Univ. of Shanghai for Science and Technology (China)

12321-11

**YAG:Yb crystal fiber sensor for partial discharge**

Author(s): Taiqi Wang, Yongkang Cheng, Chao Xu, Luchuan Zheng, Changfeng Zhang, Yuheng Yan, Qiang Guo, Shanghai Univ. (China); Gangding Peng, The Univ. of New South Wales (Australia)

12321-12

**Study on the influence of low temperature FOCT state parameters**

Author(s): Haiqing Xu, China Electric Power Research Institute (China); Junchang Huang, China Electric Power Research Institute (China), Huazhong Univ. of Science and Technology (China); Feng Zhou, China Electric Power Research Institute (China); Gangjie Lou, Huazhong Univ. of Science and Technology (China); Wei Zhou, China Electric Power Research Institute (China); Li Xia, Huazhong Univ. of Science and Technology (China)

12321-19

**A compact design for a fiber-optic magnetic field sensor (Invited Paper)**

Author(s): Zhi Li, Yuhang Yuan, Sumudith Warnarathna Jayasuriya, Joanna M. Coote, Francesco Iacoviello, Univ. College London (United Kingdom); Polina Prokopovich, Cardiff Univ. (United Kingdom); Ivan P. Parkin, Adrien E. Desjardins, Sacha Noimark, Univ. College London (United Kingdom)

**ENVIRONMENTAL SENSORS**

12321-13

**Rapid response of Raman gas sensing based on node-less anti-resonant fiber**

Author(s): Minghong Yang, Yongxin Ye, Yong Zhou, Zhixiong Liu, Lingxi Xiong, Donglai Guo, Wuhan Univ. of Technology (China)

12321-20

**Fiber-optic gas sensors based on laser spectroscopy (Keynote Presentation)**

Author(s): Wei Jin, The Hong Kong Polytechnic Univ. (Hong Kong, China)

12321-21

**Development of 1064 nm lidar for aerosol and cloud sensing**

Author(s): Sivabalan Sivaraj, Vellore Institute of Technology (India); Bhavani Kumar Yellapragada, National Atmospheric Research Lab. (India)

12321-55

**Detecting N<sub>2</sub>O in the presence of NH<sub>3</sub> using a UV lamp and wavelet transformation**

Author(s): Manish Chandra, Nilesh Jayantilal Vasa, Satyanarayanan Seshadri, Indian Institute of Technology Madras (India)

**NEW SENSOR TECHNIQUES AND APPLICATIONS**

12321-14

**Physics and applications of Raman distributed optical fiber sensing (Invited Paper)**

Author(s): Mingjiang Zhang, Taiyuan Univ. of Technology (China)

12321-54

**Distributed strain sensing of a LCFBG based on microwave photonic technology**

Author(s): Xiaozhong Tian, Yiping Wang, Jingzhan Shi, Dan Zhu, Nanjing Normal Univ. (China)

12321-22

**Spectral characteristics of coupled gratings at PT-symmetry and its destruction**

Author(s): E. A. Efremova, I. R. Krylov, U. V. Prokhorova, Saint Petersburg State Univ. (Russian Federation); E. V. Shalymov, V. I. Shoen, V. Y. Venediktov, Saint Petersburg State Univ. (Russian Federation), Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation); A. A. Zinchik, Saint Petersburg State Univ. (Russian Federation)

12321-24

**2 μm self-sweeping fiber laser oscillator for LIDAR applications**

Author(s): A. E. Budarnykh, I. A. Lobach, Institute of Automation and Electrometry (Russian Federation); S. I. Kablukov, Institute of Automation and Electrometry (Russian Federation), Novosibirsk State Univ. (Russian Federation)

**POSTER SESSION**

**Some posters may have an accompanying preview video from the presenter.**

12321-25

**Label-free protein quantitation using liquid crystal-enhanced optofluidic biosensor**

Author(s): Ziyihui Wang, Tianjin Univ. (China), Nanyang Technological Univ. (Singapore); Tianhua Xu, Tianjin Univ. (China), Univ. of Warwick (United Kingdom); Haonan Wang, Yize Liu, Kun Liu, Junfeng Jiang, Tianjin Univ. (China); Yu-Cheng Chen, Nanyang Technological Univ. (Singapore); Tiegeng Liu, Tianjin Univ. (China)

12321-26

**Luminescence and scintillation characteristics of LYSO:Ce dosimeter for low dose x-ray**

Author(s): Luchuan Zheng, Chao Xu, Yongkang Cheng, Taiqi Wang, Yuheng Yan, Changfeng Zhang, Qiang Guo, Shanghai Univ. (China); Gang-Ding Peng, The Univ. of New South Wales (Australia)

12321-27

**Real-time monitoring method for pipeline leakage based on ultra-weak FBG array based fiber sensing**

Author(s): Kunpeng Niu, Yangtze Optical Fiber and Cable Joint Stock Ltd. Co. (China), Wuhan Univ. of Technology (China); Ning Wang, Wuhan Univ. of Technology (China)

12321-28

**Sensitivity-enhanced all-fiber displacement sensor based on Lyot filter**

Author(s): Rong Tian, Haiwei Zhang, Yao Feng, Qi Lu, Zhihong Chen, Lifang Xue, Tianjin Univ. of Technology (China); Wei Shi, Jianquan Yao, Tianjin Univ. (China); Pengbo Jiang, Qilu Univ. of Technology (China)

12321-29

**A flat-shaped plastic optical fiber assisted by a long period grating for refractive index sensing**

Author(s): Yuan Liu, Yanfei Zhou, Jie Zheng, Jilin Univ. (China)

12321-30

**Temperature stability of a hollow-core microstructure fiber optic gyroscope**

Author(s): Maochun Li, Tianjin Navigation Instrument Research Institute (China); Xiaoming Zhao, Tianjin Navigation Instruments Research Institute (China); Miao Yan, Tianjin Navigation Instrument Research Institute (China); Fei Hui, Tianjin Navigation Instruments Research Institute (China)

12321-31

**The scattering characteristic analysis of various types of fiber used in FOCT through OFDR technology**

Author(s): Shuo Chen, Zhanyuan Liu, Xiaochen Niu, State Grid Energy Research Institute Co., Ltd. (China); Aodi Yu, Yan Zuo, Wei Li, Huazhong Univ. of Science and Technology (China)

12321-32

**Fluorescent visualized refractive index sensor assisted by convolutional neural network**

Author(s): Fangzhu Zheng, Huaqiao Univ. (China)

12321-33

**Neural network assisted flexible optical strain sensor based on optical microfiber knot resonator**

Author(s): Shi Hang Geng, Huaqiao Univ. (China)

12321-34

**Directional bending sensing characteristics of in-line Mach-Zehnder interferometer based on asymmetrical twin-core fiber**

Author(s): Huiping Yang, Binbin Yan, Beijing Univ. of Posts and Telecommunications (China); Yanhua Luo, Shanghai Univ. (China), The Univ. of New South Wales (Australia); Liwei Yang, China Agricultural Univ. (China); Kuiru Wang, Jinhui Yuan, Xinzhu Sang, Beijing Univ. of Posts and Telecommunications (China); Gang-Ding Peng, The Univ. of New South Wales (Australia)

12321-35

**Nonlinear effects in  $\phi$ -OTDR system**

Author(s): Yinghao Jiang, Tuanwei Xu, Lilong Ma, Kai Cao, Yaning Xie, Jing Zhang, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Dimin Deng, Institute of Semiconductors (China); Yuliang Liu, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China)

12321-36

**Sensitivity-enhanced gas-concentration alarm system based on loss-caused quenching in dual-wavelength fiber laser**

Author(s): Peng Zhang, Haiwei Zhang, Tianjin Univ. of Technology (China); Liangcheng Duan, National Institute of Metrology (China); Xiaoping Yang, Lifang Xue, Zhihong Chen, Tianjin Univ. of Technology (China); Wei Shi, Jianquan Yao, Tianjin Univ. (China)

12321-37

**Application of distributed optical fiber acoustic sensing system in pre-stressed concrete cylinder pipe (PCCP) pipeline structure health monitoring**

Author(s): Ranran Ji, Dongming Li, Lijun Wan, Fan Yang, Hangzhou Applied Acoustics Research Institute (China)

12321-38

**An all-fiber optical current transformer inspection method based on the analysis of the spectrum of the output light**

Author(s): Shuyang Hu, Jiufu Xie, Tianrui Zhai, Beijing Univ. of Technology (China)

12321-39

**Structural health monitoring of belt conveyor based on distributed optical fiber acoustic sensor**

Author(s): Qing Liu, Zhen Pan, Guizhou Power Grid Co., Ltd. (China); Zhaojie Li, Univ. of Electronic Science and Technology of China (China); Binyang Yan, Kang Liu, Bojun Ai, Guizhou Power Grid Co., Ltd. (China); Lang Xie, Univ. of Electronic Science and Technology of China (China)

12321-40

**Detection of railway wheel and rail diseases based on distributed optical fiber acoustic sensing**

Author(s): Wei Tang, Linyu Peng, Guizhou Power Grid Co., Ltd. (China); Zhaojie Li, Univ. of Electronic Science and Technology of China (China); Kang Liu, Zhen Pan, Shu Yuan, Guizhou Power Grid Co., Ltd. (China); Lang Xie, Univ. of Electronic Science and Technology of China (China)

12321-42

**Hydrogen sensor based on planar polymer grating coated with Pd/Ni composite film**

Author(s): Yong Zhou, Wenbin Hu, Jingjing Wang, Jixiang Dai, Minghong Yang, Yongxin Ye, Wuhan Univ. of Technology (China); Ralf Hellmann, Stefan Kefer, Aschaffenburg University of Applied Sciences (Germany)

12321-43

**Application of GA-VMD denoising algorithm in  $\phi$ -OTDR system**

Author(s): Fan Yang, Dongming Li, Lijun Wan, Ranran Ji, Xiaodi Wu, Hangzhou Applied Acoustics Research Institute (China)

