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TECHNICAL PROGRAM

Photonics Asia 2021

TECHNICAL PROGRAM

10–12 October 2021
Nantong International Convention
& Exhibition Center (NTICEC)
Nantong, Jiangsu, China

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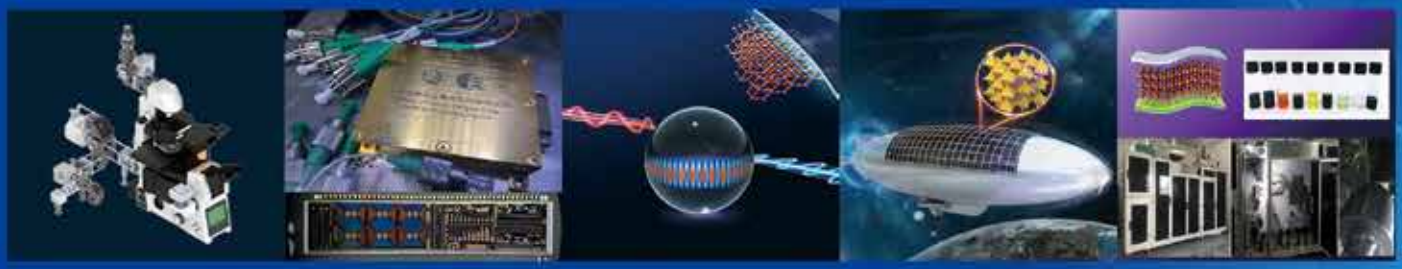
北京大学长三角光电科学研究院
Peking University Yangtze Delta Institute of Optoelectronics

Peking University Yangtze Delta Institute of Optoelectronics (PKU-YDIOE) is a newly established innovative R&D institution jointly founded by Peking University and the Nantong Municipal Government. It was inaugurated in November 2019, located at Zilang Science and Technology Park in Nantong, Jiangsu Province, China.

PKU-YDIOE is committed to carry out innovative research, develop disruptive technologies, promote translation science, incubate high-tech enterprises, and cultivate top talented engineers in the field of optics and optoelectronics. By successfully building comprehensive core facilities and instrumental infrastructures to support diverse optical and photonic research over the past two years, PKU-YDIOE has strived to provide the state of the art science and technology platform for the best research teams.



The layout of PKU-YDIOE consists of a Frontier Innovation Center in Peking University and a Translational R&D Center at the main site in Nantong. Being the core technical section, the Translational R&D Center plans to build 10-15 laboratories in 5 years. Currently, there are 5 established labs, including High Resolution Microscopic Imaging, Photonic Chip and Information System, Micro-Nano Optical Precision Measurement & Quantum Sensing, Optoelectronic Energy Technology, and Polymer Optoelectronic Printing. As the main body of our core facility, a center for micro-nano fabrication and characterization is under construction. Focused in the field of optics and optoelectronics, PKU-YDIOE aims to become one of the world's leading institutions in translational R&D.

With the rapid growth of PKU-YDIOE, we hereby cordially invite global outstanding talents to join us in building together an innovation platform with global influence in optoelectronic research and industrial development.

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Welcome

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Asia's annual international symposium for the discussion of new developments in advanced optics and photonics technologies

10–12 October 2021
Nantong International Convention
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Nantong, Jiangsu, China

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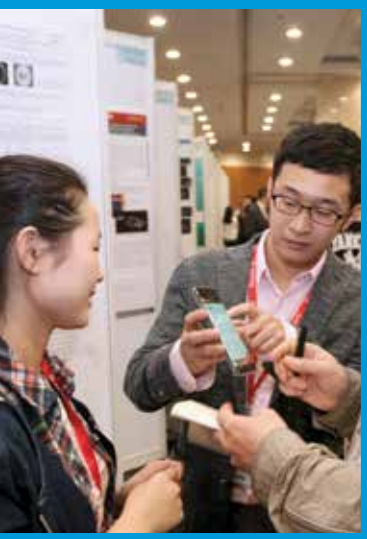

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The Chinese Optical Society (COS) was founded in 1979 as a nongovernmental organization of scientific and technological workers in the field of optics and optical engineering. COS was organized to advance the technology development of optics and promote the communication of scientists, engineers, educators and students. At present, the Society has 21 specialized committees and 7 working committees with more than 15,000 individual members.

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Welcome to SPIE/COS Photonics Asia 2021

We are happy to have the opportunity to be gathering with you — in person and online.

You'll be experiencing three days of thought-provoking technical sessions and plenary talks as we bring the community together again. You will learn from the experiences and insights of world experts, researchers, and innovators discussing advancements and the latest research in biomedical optics, advanced optical imaging, quantum and nonlinear optics, laser processing, plasmonics, and holography.

Your work is important. We appreciate your participation as we continue to enhance the future of optics and photonics research.

With much appreciation,

On behalf of your 2021 SPIE/COS Photonics Asia General Chairs

David Andrews
SPIE 2021 President, Univ. of East Anglia, (UK)

Qihuang Gong
COS 2021 President, Peking University (China)

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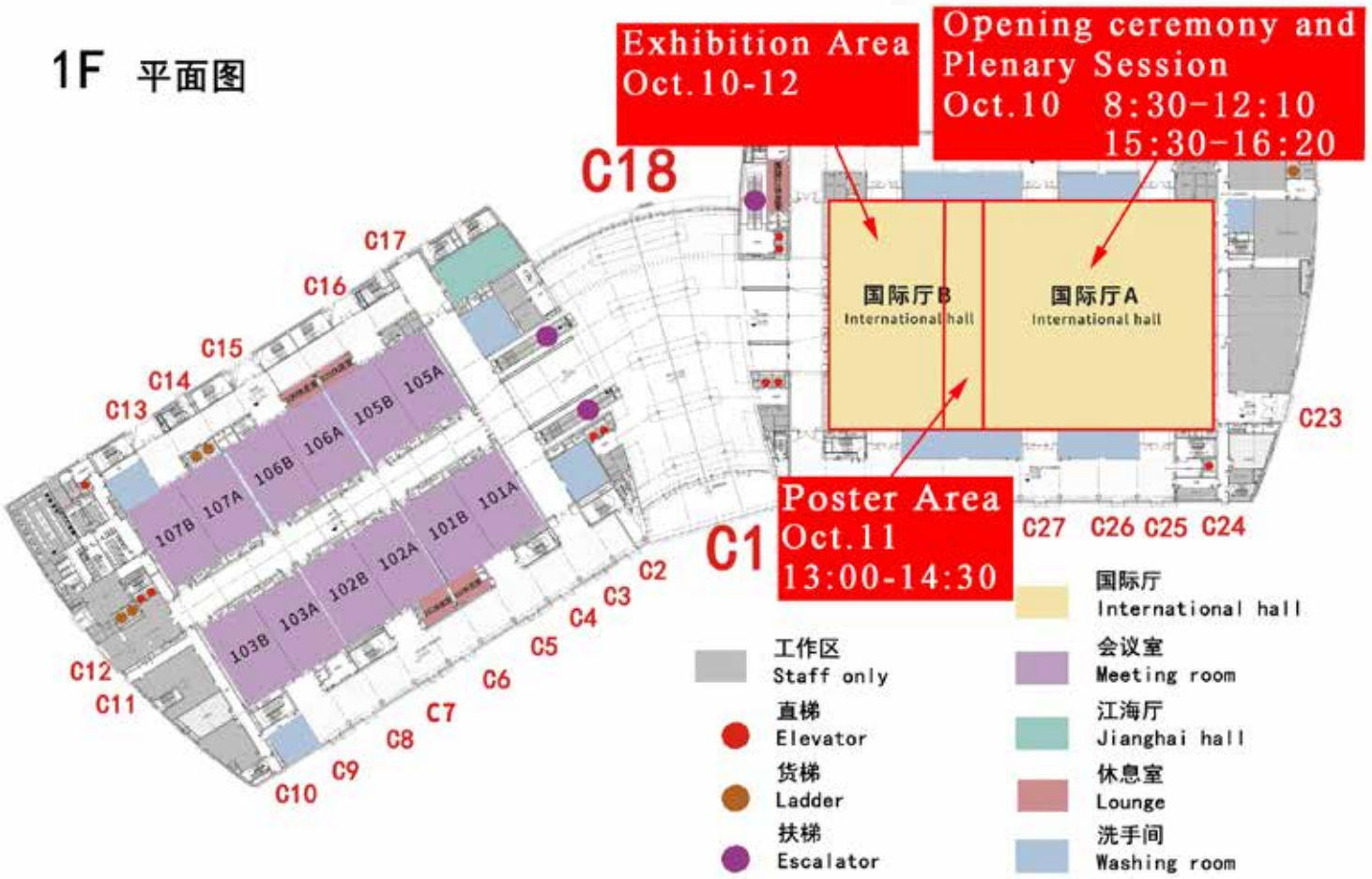
1F Conference Area Floor Plan