12321-44

**Laser echo decoherence characteristics of rough plane in heterodyne detection with truncated GSM beam**

Author(s): Xiao Dong, Yihua Hu, Nanxiang Zhao, Shilong Xu, National Univ. of Defense Technology (China)

12321-45

**Improved SVD-SSDA on Spark for real-time subway train tracking based on ultra-weak FBG arrays**

Author(s): Fang Liu, Yu Xie, Biao Xu, Yu Lei, Honghai Wang, Wuhan Univ. of Technology (China)

12321-46

**The measurements of the refractive index of WO<sub>3</sub> to explore its hydrogen sensitivity mechanism**

Author(s): Yuchen Zhou, Minghong Yang, Wenbin Hu, Jixiang Dai, Wuhan Univ. of Technology (China)

12321-47

**Optical fiber immunosensor based on graphene oxide(GO) and biotin-streptavidin(SA) signal amplification system for rapid and sensitive detection of 17  $\beta$ -estradiol(E2)**

Author(s): Wanmei Guo, Changchun Univ. of Science and Technology (China); Qi Guo, Jilin Univ. (China); Hongwen Yu, Northeast Institute of Geography and Agroecology (China); Yongsen Yu, Jilin Univ. (China); Guangyong Jin, Changchun Univ. of Science and Technology (China)

12321-48

**Fiber Bragg grating temperature sensor for marine application**

Author(s): Guangyao Wang, Jianping Sun, Ting Li, Hongjun Wang, Jiahao Li, National Institute of Metrology (China)

12321-49

**Field trial of abyss-class DAS system in South China Sea**

Author(s): Dimin Deng, Institute of Semiconductors (China); Tuanwei Xu, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Hanyu Zhang, Chunliang Yu, Institute of Deep-Sea Science and Engineering (China); Lilong Ma, Kai Cao, Yinghao Jiang, Fang Li, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Shiguo Wu, Institute of Deep-Sea Science and Engineering (China)

12321-50

**Large dynamic strain measurement by a slope-assisted Brillouin optical time domain reflectometry based on graded-index multi-mode fiber**

Author(s): Junhui Hu, Li Yang, Ge Liu, Hanglin Lu, Jian Tang, Guiguang Chen, Dongjiang Zou, Ruoxue Wei, Tian Li, Zixiong Qin, Guangxi Normal Univ. (China)

12321-51

**Decision feedback equalization for enhancing plastic optical fiber transmission in automotive optical ethernet**

Author(s): Wanlin Huang, Wuhan Univ. of Science and Technology (China)

12321-53

**Specific emitter individual identification based on the characteristics of synchronization signal rising edges and deep neural network**

Author(s): Peng Yan, Baigang Huang, Jianliang Xu, Yan Chen, Science and Technology on Communication Information Security Control Lab. (China); Xiazhao Zhang, Zhejiang Lab. (China); Jinyang Song, Science and Technology on Communication Information Security Control Lab. (China)

12321-56

**A review of closed loop control methods for wavefront correction in adaptive optics**

Author(s): Yuanhe Zhao, Jun Dai, Xingming Chen, Southwest Institute of Technical Physics (China); Lei Song, Ping Wei, Southwest Institute of Technical Physics (China)

12321-52

**Analysis of the characteristics of an optical monoblock ring confocal resonator**

Author(s): Y. V. Filatov, A. S. Kukaev, E. V. Shalymov, V. Yu. Venediktov, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation)

12321-57

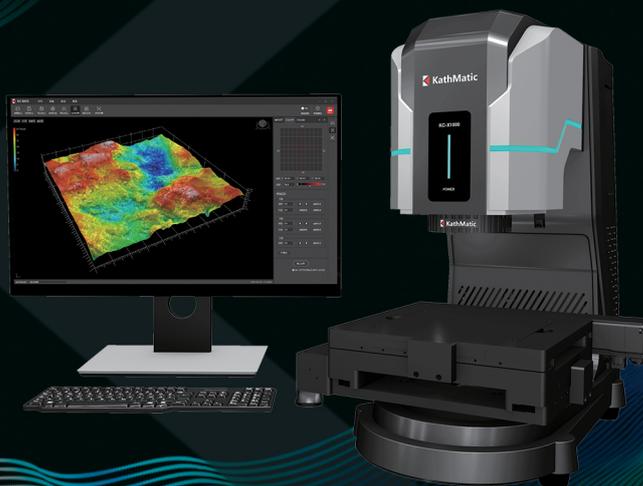
**Raman distributed temperature sensor based on pulse compression technique using hybrid modulation method**

Author(s): Sida Zeng, Xinyu Fan, Zuyuan He, Shanghai Jiao Tong Univ. (China)

# 激光光谱共聚焦 显微镜

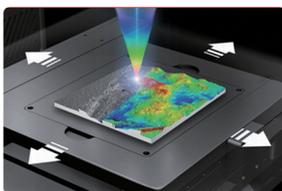
NEW

非接触式表面微观形貌测量，适用于  
透明、高斜率表面



## 产品亮点

PRODUCT HIGHLIGHTS



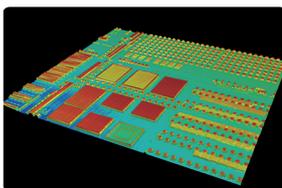
超强材质适应性，高透明、强吸光、强反光材质均可测量

KC采用的激光激发复色光兼具高灵敏度与宽动态范围的优点，面对高透明的光学镜片、高吸光的黑橡胶结构件、强反光的金属镜面始终游刃有余。



多样化结构设计，可测量样品尺寸覆盖微米级~米级

为满足用户不同的测量要求，我们提供了多种尺寸的显微镜式与龙门架式设计，分别适合小尺寸样品的高精度形貌测量和超大尺寸样品的快速轮廓测量。

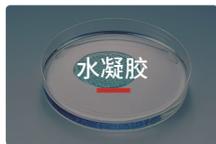


高度分辨率2nm，扫描速度80mm/s，兼顾测量的高速度与高精度

KC的扫描范围远超激光共聚焦显微镜和白光干涉仪。高精度的测量模组与高速运动模组结合，让微观形貌测试无需拼接、一次成像。

## 应用领域

APPLICATION AREA



*Conference Chairs:* **Zhiping Zhou**, Peking Univ. (China); **Kazumi Wada**, Massachusetts Institute of Technology (United States); **Limin Tong**, Zhejiang Univ. (China)

*Conference Co-Chairs:* **Zheyu Fang**, Peking Univ. (China); **Takuo Tanaka**, RIKEN (Japan)

*Program Committee:* **Eric Cassan**, Univ. Paris-Saclay (France); **Tao Chu**, Zhejiang Univ. (China); **David S. Citrin**, Georgia Institute of Technology (United States); **Hiroshi Fukuda**, NTT Device Technology Labs. (Japan); **Min Gu**, Univ. of Shanghai for Science and Technology (China); **Xiaoyong Hu**, Peking Univ. (China); **Ching-Fuh Lin**, National Taiwan Univ. (Taiwan); **Gong-Ru Lin**, National Taiwan Univ. (Taiwan); **Yan-Qing Lu**, Nanjing Univ. (China); **Jurgen Michel**, Massachusetts Institute of Technology (United States); **Takahiro Nakamura**, Photonics Electronics Technology Research Association (PETRA) (Japan); **Andrew W. Poon**, Hong Kong Univ. of Science and Technology (Hong Kong, China); **Haisheng Rong**, Intel Corp. (United States); **Yikai Su**, Shanghai Jiao Tong Univ. (China); **Hon Ki Tsang**, The Chinese Univ. of Hong Kong (Hong Kong, China); **Yun-Feng Xiao**, Peking Univ. (China); **Dan-Xia Xu**, National Research Council Canada (Canada); **Koji Yamada**, National Institute of Advanced Industrial Science and Technology (Japan); **Qing Yang**, Zhejiang Univ. (China); **Fabi Zhang**, Guilin Univ. of Electronic Technology (China); **Changhe Zhou**, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **Weidong Zhou**, The Univ. of Texas at Arlington (United States)

#### NANOMATERIALS, NANOFABRICATION, AND SILICON PHOTONICS

12322-93

**Ultrafast dynamics and Floquet engineering of quantum materials enabled by ultrafast time- and angle-resolved photoemission spectroscopy** (*Invited Paper*)

Author(s): Shuyun Zhou, Tsinghua Univ. (China)

12322-1

**Photopolymerization induced by up-conversion nanoparticles for three-dimensional low-power nanoscale writing**

Author(s): Le Gao, Qiming Zhang, Min Gu, Univ. of Shanghai for Science and Technology (China)

12322-2

**The efficient green perovskite QLEDs based on low-toxicity Zr-Pb alloy perovskite quantum dots passivated by inorganic ligands**

Author(s): Zhenfu Zhao, Anlang Wu, Xikang Yang, Ningbo Univ. (China)

12322-4

**Non-volatile optoelectronic synapse based on ITO/V2O5/Si structures with continuous resistance modulation**

Author(s): Yibo Dong, Univ. of Shanghai for Science and Technology (China); Liangchen Hu, Yiyang Xie, Beijing Univ. of Technology (China); Qiming Zhang, Xi Chen, Min Gu, Univ. of Shanghai for Science and Technology (China)

12322-89

**Efficient defect control of zinc vacancy in ZnO microtubes for optoelectronic applications**

Author(s): Yong Man Pan, Yi Jian Jiang, Beijing Univ. of Technology (China)

12322-23

**Monolithic X-ray doublets for achromatic focusing**

Author(s): Peng Qi, Umut Sanli, Paul Scherrer Institut (Switzerland); Griffin Rodgers, Univ. Basel (Switzerland); Marie-Christine Zdora, Paul Scherrer Institut (Switzerland); Georg Schulz, Bert M. Müller, Univ. Basel (Switzerland); Christian David, Joan Vila-Comamala, Paul Scherrer Institut (Switzerland)

12322-24

**All-optical modulation based on the phase-change materials combined with chains of silicon nanoantennas**

Author(s): Alisher Ibragimov, Vladislav Sitnianskii, Damir Yagudin, Alexander Shorokhov, Andrey Fedyanin, M. V. Lomonosov Moscow State Univ. (Russian Federation)