CONF #	CONF TITLE	ROOM ASSIGNMENT
	OPENING CEREMONY AND PLENARY SESSION	International Hall A
11890	Advanced Lasers, High-Power Lasers, and Applications XII	Room 209
11891	Semiconductor Lasers and Applications XI	Room 205
11892	Advanced Laser Processing and Manufacturing V	Room 206
11893	Photonics for Energy	Room 106B
11894	Optoelectronic Devices and Integration X	Room 101B
11895	Optical Design and Testing XI	Room 207
11896	Advanced Optical Imaging Technologies IV	Eoom 103A
11897	Optoelectronic Imaging and Multimedia Technology VIII	Room 101B
11898	Holography, Diffractive Optics, and Applications XI	Room 106A
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11901	Advanced Sensor Systems and Applications XI	Room 103B
11902	Real-time Photonic Measurements, Data Management, and Processing VI	Room 102A
11903	Nanophotonics and Micro/Nano Optics VII	Room 107B
11904	Plasmonics VI	Room 102B
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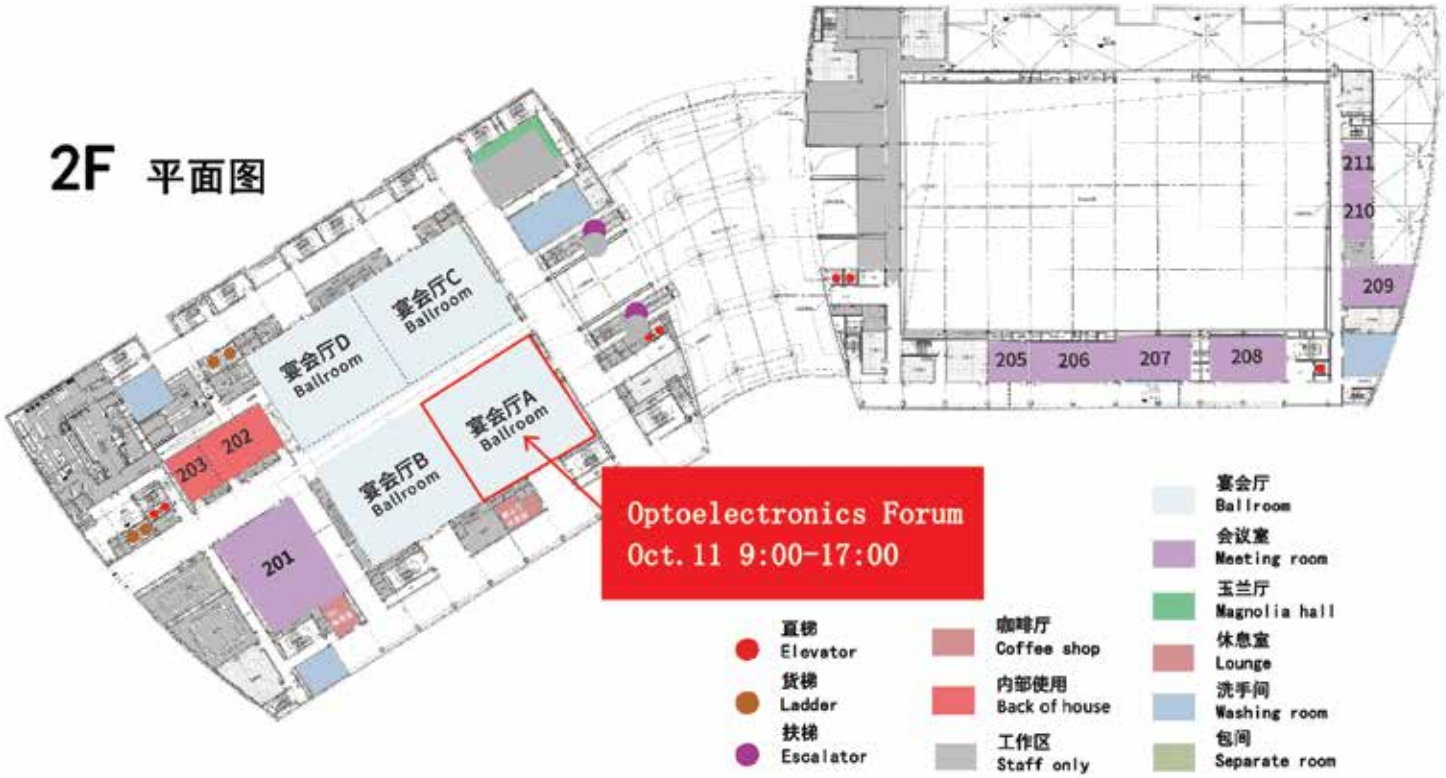
11906	Infrared, Millimeter-Wave, and Terahertz Technologies VIII	Room 105B

NANTONG INTERNATIONAL CONVENTION & EXHIBITION CENTER (NTICEC)

2F Conference Area Floor Plan



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Opening Ceremony and Plenary Session I

Sunday 10 October 2021 · 09:00–12:00
Location: International Hall A

9:00: **Opening Ceremony**

9:20: **Awards and Recognition**

9:30: **Low-Cost Optical Technologies to Improve Global Health Equity: Examples from Newborn Health, Women's Health, and COVID-19**

Remote Presenter

Rebecca Richards-Kortum, Director, Rice 360° Institute for Global Health Technologies (United States) and Rice Univ. (United States)

Abstract: This talk will examine the challenges of designing and translating new low-cost optical technologies to improve global health equity, drawing from examples to improve newborn survival in African hospitals, to improve early detection of cervical cancer for women in Texas and Latin America, and to improve point-of-care diagnosis of COVID-19. The talk will summarize lessons learned to increase the diversity of innovation teams, and to increase the impact and sustainability of the resulting innovations.

Biography: **Rebecca Richards-Kortum,** Ph.D. is the Rice University Malcolm Gillis University Professor of Bioengineering, the Director of Rice 360° Institute for Global Health, and serves as the special advisor to the Provost on health-related research and educational initiatives. Her research has been instrumental in improving early detection of cancers and other diseases, especially in low-resources settings. She is currently working with colleagues and undergraduate students to develop a Nursery of the Future to provide technologies necessary to reduce neonatal death in sub-Saharan Africa to rates equivalent to the United States.

Richards-Kortum's research has led to the development of 40 patents. She is author of the textbook Biomedical Engineering for Global Health (Cambridge University Press, 2010), more than 230 refereed research papers and 11 book chapters. Her teaching programs, research and collaborations have been supported by generous grants from the National Cancer Institute, National Institutes of Health (with more NIH grants than any other Rice professor), National Science Foundation, U.S. Department of Defense, Howard Hughes Medical Institute, Bill & Melinda Gates Foundation, Whitaker Foundation, and the Virginia and L.E. Simmons Family Foundation.

She is a member of numerous academic associations including the National Academy of Sciences, the National Academy of Engineering and the American Academy of Arts and Sciences. As a member of both the National Academy of Sciences and the National Academy of Engineering, she has the rare distinction of dual membership in the National Academies. In 2016, The American Institute for Medical and Biomedical Engineering (AIMBE) presented its highest honor, the Pierre Galletti Award to Dr. Richards-Kortum. In 2008, she was named a Howard Hughes Medical Institute Professor and subsequently received a grant for the undergraduate global health program at Rice. This program won the Science Prize for Inquiry-Based Instruction from Science magazine and the Lemelson-MIT Award for Global Innovation.

10:10: **Tea/Coffee Break**

10:40: **High-quality Electron Beams and Free-Electron Lasing Based on Laser-Wakefield Accelerator**

Wentao Wang, State Key Laboratory of High Field Laser Physics (China), CAS Center for Excellence in Ultra-intense Laser Science (China) and Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China)

Abstract: X-ray free-electron lasers can generate intense and coherent radiation at wavelengths down to the sub-ångström region and have become indispensable tools for applications in structural biology and chemistry, among other disciplines. Several X-ray free-electron laser facilities are in operation; however, their requirement for large, high-cost, state-of-the-art radio-frequency accelerators has led to great interest in the development of compact and economical accelerators. Laser-wakefield accelerators can sustain accelerating gradients more than three orders of magnitude higher than those of radio-frequency accelerators, and are regarded as an attractive option for driving compact X-ray free-electron lasers. However, the realization of such devices remains a challenge owing to the relatively poor quality of electron beams that are based on a laser-wakefield accelerator. After ten years of effort, we present an experimental demonstration of undulator radiation amplification in the exponential-gain regime by using electron beams based on a laser-wakefield accelerator. The amplified undulator radiation, which is typically centred at 27 nanometres and has a maximum photon number of around 10^{10} per shot, yields a maximum radiation energy of about 150 nanojoules. The results constitute a proof-of-principle demonstration of free-electron lasing using a laser-wakefield accelerator, and pave the way towards the development of compact X-ray free-electron lasers based on this technology with broad applications. In the future, a laboratory-scale, ultra-brilliant FEL (around 10 m in size), with the advantages of low-cost (approximately US$5 million), high-temporal resolution (femtosecond-level), high-resolution (nanometre-level), and ultra-high precision timing control (less than 1 fs), could gain popularity.

Biography: **Wentao Wang** is a professor of Shanghai Institute of Optics and Machinery, Chinese Academy of Sciences. His research interests include laser-wakefield electron accelerator and compact radiation sources, with a preference for experimental physics. He and his colleagues have published more than 50 papers in Nature, Physical Review Letters and others. He was awarded 2016 China Optical Important Achievement Award, 2019 Excellent Member of Youth Innovation Promotion Association, CAS, and other honors.