#### FIBER/WAVEGUIDE NANOPHOTONICS

12322-94

**Micro/nanofibers for single-photon sources and single-photon detection** (*Invited Paper*)

Author(s): Wei Fang, Zhejiang Univ. (China)

12322-5

**On-chip Mach-Zehnder-like interferometer for atomic spin precession detection**

Author(s): Zhibo Cui, Beihang Univ. (China)

12322-6

**Wearable optical fiber sensors for human healthcare monitoring**

Author(s): Siheng Xiang, Guorui Zhou, China Academy of Engineering Physics (China)

12322-7

**Optical trapping of nanowires for designing nanolasers**

Author(s): Zhe Xu, Inspur (Beijing) Electronic Information Industry Co., Ltd. (China)

12322-8

**Realization of quasi-edge states and topological Bloch oscillation in one dimensional waveguide arrays**

Author(s): Wu Xiaoxiong, Luo Jia Wang, Guangzhen Li, Luqi Yuan, Shanghai Jiao Tong Univ. (China)

12322-90

**A chip-scale optomechanical electrometer in the self-sustained oscillation near the thermodynamical limits**

Author(s): Shuidong Xiong, Fuyin Wang, Chunyan Cao, Zhengliang Hu, Ji Xia, National University of Defense Technology (China)

12322-25

**Grating coupler using angle-polished optical fiber**

Author(s): Rabiul Islam Sikder, Muhammad Fasih, Jaeyong Kim, Hyo-Hoon Park, Hyeonho Yoon, Hamza Kurt, Korea Advanced Institute of Science and Technology (Korea, Republic of)

12322-26

**Study of mode dispersion in bent fiber-based microresonators**

Author(s): S. A. Spirin, A. D. Novikov, I. D. Vatik, Novosibirsk State Univ. (Russian Federation)

**METAMATERIALS, METASURFACES, AND DEVICES I**

12322-9

**Miniature zero index metamaterial based on Steiner tree photonic crystal**

Author(s): Haoyi Yu, Qiming Zhang, Min Gu, Univ. of Shanghai for Science and Technology (China), Ctr. for Artificial-Intelligence Nanophotonics (China)

12322-10

**All-dielectric metasurfaces enabling surface-enhanced overtone absorption**

Author(s): Haiou Lu, Junchan Liao, Bing Yan, Kai Ni, Min Zhang, Qian Zhou, Xiaohao Wang, Tsinghua Univ. (China)

12322-11

**Perovskite chiral metasurface with giant optical chirality**

Author(s): Xiaomin Zhai, Hebin Wang, Nankai Univ. (China); Antonov Alexander Alekseevich, Russian Academy of Sciences (Russian Federation); Giorgio Adamo, Jingyi Tian, Ctr. for Disruptive Photonic Technologies, Nanyang Technological Univ. (Singapore); Maxim V. Gorkunov, Russian Academy of Sciences (Russian Federation); Cesare Soci, Ctr. for Disruptive Photonic Technologies, Nanyang Technological Univ. (Singapore); Guankui Long, Nankai Univ. (China)

12322-58

**Octave bandwidth aperiodic achromatic metalens in the infrared**

Author(s): Chunshu Li, Yuhao Guo, Yongjun Guo, Lin Zhang, Tianjin Univ. (China)

**METAMATERIALS, METASURFACES, AND DEVICES II**

12322-33

**Visualizing enhanced optical fields of dielectric-based metamaterials by mid-infrared photothermal microscopy (Invited Paper)**

Author(s): Ryo Kato, Taka-aki Yano, Tokushima Univ. (Japan), RIKEN (Japan); Takuo Tanaka, RIKEN (Japan), Tokushima Univ. (Japan)

12322-34

**Shedding light on the (in)visible: from nanophotonics to technological applications via complex wave-vectors**

Author(s): Sinuhé Perea-Puente, Francisco J. Rodríguez-Fortuno, King's College London (United Kingdom)

12322-35

**Highly efficient broadband anisotropic metasurface for cross polarization conversion operating in the terahertz band**

Author(s): Subhan Zakir, Abdullah Madni, Lahore Univ. of Management Sciences (Pakistan); Rana Muhammad Hasan Bilal, Yehia Massoud, King Abdullah Univ. of Science and Technology (Saudi Arabia)

12322-36

**Deep-learning enabled modeling tool Meta-Magus for metadvice optimization and design (Invited Paper)**

Author(s): Sadia Noureen, Sumbel Ijaz, Muhammad Zubair, Muhammad Qasim Mehmood, Information Technology Univ. of the Punjab (Pakistan); Yehia Massoud, King Abdullah Univ. of Science and Technology (Saudi Arabia)

12322-37

**All-dielectric trifunctional metadvicees to efficiently structure ultraviolet light**

Author(s): Nasir Mahmood, Yehia Massoud, King Abdullah Univ. of Science and Technology (Saudi Arabia)

12322-38

**Realization of highly efficient trifocal metalens architecture with the blend of Pancharatnam-Berry and propagation phase effect**

Author(s): Naureen Butt, Information Technology Univ. of the Punjab (Pakistan); Nasir Mahmood, King Abdullah Univ. of Science and Technology (Saudi Arabia); Tauseef Tauqeer, Muhammad Zubair, Muhammad Qasim Mehmood, Information Technology Univ. of the Punjab (Pakistan); Yehia Massoud, King Abdullah Univ. of Science and Technology (Saudi Arabia)

12322-39

**Uniform chirality enhanced optical responses via broadband achiral metasurfaces for bio-sensing applications**

Author(s): Aqsa Asad, Hafiz Saad Khaliq, Aima Zahid, Muhammad Qasim Mehmood, Yehia Massoud, King Abdullah Univ. of Science and Technology (Saudi Arabia)

12322-40

**Chromium-nanostructured metabsorber for tunable color filtering**

Author(s): Abdul Jabbar, Muhammad Ashar Naveed, Isma Javed, Yehia Massoud, King Abdullah Univ. of Science and Technology (Saudi Arabia)

12322-41

**Perfect vortex beam generation with high numerical aperture in broadband UV-visible regime**

Author(s): Muhammad Danial Shafqat, Nasir Mahmood, Hafiz Saad Khaliq, Muhammad Qasim Mehmood, Yehia Massoud, King Abdullah Univ. of Science and Technology (Saudi Arabia)

12322-42

**Reconfigurable meta-devices platform based on stimuli-responsive materials**

Author(s): Aqib Raza Shah, Sumbel Ijaz, Muhammad Zubair, Muhammad Qasim Mehmood, Information Technology Univ. of the Punjab (Pakistan); Yehia Massoud, King Abdullah Univ. of Science and Technology (Saudi Arabia)

12322-91

**Meta-lens in the sky**

Author(s): Mu-Ku Chen, City Univ of Hong Kong (Hong Kong, China); Xiaoyuan Liu, City Univ. of Hong Kong (Hong Kong, China); Cheng Hung Chu, RIKEN (Japan); Jingcheng Zhang, Jin Yao, Yubin Fan, Yao Liang, City Univ. of Hong Kong (Hong Kong, China); Takeshi Yamaguchi, Takuo Tanaka, RIKEN (Japan); Din Ping Tsai, City Univ. of Hong Kong (Hong Kong, China)

12322-92

**An intelligent meta-device for depth perception**

Author(s): Xiaoyuan Liu, Mu Ku Chen, Yongfeng Wu, Jingcheng Zhang, Din Ping Tsai, City Univ. of Hong Kong (Hong Kong, China)

**NANOPARTICLES, SCATTERING, LUMINESCENCE, AND SPECTROSCOPY**

12322-12

**Enhancement of chiral scattering from Mie particles by tailoring the illumination fields (Invited Paper)**

Author(s): Qiwen Zhan, Haifeng Hu, Univ. of Shanghai for Science and Technology (China)

12322-13

**Fast size and structure estimation of single-levitated nanoparticles in a vacuum optomechanical system**

Author(s): Cuihong Li, Zhejiang Lab. (China)

12322-14

**Reducing up-conversion luminescence under high-energy irradiation for optical data storage**

Author(s): Weizhao Gu, Simone Lamon, Min Gu, Qiming Zhang, Univ. of Shanghai for Science and Technology (China)

12322-15

**Low-power nanoscale optical memory by upconversion-based photo-activation**

Author(s): Simone Lamon, Qiming Zhang, Min Gu, Univ. of Shanghai for Science and Technology (China)

12322-16

**Gold nanoparticle enhanced microwave modulation with 1.55µm light in graphene-based antenna**

Author(s): Cheng Shan, Chongqing Three Gorges Univ. (China), Yangtze Normal Univ. (China); LiangPing Xia, Man Zhang, MengTing Zeng, Lin Qin, Hong Tu, YaDong Li, Yangtze Normal Univ. (China); ShiFa Wang, Chongqing Three Gorges Univ. (China); SuiHu Dang, ChunLei Du, Yangtze Normal Univ. (China)

12322-17

**Influence of the environment on the effect of super resonance in mesoscale dielectric spheres**

Author(s): Igor V. Minin, Oleg V. Minin, Tomsk Polytechnic Univ. (Russian Federation); Song Zhou, Huaiyin Institute of Technology (China)

12322-27

**Tip-enhanced Raman spectroscopy: Probing physicochemical properties at the nanoscale in ambient**

Author(s): Maria Vanessa B. Oguchi, Norihiko Hayazawa, Takuo Tanaka, RIKEN (Japan)

**PLASMONICS I**

12322-95

**Polarization- and angle-resolved cathodoluminescence spectroscopy for nanophotonics (Invited Paper)**

Author(s): Zheyu Fang, Peking Univ. (China)

12322-18

**Ultrafast laser-induced strong metal-support interactions**

Author(s): Dezhi Zhu, Tsinghua Univ. (China)

12322-20

**Intersectional nanofabrication of disk nanoantennas by colloidal lithography**

Author(s): Kai Chen, Churong Ma, Feng Zhao, Meng Li, Fangrong Zhou, Zhiliang Zhang, Jinan Univ. (China)

12322-21

**Core-shell plasmonic nanoparticle lattices and devices from Chinese Academy of Science**

Author(s): Shikai Deng, Shanghai Institute of Microsystem and Information Technology (China)

**PLASMONICS II**

12322-28

**Dual microchannel-based plasmonic sensor for multi-analyte detection**

Author(s): Hima Akter, Jagannath Univ. (Bangladesh); Firoz Haider, Multimedia Univ. (Malaysia); Abrar Islam, Bangabandhu Sheikh Mujibur Rahman Science and Technology Univ. (Bangladesh); Hairul Azhar Bin Abdul Rashid, Multimedia Univ. (Malaysia); Rajib Ahmed, Stanford Univ. (United States); Rifat Ahmmed Aoni, RMIT Univ. (Australia)

12322-29

**Photonic-crystal-fiber-based plasmonic sensor for multi-operational coronavirus detections**

Author(s): Abrar Islam, Bangabandhu Sheikh Mujibur Rahman Science and Technology Univ. (Bangladesh); Firoz Haider, Multimedia Univ. (Malaysia); Hima Akter, Jagannath Univ. (Bangladesh); Hairul Azhar Bin Abdul Rashid, Multimedia Univ. (Malaysia); Rajib Ahmed, Stanford Univ. (United States); Rifat Ahmmed Aoni, RMIT Univ. (Australia)

12322-30

**Graphene embedded double D-shaped plasmonic sensor for multi-analyte detection**

Author(s): Rakib Haider, Daffodil International Univ. (Bangladesh); Md. Mashrafi, Univ. of Dhaka (Bangladesh); Firoz Haider, Hairul Azhar Bin Abdul Rashid, Multimedia Univ. (Malaysia); Rajib Ahmed, Stanford Univ. (United States); Rifat Ahmmed Aoni, RMIT Univ. (Australia)

12322-31

**Spectral and time-resolved photoluminescence of aromatic amino acids in complex with rhodium and platinum nanoparticles**

Author(s): Andrey Y. Zyubin, Elizaveta Demishkevich, Alexander Zozulya, Iliia Samusev, Immanuel Kant Baltic Federal Univ. (Russian Federation)

12322-32

**Magneto-optical effects in plasmonic nanostructures with nonuniform magnetization**

Author(s): Olga Borovkova, Russian Quantum Ctr. (Russian Federation); M. V. Lomonosov Moscow State Univ. (Russian Federation); Daria Sylgacheva, Russian Quantum Ctr. (Russian Federation); Saveliy Lutsenko, Russian Quantum Ctr. (Russian Federation); M. V. Lomonosov Moscow State Univ. (Russian Federation); Andrey Kalish, Russian Quantum Ctr. (Russian Federation); M. V. Lomonosov Moscow State Univ. (Russian Federation)

**POSTER SESSION**

**Some posters may have an accompanying preview video from the presenter.**

12322-43

**Ultraviolet/visible quasicylindrical waves on semimetal Cd3As2 nanoplates**

Author(s): Zhaohang Xue, Peking Univ. (China)

12322-44

**Triple tapered SMF sensor probes for glucose detection based on LSPR**

Author(s): Guoru Li, Ragini Singh, Bingyuan Zhang, Santosh Kumar, Liaocheng Univ. (China)

12322-45

**A rapid design method based on catenary field theory combined with genetic algorithms for THz broadband absorber**

Author(s): Ming Zhang, Ze Ma, Najiao Zhang, Mengxue Yang, Cong Li, Wanmei Zhang, Zhonghao Luo, Hebei Univ. of Science and Technology (China)

12322-46

**Information encoding with spin-dependent Bessel beams via metasurfaces**

Author(s): Lei Chen, Qiming Zhang, Min Gu, Univ. of Shanghai for Science and Technology (China)

12322-47

**Polarization-insensitive broadband metalens integrated on photonic crystal fiber tip**

Author(s): Fengtong Dai, Qianqian Wang, Haida Liu, Ziyang Liu, Geer Teng, Kuo Zhao, Beijing Institute of Technology (China)

12322-48

**SiN optical phased array based on slab waveguide**

Author(s): Pengfei Ma, Pengfei Wang, Guangzhen Luo, Lei Yu, Langlin Cui, Xuliang Zhou, Jiaoqing Pan, Yejin Zhang, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China)

12322-50

**Adaptive methodologies of computational imaging based on super-resolution technology**

Author(s): Hua Liu, Science and Technology on Electro-Optic Control Lab. (China)

12322-51

**Research on fusion splicing polarization-maintaining anti-resonant hollow-core optical fiber and conventional polarization-maintaining fiber**

Author(s): Fei Hui, Maochun Li, Tianjin Navigation Instruments Research Institute (China)

12322-52

**Broadband absorber based on metamaterials**

Author(s): Mian Wu, Shilin Yu, Ziang Gao, Dafa Pan, Tonggang Zhao, Beijing Univ. of Posts and Telecommunications (China)

12322-53

**Highly directional Si antenna based on dual-layer gratings for optical phased array**

Author(s): Lei Yu, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Wenyuan Liao, Science and Technology on Reliability Physics and Application of Electronic Component Lab. (China); Pengfei Wang, Pengfei Ma, Guangzhen Luo, Langlin Cui, Chen Lv, Yejin Zhang, Jiaoqing Pan, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China)

12322-54

**All-dielectric metasurface optical refractive index sensor based on double Fano resonances excited by dual magnetic dipole modes**

Author(s): Ziang Gao, Tonggang Zhao, Beijing Univ. of Posts and Telecommunications (China)

12322-55

**Observation of topological phase transitions of light in c-cut uniaxial crystals**

Author(s): Jiahao Cheng, Yawei Tan, Wang Mei, Zan Zhang, Xiaohui Ling, Hengyang Normal Univ. (China)

12322-56

**Preparation and properties of high stability quantum dot-silica hybrid nanospheres**

Author(s): Yaqian Zheng, Hongxing Xie, Yun Ye, Zhenyu Zeng, Sheng Xu, Enguo Chen, Tailiang Guo, Fuzhou Univ. (China), Fujian Science and Technology Innovation Lab. for Optoelectronic Information of China (China)

12322-57

**Injection molding and performance testing of quantum-dot diffusion plate**

Author(s): Sijie Li, Hongxing Xie, Yun Ye, Sheng Xu, Enguo Chen, Tailiang Guo, Fuzhou Univ. (China), Fujian Science and Technology Innovation Lab. for Optoelectronic Information of China (China)

12322-59

**High Q-factor multiple Fano resonances induced by bound states in the continuum based on all-dielectric nanoholes arrays**

Author(s): Xuanhao Shi, Ziang Gao, Zhengshan Xu, Tonggang Zhao, Beijing Univ. of Posts and Telecommunications (China)

12322-60

**Control of incoherent optical field via a combination of resonant cavity and metasurface optimal structure**

Author(s): Yiming Li, Tsinghua Univ. Shenzhen International Graduate School (China), Peng Cheng Lab. (China); Tianshi Lu, Fuyuan Deng, Tsinghua Univ. Shenzhen International Graduate School (China); Zhixue He, Zhengtong Liu, Peng Cheng Lab. (China); Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China), Peng Cheng Lab. (China), Tsinghua-Berkeley Shenzhen Institute, Tsinghua Univ. (China)

12322-61

**All-dielectric metasurface based on bound states in the continuum for refractive index sensing**

Author(s): Maojin Yun, Linhui Guo, Qingdao Univ. (China)

12322-62

**Tunable plasmon-induced transparency desensitized to polarized light based on a monolayer patterned graphene metamaterial**

Author(s): Maojin Yun, Qun Xie, Qingdao Univ. (China)

12322-63

**Polarization-insensitive independently tunable dual-band absorber based on graphene metasurfaces in the mid-infrared**

Author(s): Maojin Yun, Panpan Gao, Qingdao Univ. (China)

12322-64

**Terahertz multi-band tunable metasurface perfect absorber based on graphene**

Author(s): Maojin Yun, Wenxuan Li, Qingdao Univ. (China)

12322-65

**Electrically tunable absorber based on a lithium niobate metamaterial in visible range**

Author(s): Maojin Yun, Zexuan Zhang, Qingdao Univ. (China)

12322-66

**Dynamically tunable plasmon-induced transparency in the terahertz frequencies**

Author(s): Maojin Yun, Chenxi Su, Qingdao Univ. (China)

12322-68

**Photoexcited electron dynamics in Cd<sub>3</sub>As<sub>2</sub> revealed by time- and energy-resolved photoemission electron microscopy**

Author(s): Zhaohang Xue, Peking Univ. (China)

12322-69

**Analysis light scattering properties of particles with porous structure based on discrete dipole approximation**

Author(s): Heng Zhang, Nan Zeng, Hui Ma, Tsinghua Univ. (China)

12322-70

**Spatiotemporal manipulation of localized plasmon modes within nano-femto scale using femtosecond chirped pulses**

Author(s): Hanbing Song, Peng Lang, Boyu Ji, Xiaowei Song, Jingquan Lin, Changchun Univ. of Science and Technology (China)

12322-71

**Metalens: invention, solution, and global automation**

Author(s): Hua Liu, Science and Technology on Electro-Optic Control Lab. (China)

12322-72

**Room temperature strong-coupling in a hybrid system of silver nanoparticles and J-aggregates**

Author(s): Zhicong He, Fang Li, Wuhan Institute of Technology (China)

12322-86

**Active metasurface switchable between half-waveplate and quarter-waveplate based on vanadium dioxide**

Author(s): Lijun Guo, Kun Zhang, Yu Tian, Weijin Kong, Qingdao Univ. (China)

12322-87

**Large-area and wide-angle perfect absorbers based on array of nanospheres**

Author(s): Zhou Zhou, Xiang Zhou, Ruoxi Zhang, Shengchen Ke, Weijian Zhu, Shaolong Wu, Linling Qin, Xiaofeng Li, Soochow Univ. (China)

12322-88

**Optical pulling of dielectric particles with non-paraxial Bessel beams through Pancharatnam-Berry metasurface**

Author(s): Xinyu Huang, Jianing Qin, Nanjing Univ. of Science and Technology (China); Zhe Shen, Nanjing University of Science and Technology (China)