11:20: **Advances of Perovskite Solar Cell Technology**

Rui Zhu, Peking University (China)

Abstract: Perovskite solar cells have attracted tremendous attention in recent years due to the high device performance and the superior optoelectronic properties of perovskite materials. In this talk, I will give an introduction about the advances of perovskite solar cells. Then, I will present our efforts on improving the device performance and understanding the device physics of perovskite solar cells. In addition, I will also discuss the advantages of perovskite solar cells for space aircraft application. We have some preliminary efforts of sending the perovskite solar cells into near space. I will share our view about the exciting possibilities for perovskite solar cell technology.

Biography: **Rui Zhu** has been focusing on the research of novel optoelectronic materials and device physics. Specifically, he is working on next-generation solar cells, such as perovskite solar cells, organic solar cells. He received his B.S. degree from Nanjing University in 2003 and Ph.D. degree from Fudan University in 2008, working on organic light-emitting materials and devices. From 2007 to 2009, he worked on solid-state dye-sensitized solar cells and semiconducting metal oxide nanowires at the National University of Singapore as a research fellow. He then joined University of California, Los Angeles as a postdoctoral researcher. Since 2013, he has been working at Peking University as a tenured-tracked associate professor in the School of Physics. In 2019, he was promoted to a tenured faculty position. He has authored more than 90 papers in Science, Nature Reviews Materials, Nature Photonics, Nature Energy, Nature Communications, and Advanced Materials series. He was granted by the Outstanding Youth Foundation from National Natural Science Foundation of China.

Plenary Session II

Sunday 10 October 2021 · 15:30–16:20
Location: International Hall A

15:30: Welcome and Opening Remarks

15:35: The UK National Quantum Technology Programme

Remote Presenter

Peter L. Knight, Blackett Lab., Imperial College London (United Kingdom) and UK National Quantum Technology Strategic Advisory Board for UKRI (United Kingdom)

Abstract: The UK through a mix of government and industry funding has committed more than £1Bn over 10 years to a coordinated programme in quantum technology. Seven years into this programme I will describe here how we got there, and our goals for the future. The UK National Quantum Technology Programme has induced a step change in the UK's capabilities for pushing forward a new sector in future information technologies. I describe how the programme arose and the activities it supported and influenced to deliver these new capabilities, building on a first phase almost £480M investment across several UK government agencies. The UK programme is now in its second phase, with a further substantial investment by UK government and global industries in the UK making a total of over £1Bn. I will describe our plans for ensuring the advanced quantum science and demonstrator platforms in imaging, sensing, communications and computing developed over the past seven years will drive the formation of the QT sector and embed quantum tech in a broad range of industries.

Biography: **Sir Peter Knight** is a British physicist, professor of quantum optics and senior research investigator at Imperial College London, and principal of the Kavli Royal Society International Centre. He is a leading academic in the field of quantum optics and is the recipient of several major awards including the Royal Medal from the Royal Society and the Thomas Young Medal and Prize from the Institute of Physics. He is a former president of the Institute of Physics and the Optical Society of America, the first non North American-based person to take the position. He is described as "one of the UK's most influential scientists and leaders of scientific policy" by his peers.

16:05: **Question and Answer with Sir Peter Knight**

Poster Session

Monday 11 October 2021 · 13:00–14:30
Location: International Hall B

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

Poster authors can set up presentations between 10:00 and 13:00. Posters that are not set up by 13:00 will be considered a No-Show. Poster presentation guidelines and setup instructions can be viewed at https://spie.org/PA/poster-presentation-instructions.

DAILY CONFERENCE SCHEDULE

SUNDAY	MONDAY	TUESDAY
Conf. 11890 **Advanced Lasers, High-Power Lasers, and Applications XII** (Jiang, Hartl, Liu), 13–15		
	Conf. 11891 **Semiconductor Lasers and Applications XI** (Li, Hofmann, Su), 16–17	
	Conf. 11892 **Advanced Laser Processing and Manufacturing V** (Xiao, Hong, Yao, Sano), 18–19	
Conf. 11893 **Photonics for Energy** (Zhu, Stranks, Wang), 20–21		
	Conf. 11894 **Optoelectronic Devices and Integration X** (Zhang, Li, Yu, Zhang), 22–23	
Conf. 11895 **Optical Design and Testing XI** (Wang, Kidger, Matoba, Wu), 24–26		
Conf. 11896 **Advanced Optical Imaging Technologies IV** (Yuan, Carney, Shi), 27–28		
Conf. 11897 **Optoelectronic Imaging and Multimedia Technology VIII** (Dai, Shimura, Zheng), 29–30		
Conf. 11898 **Holography, Diffractive Optics, and Applications XI** (Sheng, Zhou, Cao), 31–33		
	Conf. 11899 **Optical Metrology and Inspection for Industrial Applications VIII** (Han, Ehret, Chen), 34–35	
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	Conf. 11903 **Nanophotonics and Micro/Nano Optics VII** (Zhou, Wada, Tong), 45–46	
Conf. 11904 **Plasmonics VI** (Fang, Tanaka), 47–48		
	Conf. 11905 **Quantum and Nonlinear Optics VIII** (He, Kim, Li), 49–50	
Conf. 11906 **Infrared, Millimeter-Wave, and Terahertz Technologies VIII** (Zhang, Zhang, Tani), 52–54		
	POSTER SESSION · 13:00–14:30	