12322-73

**Numerical simulation of pump power-induced heating processes in silicon nitride photonic chips**

Author(s): Vladislav I. Pavlov, M. V. Lomonosov Moscow State Univ. (Russian Federation), Russian Metrological Institute of Technical Physics and Radio Engineering (Russian Federation); Nikita M. Kondratyev, Technology Innovation Institute (United Arab Emirates), Russian Quantum Center (Russian Federation); Steevy J. Cordette, Technology Innovation Institute (United Arab Emirates); Valery E. Lobanov, Russian Quantum Center (Russian Federation)

12322-74

**Semiconductor metasurfaces for optical correlation analysis and tunable image processing**

Author(s): Viacheslav Iushkov, Vladislav Sitnyansky, Nikolay Orlikovskiy, Alexander Shorokhov, Andrey Fedyanin, M. V. Lomonosov Moscow State Univ. (Russian Federation)

12322-75

**Optical coupling of interlayer excitons in thin films with resonant silicon nanostructures**

Author(s): Timofei Antipov, Alexander Shorokhov, M. V. Lomonosov Moscow State Univ. (Russian Federation)

12322-76

**High-Q WGM microresonators for mid-IR**

Author(s): Tatiana S. Tebeneva, Russian Quantum Ctr. (Russian Federation), Moscow Institute of Physics and Technology (Russian Federation); Artem E. Shitikov, Oleg V. Benderov, Moscow Institute of Physics and Technology (Russian Federation); Valery E. Lobanov, Kirill N. Min'kov, Russian Quantum Ctr. (Russian Federation); Igor A. Bilenko, Russian Quantum Ctr. (Russian Federation), M. V. Lomonosov Moscow State Univ. (Russian Federation); Alexander V. Rodin, Moscow Institute of Physics and Technology (Russian Federation)

12322-77

**Theoretical investigation of plasmonic Ge/SiGe multiple quantum well structures toward compact and low-energy optical modulation**

Author(s): Saranisorn Srikam, Papichaya Chaisakul, Kasetsart Univ. (Thailand)

12322-78

**Quantum behavior of double barrier structure with variable width**

Author(s): Deborah Eric, Dong-A Univ. (Korea, Republic of); Abbas Ahmad Khan, Hanyang Univ. (Korea, Republic of)

12322-79

**Numerical FDTD-based simulations for SERS-active planar plasmonic surfaces**

Author(s): Igor Kon, Andrey Zyubin, Immanuel Kant Baltic Federal Univ (Russian Federation); Ilya Samusev, Immanuel Kant Baltic Federal Univ. (Russian Federation)

12322-80

**Spectral shift of the plasmon maximum on the rough anodized Ti surface in the presence of PVA films with Bi<sub>2</sub>O<sub>3</sub> and Bi<sub>2</sub>O<sub>3</sub>/Tm<sub>2</sub>O<sub>3</sub> complexes**

Author(s): Dmitry Artamonov, Anna Tsubulnikova, Iliia Samusev, Ivan Lyatun, Valery Bryukhanov, Immanuel Kant Baltic Federal Univ. (Russian Federation)

12322-81

**Symmetrical and nonsymmetrical excitation of plasmon oscillations in clusters consisting of two 6H-SiC cylinders**

Author(s): N. D. Anyutin, Russian New Univ. (Russian Federation)

12322-82

**Asymmetric spectral features of a three level  $\Lambda$  system coupled to a spherical silver metal nanoparticle**

Author(s): Abhay Mishra, Indian Institute of Technology Bombay (India)

12322-83

**Investigation of structural defects in amorphous carbon thin films by tip-enhanced Raman spectroscopy with electric heating of a sample**

Author(s): Svetlana Saparina, Sergey Kharintsev, Kazan Federal Univ. (Russian Federation)

12322-84

**Detection of the enhanced heating of TiN:Si voxels using Raman thermometry**

Author(s): Elena Chernykh, Sergey Kharintsev, Kazan Federal Univ. (Russian Federation)

12322-85

**Varifocal Moiré meta-lens for optical sectioning fluorescence imaging system**

Author(s): Mu-Ku Chen, City Univ. of Hong Kong (Hong Kong, China); Yuan Luo, Cheng Hung Chu, National Taiwan Univ. (Taiwan, China); Xu Shi, Hokkaido Univ. (Japan); Takuo Tanaka, RIKEN (Japan); Hiroaki Misawa, Hokkaido Univ. (Japan); Din Ping Tsai, City Univ. of Hong Kong (Hong Kong, China)

**Quantum and Nonlinear Optics IX****Proceedings of SPIE Vol. 12323**

*Conference Chairs:* **Qiongyi He**, Peking Univ. (China); **Dai-Sik Kim**, Ulsan National Institute of Science and Technology (Korea, Republic of); **Chuan-Feng Li**, Univ. of Science and Technology of China (China)

*Program Committee:* **Fang Bo**, Nankai Univ. (China); **Chunhua Dong**, Univ. of Science and Technology of China (China); **Osamu Hirota**, Tamagawa Univ. (Japan); **Kebin Shi**, Peking Univ. (China); **Xiaolong Su**, Shanxi Univ. (China); **Jianwei Wang**, Peking Univ. (China)

**QUANTUM OPTICS**

12323-1

**Measurement-dependent erasure of distinguishability for observing interference in an unbalanced SU(1,1) interferometer** (*Invited Paper*)

Author(s): Xiaoying Li, Nan Huo, Liang Cui, Xueshi Guo, Tianjin Univ. (China); Jeff Ou, City Univ. of Hong Kong (China)

12323-2

**High-dimensional quantum steering with multimeasurement settings** (*Invited Paper*)

Author(s): Pei Zhang, Xi'an Jiaotong Univ. (China)

12323-3

**Direct fidelity estimation of quantum states using machine learning** (*Invited Paper*)

Author(s): Xiaoqi Zhou, Sun Yat-Sen Univ. (China)

12323-4

**A programmable qudit-based quantum processor**

Author(s): Jieshan Huang, Yulin Chi, Zhanchuan Zhang, Peking Univ. (China); Yan Yang, Institute of Microelectronics (China); Jianwei Wang, Qihuang Gong, Peking Univ. (China)

12323-5

**High efficiency and low noise quantum memory with warm atomic cell inside a cavity** (*Invited Paper*)

Author(s): Zhihui Yan, Shanxi Univ. (China)

12323-6

**Super-Heisenberg scaling metrology with indefinite causal order** (*Invited Paper*)

Author(s): Geng Chen, Peng Yin, Univ. of Science and Technology of China (China)

12323-7

**Remote generation of Wigner-negative state via quantum steering** (*Invited Paper*)

Author(s): Yu Xiang, Peking Univ. (China)

12323-8

**Multiplexed quantum repeaters with absorptive quantum memories**

Author(s): Xiao Liu, CAS Key Lab of Quantum Information, USTC (China); Jun Hu, Zong-Feng Li, Xue Li, Pei-Yun Li, Peng-Jun Liang, Key Lab. of Quantum Information (China); Zong-Quan Zhou, Chuan-Feng Li, Guang-Can Guo, CAS Key Lab of Quantum Information (China)

12323-41

**Realization of a source-device-independent quantum random number generator secured by nonlocal dispersion cancellation**

Author(s): Jining Zhang, Ran Yang, Xinhui Li, Changwei Sun, Nanjing Univ. (China); Yichen Liu, Qingdao Univ. of Technology (China); Ying Wei, Jiachen Duan, Zhenda Xie, Yanxiao Gong, Shining Zhu, Nanjing Univ. (China)

**NONLINEAR PHOTONICS I**

12323-9

**Intrinsic microscopic structure of the gate-tunable suspended graphene/electrolyte interface** (*Invited Paper*)

Author(s): Chuanshan Tian, Fudan Univ. (China)

12323-10

**Graphene functionalized microcomb devices** (*Invited Paper*)

Author(s): Baicheng Yao, Univ. of Electronic Science and Technology of China (China)

12323-11

**High-performance silicon photonic integrated devices for quantum applications** (*Invited Paper*)

Author(s): Ming Zhang, Zhejiang Univ. (China)

12323-20

**Comb generation in cylindrical microresonators based on optical fibers**

Author(s): Alena Yu. Kolesnikova, Sergey V. Suchkov, Ilya D. Vatik, Novosibirsk State Univ. (Russian Federation)

12323-21

**Kerr soliton comb generation efficiency in microresonators and microresonator coupling rate**

Author(s): Nikita M. Kondratiev, Technology Innovation Institute (United Arab Emirates); Valery E. Lobanov, Russian Quantum Ctr. (Russian Federation); Steevy J. Cordette, Technology Innovation Institute (United Arab Emirates); Igor A. Bilenko, Russian Quantum Ctr. (Russian Federation), Lomonosov Moscow State Univ. (Russian Federation)

12323-23

**Observation of cascade Brillouin processes in random distributed feedback Raman fiber lasers**

Author(s): A. E. Kirik, A. A. Aprelov, I. D. Vatik, D. V. Churkin, Novosibirsk State Univ. (Russian Federation)

**NONLINEAR PHOTONICS II**

12323-12

**Brillouin-Kerr soliton frequency combs and high-power low-noise Brillouin lasers in optical microresonators** (*Invited Paper*)

Author(s): Xiaoshun Jiang, Nanjing University (China); Yan Bai, Nanjing Univ. (China); Menghua Zhang, Shulin Ding, Nanjing University (China); Yingchun Qin, Nanjing Univ. (China); Min Xiao, Nanjing University (China), University of Arkansas (United States)

12323-13

**AlGaAs on insulator for nonlinear and quantum photonics** (*Invited Paper*)

Author(s): Lin Chang, Peking Univ. (China)

12323-14

**Photonic soliton combs via dispersive intermode interactions** (*Invited Paper*)

Author(s): Hairun Guo, Suwan Sun, Yongyuan Chu, Shanghai Univ. (China)

**NONLINEAR PHOTONICS III**

12323-15

**Non-Hermitian optics in a single nonlinear microcavity**  
*(Invited Paper)*

Author(s): Wenjie Wan, Shanghai Jiao Tong Univ. (China)

12323-16

**Nonlinear polarization imaging by parametric upconversion** *(Invited Paper)*

Author(s): Mengxin Ren, Zhanghang Zhu, Di Zhang, Jingjun Xu, Nankai Univ. (China)

12323-40

**Second harmonic generation and photon pair generation by AlGaAs nonlinear waveguide**

Author(s): Bin Niu, Nanjing Electronic Devices Institute (China); Liangliang Lu, Nanjing Normal Univ. (China); Xu Jing, Nanjing Electronic Devices Institute (China); Cheng Qian, Nanjing Normal Univ. (China); Yuechan Kong, Tangsheng Chen, Nanjing Electronic Devices Institute (China)

12323-17

**Transmitting spatiotemporal optical vortices through optical fiber** *(Invited Paper)*

Author(s): Qian Cao, Zhuo Chen, Qiwen Zhan, Univ. of Shanghai for Science and Technology (China)

12323-18

**Light manipulations in synthetic frequency dimension** *(Invited Paper)*

Author(s): Luqi Yuan, Shanghai Jiao Tong Univ. (China)

12323-19

**Electro-optically tunable narrow-linewidth single-frequency microlasers and low-phase-noise microwave signal synthesizer on single active lithium niobate microdisks** *(Invited Paper)*

Author(s): Jintian Lin, Renhong Gao, Botao Fu, Shanghai Institute of Optics and Fine Mechanics (China); Ni Yao, Zhejiang Lab. (China); Jianglin Guan, East China Normal Univ. (China); Ya Cheng, Shanghai Institute of Optics and Fine Mechanics (China), East China Normal Univ. (China)

**POSTER SESSION**

**Some posters may have an accompanying preview video from the presenter.**

12323-24

**Design and analysis of an optical one to two data distributor using plasmonic waveguide-based Mach-Zehnder interferometers**

Author(s): Kuldeep Choudhary, DIT Univ. (India); Santosh Kumar, Liaocheng Univ. (China)

12323-25

**Study of broadband second harmonic generation based on random quasi-phase matching**

Author(s): Sijia Wang, Kai Zhong, Fangjie Li, Hongzhan Qiao, Xianzhong Zhang, Yizhe Zheng, Xinqi Li, Tana Gegen, Jining Li, Degang Xu, Jianquan Yao, Tianjin Univ. (China)

12323-26

**High birefringence properties of nonlinear photonic crystal fiber with negative dispersion**

Author(s): Zhenhua Du, Feifei Wei, Jiaxin He, Yanfei Lü, Yunnan Univ. (China)

12323-27

**Adaptive computational imaging improve architectures**

Author(s): Hua Liu, Science and Technology on Electro-Optic Control Lab. (China)

12323-28

**An efficient and high-speed two-stage decoding scheme for continuous-variable quantum key distribution system**

Author(s): Chuang Zhou, Yang Li, Li Ma, Yujie Luo, Wei Huang, Jie Yang, Jinlong Hu, Liangliang Zhang, Shuai Zhang, Bingjie Xu, Institute of Southwestern Communication (China)

12323-29

**A feasible two-step optimization method for continuous-variable quantum key distribution**

Author(s): Li Ma, Yang Li, Jie Yang, Yun Shao, Yujie Luo, Wei Huang, Heng Wang, Chuang Zhou, Jinlong Hu, Shuai Zhang, Bingjie Xu, Institute of Southwestern Communication (China)

12323-30

**Phase-reference polarization attack on continuous-variable quantum key distribution with a real local oscillator**

Author(s): Yun Shao, Yan Pan, Heng Wang, Yaodi Pi, Yang Li, Li Ma, Wei Huang, Bingjie Xu, Institute of Southwestern Communication (China)

12323-31

**Experimental demonstration of 5 GBaud four-state continuous-variable quantum key distribution with digital signal processing**

Author(s): Heng Wang, Yan Pan, Yaodi Pi, Yun Shao, Ting Ye, Yang Li, Li Ma, Tao Zhang, Jinlu Liu, Wei Huang, Bingjie Xu, Institute of Southwestern Communication (China)

12323-32

**Realization of two-qubit quantum SWAP gate based on cavity QED**

Author(s): Ziqiu Zhang, Si Luo, Xi Jiang, Shiqing Tang, Hengyang Normal Univ. (China)

12323-33

**Realization of two mode squeezed state in circuit QED**

Author(s): Xi Jiang, Si Luo, Ziqiu Zhang, Shiqing Tang, Hengyang Normal Univ. (China)

12323-39

**Directly imaging current distributions of nanowire networks during electrical annealing with solid-state spins**

Author(s): En-Hui Wang, Xiang-Dong Chen, Guang-Can Guo, Fang-Wen Sun, Univ. of Science and Technology of China (China)

12323-42

**Nonlinear dynamics of a diode-pumped all-solid-state passively Q-switched Nd:LaMgAl11O19 laser**

Author(s): Zi-yi Kang, Southwest Univ (China); Zi-Ye Gao, Guang-Qiong Xia, Zheng-Mao Wu, Southwest Univ. (China)

12323-34

**Study of a single-photon detector blinding attack with modulated bright light**

Author(s): D. S. Bulavkin, SFB Lab. (Russian Federation), Bauman Moscow State Technical Univ. (Russian Federation); I. S. Sushchev, SFB Lab. (Russian Federation), M. V. Lomonosov Moscow State Univ. (Russian Federation); K. E. Bugai, SFB Lab. (Russian Federation), Bauman Moscow State Technical Univ. (Russian Federation); S. A. Bogdanov, SFB Lab. (Russian Federation), M. V. Lomonosov Moscow State Univ. (Russian Federation); D. A. Dvoretzkiy, SFB Lab. (Russian Federation), Bauman Moscow State Technical Univ. (Russian Federation)

12323-35

**Influence of a relaxation time of optical semiconductor saturable absorber on spectral properties of ultrashort pulses**

Author(s): Alexey Y. Kokhanovskiy, Aleksander Perepelov, Kirill Serebrennikov, Novosibirsk State Univ. (Russian Federation)

12323-36

**Manifestation of optical feedback in power and spectral radiation properties of a Raman fiber laser with randomly distributed feedback well above generation threshold**

Author(s): Oleg A. Gorbunov, Ilya D. Vatnik, Novosibirsk State Univ. (Russian Federation), Institute of Automation and Electrometry of the SB (Russian Federation); Sergey V. Smirnov, Dmitry V. Churkin, Novosibirsk State Univ. (Russian Federation)

12323-37

**Optimization of microresonator characteristics with carbon nanotubes**

Author(s): Ilya Gorelov, Russian Quantum Ctr. (Russian Federation)

12323-38

**Free-charge carrier assisted third-order nonlinear optical manifestations in sputtered WSe<sub>2</sub> thin films**

Author(s): Km. Surbhi, National Institute of Science Education and Research (India)



# 科菱环境工程（北京）有限公司



科菱环境工程（北京）有限公司，是一家专业从事实验室及实验办公区整体规划、洁净厂房、净化车间、电子厂房、净化工程设计与施工、洁净环境运维的高新技术企业，专门服务于各类科研实验室、医药卫生、半导体、微电子、核工业、航空航天、光学设备、生物工程、精细化工、精密仪器和食品工业领域并提供专业的净化技术和业务。科菱环境工程（北京）有限公司是AAA级资信等级、重合同守信用单位、质量服务信誉单位和诚信经营示范单位，公司通过了ISO9001：2015和GB/T50430-2017质量管理体系、ISO45001：2018职业健康安全管理体系和ISO14001：2015环境管理体系等的认证，被授予“中关村高新技术企业”和“国家高新技术企业”称号。科菱环境工程（北京）有限公司，具有建筑工程施工总承包、机电工程施工总承包、建筑装修装饰工程专业承包、电子与智能化工程专业承包、环保工程专业承包、建筑幕墙工程专业承包、消防设施工程专业承包、防水防腐保温工程专业承包、钢结构工程专业承包、地基基础工程专业承包、古建筑工程专业承包、特种工程（结构补强）专业承包和安全生产许可证等资质。



中国科学院力学研究所超净间建设项目

科菱人克服一切困难，仅用20天时间完成了8米高、千级卫星组装大厅建设。是目前航天卫星领域示范工程，受到了国内多位航天领域专家的肯定，同时被同行业公司多次考察学习。组装大厅以恒湿恒温、净化车间、组装实验室为主，同时涵盖屏蔽室、智能控制等特种设备集成。科菱用研发与科技创新推动行业的持续发展，保障实验及生产环境的高效运转！



北京航空航天大学沙河校区仿生微纳系统研究所超净间建设工程

北京航空航天大学沙河校区仿生微纳实验室，主要研究领域是靶向药物输送场控微纳机器人，精准化技术与医用器械研究，该研究对环境要求很高，光刻间洁净度达到百级。可满足微纳器件加工和微流控芯片的制作。



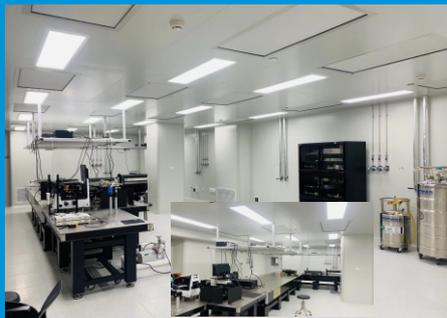
建设恒温恒湿高精度载人航天飞船发射准备前实验室

参与建造中国空间站天和核心舱检测舱，成为科菱人的骄傲，用实际行动助力中国航天航空事业，该检测舱23米高，用于飞船升空前飞船及仪器设备进行单元测试及升空前准备。目前是世界规模最大的飞船检测舱。