NOTES ON THE PROGRAM

This printed program is current as of 9 September. Find the latest information at spie.org/PA or via the SPIE Conferences mobile app. In the conference program pages that follow you will find:

1) in-person presentations each listed with its scheduled presentation time
2) remote presentations listed with "ON DEMAND" instead of a time.

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Advanced Lasers, High-Power Lasers, and Applications XII

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

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); **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); **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); **Robert F. Walter,** Walter Critical Technologies (United States); **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); **Shou-huan Zhou,** Sichuan Univ. (China)

SUNDAY 10 OCTOBER

OPENING CEREMONY AND PLENARY SESSION I

LOCATION: INTERNATIONAL HALL A . . . . . SUN 9:00 TO 12:00

9:00: Opening Ceremony

9:20: Awards and Recognition

9:30: **Low-cost optical technologies to improve global health equity: examples from newborn health, women's health, and COVID-19** *(Plenary)*, Rebecca R. Richards-Kortum, Director, Rice 360 Institute for Global Health Technologies (United States) and Rice Univ. (United States). . . . . [11900-501]

Tea/Coffee Break . . . . . .Sun 10:10 to 10:40

10:40: **High-quality electron beams and free-electron lasing based on laser-wakefield accelerator** *(Plenary)*, Wentao Wang, State Key Lab. of High Field Laser Physics (China) and CAS Ctr. for Excellence in Ultra-intense Laser Science (China) and Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China) . . . . . [11890-502]

11:20: **Advances of perovskite solar cell technology** *(Plenary)*, Rui Zhu, Peking Univ. (China) . . . . . [11893-503]

Lunch Break . . . . . Sun 12:00 to 13:30

SESSION 1

LOCATION: ROOM 209 . . . . . SUN 13:30 TO 15:10

Ultra-Intense/High-Power Lasers I

Session Chair: **Xiaoyan Liang,** Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China)

13:30: **Recent progress in high-power pre-chirp managed Yb-fiber amplifiers** *(Invited Paper)*, Guoqing Chang, Chinese Academy of Sciences (China); Zhiyi Wei, Institute of Physics (China) . . . . . [11890-1]

14:00: **Mid-infrared high-power ultrafast fluoride fiber laser: progress and prospect** *(Invited Paper)*, Guoqiang Xie, Zhipeng Qin, Yicheng Zhou, Shanghai Jiao Tong Univ. (China) . . . . . [11890-2]

14:30: **Single-shot fourth-order auto-correlator**, Peng Wang, Xiong Shen, Jun Liu, Shanghai Institute of Optics and Fine Mechanics (China) . . . [11890-3]

14:50: **Influencing factors of contact angle method for surface cleaning of metal materials in large laser installations**, Yilan Jiang, Guorui Zhou, Xinxiang Miao, Longfei Niu, China Academy of Engineering Physics (China). . . . . [11890-4]

Tea/Coffee Break . . . . . .Sun 15:10 to 15:30

PLENARY SESSION II

LOCATION: INTERNATIONAL HALL A . . . . . SUN 15:30 TO 16:20

15:30: Welcome and Introduction

Q&A period will follow after the talk

15:35: **The UK National Quantum Technology Programme** *(Plenary)*, Peter L. Knight, Blackett Lab., Imperial College London (United Kingdom) and UK National Quantum Technology Strategic Advisory Board for UKRI (United Kingdom). . . . . [11905-504]

Tea/Coffee Break . . . . . Sun 16:20 to 16:30

SESSION 2

LOCATION: ROOM 209 . . . . . SUN 16:30 TO 17:40

Ultra-Intense/High-Power Lasers II

Session Chair: **Jin Woo Yoon,** Gwangju Institute of Science and Technology (Korea, Republic of)

16:30: **Coherent beam combining of multi-femtosecond laser pulse beam** *(Invited Paper)*, Xiaoyan Liang, Shanghai Institute of Optics And Fine Mechancis (China) . . . . . [11890-5]