核保障领域的国际原子能机构（IAEA）网络分析实验室

中国原子能科学研究院网络和分析实验室开展网络分析技术研发的基础。网络分析对洁净室的洁净度及湿度的精度具有非常高的要求，各洁净室绝对不能发生污染事件。科菱对洁净室的建设得到了用户和国际原子能机构IAEA技术官员的高度好评，正式成为国际原子能机构（IAEA）网络分析实验室，是中国唯一一个获此殊荣的实验室，打破了几个发达国家垄断的局面，代表中国的网络分析技术达到了国际一流水平。使其成为科菱进入中国核工业领域的样板工程。



北京量子信息科学研究院项目

北京量子信息科学研究院凝聚态材料光谱学及低维纳米材料实验室，实验室的主要研究领域是半导体光学以及低维量子材料科学与物质相互作用物理机制和量子调控。研究要求的实验环境对洁净度、温湿度精度要求非常高，洁净度需达到千级净化标准，湿度需达到正负0.1相对湿度。科菱团队对该项目详细的了解使用用户的需求后，进行深刻严谨的设计，在完工验收经过各项检测，完美的达到验收要求。



抗击新冠疫情我们在行动自主研发移动式核酸检测车

疫情防控，科菱守护。疫情期间，我们与时间赛跑，不分昼夜，支援武汉、广西、云南、广东、内蒙、山东、湖北、河北及海外等友好国家。用实际行动履行了企业担当和家国情怀，我们与奋战在一线的医护人员一起为疫情防控保驾护航！

*Conference Chairs:* **Cunlin Zhang**, Capital Normal Univ. (China); **Xi-Cheng Zhang**, The Institute of Optics, Univ. of Rochester (United States); **Masahiko Tani**, Univ. of Fukui (Japan)

*Program Committee:* **Derek Abbott**, The Univ. of Adelaide (Australia); **Jun-Cheng Cao**, Shanghai Institute of Microsystem and Information Technology (China); **Jian Chen**, Nanjing Univ. (China); **Yiwen E.**, The Institute of Optics, Univ. of Rochester (United States); **Vladimir Yu Fedorov**, P.N. Lebedev Physical Institute of the Russian Academy of Sciences (Russian Federation), Texas A&M Univ. at Qatar (Qatar); **Jiaguang Han**, Ctr. for Terahertz Waves of Tianjin Univ. (China); **Zhi Hong**, China Jiliang Univ. (China); **Yen-Chieh Huang**, National Tsing Hua Univ. (Taiwan); **Biaobing Jin**, Nanjing Univ. (China); **Weiqi Jin**, Beijing Institute of Technology (China); **Rajib Kumar Mitra**, S.N. Bose National Ctr. for Basic Sciences (India); **Fengqi Liu**, Institute of Semiconductors, Chinese Academy of Sciences (China); **Weiwei Liu**, Nankai Univ. (China); **Chih Wei Luo**, National Chiao Tung Univ. (Taiwan); **Yungui Ma**, Zhejiang Univ. (China); **Hiroaki Minamide**, RIKEN (Japan); **Makoto Nakajima**, Osaka Univ. (Japan); **Hua Qin**, Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences (China); **Sheng-Cai Shi**, Purple Mountain Observatory, Chinese Academy of Sciences (China); **Alexander P. Shkurinov**, M.V. Lomonosov Moscow State Univ. (Russian Federation); **Xianghong Tang**, Hangzhou Dianzi Univ. (China); **Joo-Hiuk Son**, The Univ. of Seoul (Korea, Republic of); **Anton N. Tcypkin**, ITMO Univ. (Russian Federation); **Masayoshi Tonouchi**, Osaka Univ. (Japan); **Xiaojun Wu**, Beihang Univ. (China); **Xinlong Xu**, Northwest Univ. (China); **Yuping Yang**, Minzu Univ. of China (China); **Chao Zhang**, Univ. of Wollongong (Australia); **Dongwen Zhang**, National Univ. of Defense Technology (China); **LiangLiang Zhang**, Capital Normal Univ. (China); **Weili Zhang**, Oklahoma State Univ. (United States); **Yan Zhang**, Capital Normal Univ. (China); **Yaxin Zhang**, Univ. of Electronic Science and Technology of China (China); **Zhuoyong Zhang**, Capital Normal Univ. (China); **Kun Zhao**, China Univ. of Petroleum (China); **Zengxiu Zhao**, National Univ. of Defense Technology (China); **Zhenyu Zhao**, Shanghai Normal Univ. (China); **Li-Guo Zhu**, China Academy of Engineering Physics (China); **Yiming Zhu**, Univ. of Shanghai for Science and Technology (China); **Oлга G. Kosareva**, M. V. Lomonosov Moscow State Univ. (Russian Federation); **Tae-In Jeon**, Korea Maritime and Ocean Univ. (Korea, Republic of)

**DEVICES**

12324-1

**Nonlinear dynamics of semiconductor terahertz devices (Invited Paper)**

Author(s): Chang Wang, Shanghai Institute of Microsystem and Information Technology (China); Shuting Wei, Wei Feng, Jiangsu Univ. (China); Juncheng Cao, Shanghai Institute of Microsystem and Information Technology (China)

12324-2

**Spatially multiplexed metasurfaces for polarization conversion and wavefront steering**

Author(s): Zhen Yue, Jie Li, Jitao Li, Chenglong Zheng, Yating Zhang, Jianquan Yao, Tianjin Univ. (China)

12324-3

**Preliminary design of a superconducting heterodyne array receiver for Leighton Chajnantor Telescope**

Author(s): S. Q. Wang, Shanghai Normal Univ. (China); D. Liu, Purple Mountain Observatory (China), Univ. of Science and Technology of China (China); B. L. Liu, Purple Mountain Observatory (China); M. Yao, Purple Mountain Observatory (China); D. Cao, F. Liu, W. Z. Shi, C. G. Shu, Shanghai Normal Univ. (China); S. C. Shi, Purple Mountain Observatory (China)

12324-4

**High sensitivity terahertz parametric up-conversion detector based on KTP crystal**

Author(s): Changhao Hu, Yuye Wang, Kai Chen, Chao Yan, Degang Xu, Tianjin Univ. (China); Yuma Takida, Hiroaki Minamide, RIKEN Ctr. for Advanced Photonics (Japan); Jianquan Yao, Tianjin Univ. (China)

12324-6

**Noise performance of a 200–280 GHz mixer with Nb-AlN-NbN superconducting tunnel junctions**

Author(s): Bo-Liang Liu, Purple Mountain Observatory (China), Univ. of Science and Technology of China (China); Dong Liu, Purple Mountain Observatory (China); Ming Yao, Purple Mountain Observatory (China); Jing Li, Sheng-Cai Shi, Purple Mountain Observatory (China); Artem Chekushkin, Michael Fominsky, Lyudmila Filippenko, Kotelnikov Institute of Radio Engineering and Electronics (Russian Federation); Valery Koshelets, Kotelnikov Institute of Radio Engineering and Electronics (Russian Federation)

12324-7

**Microwave photonic radar for distance and direction measurement of multiple targets**

Author(s): Zheng He, Yunxin Wang, Feng Yang, Dayong Wang, Zhe Liu, Xueyuan Hou, Lu Rong, Beijing Univ. of Technology (China)

12324-38

**Transfer printed GaAs Schottky barrier diode on quartz for terahertz mixer and frequency multiplier**

Author(s): Yuxuan Wang, Bin Niu, Kunpeng Dai, Shaobing Wu, Yuechan Kong, Tangsheng Chen, Nanjing Electronic Devices Institute (China)

12324-39

**MOEMS metamaterial THz absorber and its imaging application**

Author(s): Cheng Gong, Institute of Modern Optics, Nankai Univ. (China); Zhigang Wang, Han Wang, Univ. of Electronic Science and Technology of China (China); Xinyu Li, Weiwei Liu, Institute of Modern Optics, Nankai Univ. (China)

12324-46

**Ultrahigh modulation enhancement in all-optical THz modulators integrated with gold nanopyramids**

Author(s): Pujing Zhang, JinYu Chen, Qingli Zhou, Liangliang Zhang, Cunlin Zhang, Capital Normal University (China)

**MATERIALS AND SYSTEMS**

12324-8

**Nonlinear response of liquid water induced by terahertz pulses (Invited Paper)**

Author(s): Hang Zhao, Beijing Institute of Technology (China), Yangtze Delta Region Academy of Beijing Institute of Technology (China); Yong Tan, Yangtze Delta Region Institute of Tsinghua Univ. (China), Wuzhen Lab. (China); LiangLiang Zhang, Cunlin Zhang, Capital Normal Univ. (China); Yuejin Zhao, Beijing Institute of Technology (China), Yangtze Delta Region Academy of Beijing Institute of Technology (China)

12324-9

**Terahertz dielectric characterization of low-loss materials for 6G and ADAS application**

Author(s): Longhai Liu, Tianjin Univ. (China), Advantest (China) Co., Ltd. (China); Jianhua Xie, Xiaoqian Qin, Advantest (China) Co., Ltd. (China)

12324-10

**Perfect phase matching regulation in cubic semiconductors based on linear electro-optic effect**

Author(s): Fangjie Li, Kai Zhong, Hongzhan Qiao, Xianzhong Zhang, Degang Xu, Jianquan Yao, Tianjin Univ. (China)

12324-40

**Adaptive-clock terahertz time-of-flight ranging based on asynchronous sampling**

Author(s): Zheng Liu, Min Li, Univ. of Shanghai for Science and Technology (China); Heping Zeng, East China Normal Univ. (China)

12324-20

**Generation of tunable THz-radiation with self-sweeping Er-doped fiber laser**

Author(s): N. R. Poddubrovskii, Institute of Automation and Electrometry of the SB RAS (Russian Federation), Novosibirsk State Univ. (Russian Federation); I. A. Lobach, N. A. Nikolaev, S. I. Kablukov, Institute of Automation and Electrometry of the SB RAS (Russian Federation)

12324-21

**Spatial chirping of a THz pulse during generation in InAs crystal**

Author(s): A. O. Nabilkova, E. N. Oparin, V. S. Shumigai, M. V. Melnik, A. N. Tsytkin, ITMO Univ. (Russian Federation)

**TERAHERTZ SPECTRAL APPLICATIONS**

12324-11

**Metamaterial sensing with ultra-high sensitivity and tunability within terahertz region based on photosensitive semiconductors (Invited Paper)**

Author(s): Jingwen Wu, Tingting Yuan, Jianjun Liu, Zhi Hong, Yong Du, China Jiliang Univ. (China)

12324-12

**Wideband one-dimensional range profiles of Lambertian reflectors in the terahertz range**

Author(s): Tana Gegen, Kai Zhong, Hongzhan Qiao, Xianzhong Zhang, Tianjin Univ. (China); Wei He, Science and Technology on Electromagnetic Scattering Lab. (China); Jining Li, Degang Xu, Jianquan Yao, Tianjin Univ. (China)

12324-13

**Study on terahertz spectra of traditional Chinese medicine tablets with porous and non-porous structures**

Author(s): Xu Li, Capital Normal Univ. (China); Yanbing Bai, Yuanfeng Guo, Zining Wang, Yulei Shi, Jian Zuo, Cunlin Zhang, Capital Normal Univ. (China)

12324-14

**The detection of early rat blast-induced traumatic brain injury based on high wavenumber Raman spectroscopy**

Author(s): Meilan Ge, Yuye Wang, Haibin Li, Tianjin Univ. (China); Chuanyan Yang, Ning Mu, Southwest Hospital (China); Degang Xu, Jianquan Yao, Tianjin Univ. (China)

**INFRARED AND MICROWAVE TECHNOLOGY**

12324-15

**High performance of EIW terahertz detection (Invited Paper)**

Author(s): Zhiming Huang, The Shanghai Institute of Technical Physics of the Chinese Academy of Sciences (China)

12324-16

**Dual-channel microwave photonic frequency conversion and transmission method with immunity to periodically power fading**

Author(s): Wu Zhang, China Academy of Space Technology (China), National Key Lab. of Science and Technology on Space Microwave (China); Xinyao Xu, Aerospace Information Research Institute (China); Shunfeng Sun, China Academy of Space Technology (China), Northwest Polytechnic Univ. (China); Bin Shao, China Academy of Space Technology (China); Dong Liang, Qinggui Tan, China Academy of Space Technology (China), National Key Lab. of Science and Technology on Space Microwave (China)

12324-17

**The calculation theory of differential model for the infrared radiation characteristics of the high-altitude high-speed unmanned-aerial-vehicle plume**

Author(s): Jianjun Shi, Army Engineering University of PLA (China); Yang Zhao, PLA Army Academy of Artillery and Air Defense (China); Xu Li, Nanjing Agricultural Univ. (China)

12324-18

**An automatic baseline correction method based on the adaptive smoothness parameter penalized least squares method**

Author(s): Feng Zhang, Lin Li, Xi'an Technological Univ. (China)

12324-19

**Detection and azimuth information display of infrared moving targets**

Author(s): Yefei Li, Science and Technology on Low-Light-Level Night Vision Lab. (China), Nanjing Univ. of Science and Technology (China); Xiangyu Kong, Lei Liu, Nanjing Univ. of Science and Technology (China); Xiaofeng Bai, Science and Technology on Low-Light-Level Night Vision Lab. (China)

12324-41

**Large-area seamless mosaic for UAV thermal infrared sequence images based on prior coordinates and overlap area**

Author(s): Jiani He, Zhejiang Lab. (China); Yueming Wang, Zhejiang Lab. (China), The Shanghai Institute of Technical Physics (China); Tianshu Zhou, Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences (China); Longhan Zhang, Temesgen Muruts, Zhejiang Lab. (China); Xiangbo Jin, The Shanghai Institute of Technical Physics (China); Jing Jiang, Zhejiang Lab. (China)

**POSTER SESSION**

**Some posters may have an accompanying preview video from the presenter.**

12324-22

**Enhancing efficiency of perovskite NIR phototransistor via sulfonated graphene oxide**

Author(s): Mengyao Li, Silei Wang, Yating Zhang, Jianquan Yao, Tianjin Univ. (China)

12324-23

**Polarization insensitive tunable terahertz coding metasurface based on vanadium dioxide**

Author(s): Zailin Wang, Pengzhan Li, Jinyu Chen, Wanlin Liang, Zhanyi Wu, Qingli Zhou, Cunlin Zhang, Capital Normal Univ. (China)

12324-24

**Electromagnetic induced transparency from interlayer coupling of asymmetric split ring resonators**

Author(s): Peng Zhan Li, Jin Yu Chen, Zai Lin Wang, Pujing Zhang, Yuwang Deng, Qingli Zhou, Cunlin Zhang, Capital Normal Univ. (China)

12324-25

**Coherent detection of broadband terahertz pulses using ethanol-water mixtures**

Author(s): Wen Xiao, Minghao Zhang, Liangliang Zhang, Cunlin Zhang, Capital Normal Univ. (China); X.-C. Zhang, Univ. of Rochester (United States)

12324-26

**Modulation of electromagnetically induced transparency based on bright-bright mode coupling in asymmetric split ring resonators**

Author(s): Jinyu Chen, Zailin Wang, Pengzhan Li, Pujing Zhang, Qingli Zhou, Cunlin Zhang, Capital Normal Univ. (China)

12324-27

**Low thermal mass long wave infrared metasurface absorber for small pixel microbolometer with fast response**

Author(s): Jing Yang, Jianjun Lai, Huazhong Univ. of Science and Technology (China); Jianfei Gao, Wuhan Guide Infrared Co., Ltd. (China)

12324-28

**Recognition of biological collagen peptides based on terahertz spectroscopy and PCA-RF**

Author(s): Jian Zuo, Department of Physics, Capital Normal University (China)

12324-29

**Study of different types of hydroxypropyl celluloses (HPC) based on terahertz time-domain spectroscopy (THz-TDS)**

Author(s): Jiayu Yan, Zining Wang, Yuanfeng Guo, Yulei Shi, Jian Zuo, Cunlin Zhang, Capital Normal Univ. (China)

12324-30

**Quantitative analysis of the concentration of coumarin in binary mixture based on terahertz spectroscopy with an improved least square support vector machine**

Author(s): Yuanfeng Guo, Jian Zuo, Capital Normal Univ. (China)

12324-31

**Adaptive higher ratio systems implementation**

Author(s): Hua Liu, Science and Technology on Electro-Optic Control Lab. (China)

12324-32

**Correlation between dynamic mechanical properties and infrared spectra of HTPB propellant during aging**

Author(s): Yi Huang, Xin Sui, Beijing Institute of Technology (China)

12324-33

**A frequency-adjustable electromagnetic induced transparency with terahertz metasurface based on vanadium dioxide**

Author(s): Linyu Yang, Yunnan Normal Univ. (China); Wei Wang, Yunnan Normal Univ. (China), Yunnan Key Lab. of Opto-electronic Information Technology (China); Yide Sun, Chunyue Zhao, Yunnan Normal Univ. (China); Ying Zhang, Yunnan Normal Univ. (China), Yunnan Key Lab. of Opto-electronic Information Technology (China)

12324-34

**2- $\mu\text{m}$ -compatible avalanche photodetector using Sb-based superlattice**

Author(s): Wenguang Zhou, Junkai Jiang, Nong Li, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Faran Chang, Nanjing Univ. (China); Guowei Wang, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Yingqiang Xu, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Donghai Wu, Institute of Semiconductors (China), Univ. of Chinese Academy of Science (China); Dongwei Jiang, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Hongyue Hao, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Weiqiang Chen, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Suning Cui, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Xueyue Xu, Zhichuan Niu, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China)

12324-35

**Study on integrated optical beamforming network for microwave photonics network radar**

Author(s): Li Lu, Yuan Jiang, Air Force Early Warning Academy (China); Zhen Wang, Huazhong Univ. of Science and Technology (China); Hong-zeng Yuan, Air Force Early Warning Academy (China)

12324-36

**LOS and NLOS channel models for indoor 220-330GHz communications based on ray tracing**

Author(s): Pandeng Wang, Hongcheng Yang, Cuiling Zhang, Jiahui Wang, Jingsuo He, Bo Su, Cunlin Zhang, Ministry of Education (China), Beijing Key Lab. for Terahertz Spectroscopy and Imaging (China), Beijing Advanced Innovation Ctr. for Imaging Theory and Technology (China)

12324-45

**Gouy phase shift of terahertz pulses observed using a water column as a probe**

Author(s): Yemin Li, Capital Normal University (China); Danni Ma, Beijing Institute of Technology (China); Cunlin Zhang, Liangliang Zhang, Capital Normal Univ. (China)

12324-47

**Study on terahertz spectra of traditional Chinese medicine tablets with porous and non-porous structure**

Author(s): Xu Li, Yuanfeng Guo, Capital Normal Univ. (China); Yanbing Bai, Zining Wang, Capital Normal Univ (China); Yulei Shi, Jian Zuo, Cunlin Zhang, Capital Normal Univ. (China)

12324-37

**Investigation of dispersion properties of congruent lithium niobate crystal in the terahertz frequency range**

Author(s): V. S. Shumigai, E. N. Oparin, A. O. Nabilkova, M. V. Melnik, A. N. Tcypkin, S. A. Kozlov, ITMO Univ. (Russian Federation)

12324-42

**Transmission and reflection spectra of Si wave-guiding structures for THz integrated photonics**

Author(s): Sergey Seliverstov, Moscow State Pedagogical Univ. (Russian Federation); Sergey Svyatodukh, Moscow State Pedagogical Univ. (Russian Federation), National Research Univ. Higher School of Economics (Russian Federation); Aleksey Prokhodtsov, Moscow State Pedagogical Univ. (Russian Federation); Anatoly Prikhodko, Alexander Shurakov, Moscow State Pedagogical Univ. (Russian Federation), National Research Univ. Higher School of Economics (Russian Federation); Evgenia Sheveleva, Moscow State Pedagogical Univ. (Russian Federation); Galina Chulkova, Gregory Goltsman, Moscow State Pedagogical Univ. (Russian Federation), National Research Univ. Higher School of Economics (Russian Federation)

12324-43

**The development of the simulation methodology for steady-state thermoreflectance technique**

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**BiSb structured thin-film as photothermoelectric terahertz detector**

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