17:00: **Wavefront aberration mitigation with adaptive distributed aperture fiber array lasers**, Jinhu Long, Kaikai Jin, Tianyue Hou, Rongtao Su, Yanxing Ma, Pengfei Ma, Jian Wu, Pu Zhou, National Univ. of Defense Technology (China). . . . . [11890-6]

17:20: **Particle cleanliness control on the surface of large-aperture reflector**, Longfei Niu, Yilan Jiang, Guorui Zhou, Xinxiang Miao, Caizhen Yao, Haibing Lv, China Academy of Engineering Physics (China) . . . . . [11890-7]

ON DEMAND: **Generation of the laser intensity exceeding 10^{23} W/cm^2** *(Invited Paper)*, Jin Woo Yoon, Il Woo Choi, Jae Hee Sung, Yeong Gyu Kim, Gwangju Institute of Science and Technology (Korea, Republic of); Hwang Woon Lee, Institute for Basic Science (Korea, Republic of); Seong Ku Lee, Chang Hee Nam, Gwangju Institute of Science and Technology (Korea, Republic of) . . . . . [11890-8]

MONDAY 11 OCTOBER

SESSION 3

LOCATION: ROOM 209 . . . . . MON 8:30 TO 10:10

Fiber/Solid Lasers I

Session Chair: **Guoqing Chang,** Institute of Physics, Chinese Academy of Sciences (China)

8:30: **Single-frequency fiber amplifiers for quantum technology** *(Invited Paper)*, Yan Feng, Shanghai Institute of Optics and Fine Mechanics (China). . . . . [11890-9]

9:00: **The rising performance of low-quantum-defect fiber lasers** |*(Invited Paper)*, Pu Zhou, Jiangming Xu, Jun Ye, Yang Zhang, Xiaoya Ma, Hanshuo Wu, Hu Xiao, Jinyong Leng, Tianfu Yao, Liangjin Huang, Zhiyong Pan, National Univ. of Defense Technology (China) . . . . . [11890-10]

9:30: **Fluoride crystal-based direct AlGaAs diode-pumped 2.1μm laser**, Haizhou Huang, Jianhong Huang, Zixiong Lin, Jing Deng, Lixia Wu, Wenxiong Lin, Fujian Institute of Research on the Structure of Matter (China). . . . . [11890-11]

9:50: **Design of III-V sub-micron lasers with reversed ridge waveguides on patterned SOI/Si substrates**, Zhengxia Yang, Wenyu Yang, Institute of Semiconductors (China) and Univ. of Chinese Academy of Sciences (China); Mengqi Wang, Xuliang Zhou, Institute of Semiconductors (China); Hongyan Yu, Yejin Zhang, Jiao-Qing Pan, Institute of Semiconductors (China) and Univ. of Chinese Academy of Sciences (China) . . . . . [11890-12]

ON DEMAND: **Self-sweeping Er-doped ring fiber laser,** Nikita R. Poddubrovskii, Ivan A. Lobach, Sergei I. Kablukov, Institute of Automation and Electrometry of the SB (Russian Federation) . . . . . [11890-13]

Tea/Coffee Break . . . . . Mon 10:10 to 10:40

SESSION 4

LOCATION: ROOM 209 . . . . . MON 10:40 TO 11:50

Fiber/Solid Lasers II

Session Chair: **Guoqiang Xie,** Shanghai Jiao Tong Univ. (China)

10:40: **High-power broadband fiber-comb based on a pre-chirped-management self-similar amplifier** *(Invited Paper)*, Wenxue Li, Daping Luo, East China Normal Univ. (China) . . . . . [11890-14]

11:10: **A simple O-shaped cylinder fiber laser without inter-cladding-power-strippers**, Donglin Yan, Chao Guo, Pengfei Zhao, Qiang Shu, Rumao Tao, Honghuan Lin, Jianjun Wang, Ruoyu Liao, China Academy of Engineering Physics (China). . . . . [11890-15]

11:30: **Dual-wavelength and wavelength-tunable passively Q-switched 3μm fiber laser based on a bulk $PtSe_2$**, Shurong Jiang, Univ. of Electronic Science and Technology of China (China) and Sichuan Univ. (China); Chen Wei, Le Zheng, Hongrong Zhou, Univ. of Electronic Science and Technology of China (China); Han Zhang, Jing Zhang, Sichuan Univ. (China); Yong Liu, Univ. of Electronic Science and Technology of China (China). . . . . [11890-16]

Lunch Break . . . . . Mon 11:50 to 13:30

ON DEMAND: **Investigation of photodarkening in Yb-doped fibers with fluorescence spectra** *(Invited Paper)*, Ji Won Kim, J. S. Park, E. J. Park, Y. J. Oh, Hanyang Univ. (Korea, Republic of); Hoon Jeong, Korea Institute of Industrial Technology (Korea, Republic of). . . . . [11890-17]

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

A dual-wavelength laser at 1064 nm and 1080 nm with tunable power ratio by varying the pump wavelength, Xianzhong Zhang, Kai Zhong, Hongzhan Qiao, Yizhe Zheng, Fangjie Li, Degang Xu, Jianquan Yao, Tianjin Univ. (China) . . . . . [11890-35]

Q-switched and mode-locked YVO_4/Nd:YVO_4/YVO_4 self-Raman first-Stokes laser, Siping Lian, Jiahao Guo, Guangxi Normal Univ. (China); Yongzhang Chen, Shenzhen Technology Univ. (China); Jinchao Deng, Shenzhen Univ. (China); Yongqin Yu, Dezhi Liang, Yufeng Zhang, Chenlin Du, Shenzhen Technology Univ. (China); Junhui Hu, Guangxi Normal Univ. (China); Haibing Xiao, Shenzhen Institute of Information Technology (China) [11890-36]

5 kW monolithic fiber laser oscillator with ring beam output employing bidirectional-pump scheme, Peng Wang, Baolai Yang, Hanwei Zhang, Xiaoming Xi, Chen Shi, Xiaolin Wang, Xiaojun Xu, National Univ. of Defense Technology (China). . . . . [11890-37]

Diamond Raman laser emitting at 2.91 μm, Zhenhua Shao, Fudan Univ. (China); Xuanxi Li, Jiangsu Normal Univ. (China); Manman Ding, Fudan Univ. (China); Deyuan Shen, Jiangsu Normal Univ. (China); Heyuan Zhu, Fudan Univ. (China). . . . . [11890-38]

Widely-tuned longwave mid-infrared optical parametric oscillator based on $BaGa_4Se_7$ crystal, Degang Xu, Jiaxin Zhang, Yuye Wang, Tianjin Univ. (China); Jiyong Yao, Yangwu Guo, Technical Institute of Physics and Chemistry (China); Kai Chen, Chao Yan, Jianquan Yao, Tianjin Univ. (China). . . [11890-39]

The effect of ultra-short laser pulse on photoacoustic signal based on finite element analysis, Jiahao Zeng, Xianlin Song, Nanchang Univ. (China). . . . . [11890-40]

TG-FASI for broad spectral range few-cycle laser pulse characterization, Qi Kuang, Shanghai Univ. (China) and Shanghai Institute of Optics and Fine Mechanics (China); Xiong Shen, Jun Liu, Shanghai Institute of Optics and Fine Mechanics (China) and Ctr. of Materials Science and Optoelectronics Engg, Univ. of Chinese Academy of Science (China) . . . . . [11890-41]

Beam-smoothing-based pulse compressor for achieving high-energy PW laser pulse, Shuman Du, Xiong Shen, Jun Liu, Shanghai Institute of Optics and Fine Mechanics (China). . . . . [11890-42]

Research on $SO_{2\ 2}$ gas detection in GIS combining interband cascade laser and second harmonic technology, Xiao-zhe Zeng, Henan Relations Co., Ltd. (China) . . . . . [11890-43]

Multi-disciplinary strategies: configurations, optimizations, and products, Hua Liu, Luoyang Electro-optical Equipment Research Institute (China). . . . . [11890-44]

ON DEMAND: **Multimode diode-pumped graded-index fiber Raman laser with pulsed generation in all-fiber scheme**, Alexey G. Kuznetsov, Sergey I. Kablukov, Sergey A. Babin, Institute of Automation and Electrometry of the SB (Russian Federation) . . . . . [11890-45]

ON DEMAND: **Mode decomposition of output beam in LD-pumped graded-index fiber Raman laser**, Denis S. Kharenko, Institute of Automation and Electrometry of the SB (Russian Federation) and Novosibirsk State Univ. (Russian Federation); Mikhail D. Gervaziev, Novosibirsk State Univ. (Russian Federation) and Institute of Automation and Electrometry of the SB (Russian Federation); Alexey Kuznetsov, Institute of Automation and Electrometry of the SB (Russian Federation); Stefan Wabnitz, Novosibirsk State Univ. (Russian Federation) and Sapienza Univ. di Roma (Italy); Evgeniy V. Podivilov, Sergey A. Babin, Institute of Automation and Electrometry of the SB (Russian Federation) and Novosibirsk State Univ. (Russian Federation) . . . . . [11890-46]

SESSION 5

LOCATION: ROOM 209 . . . . . MON 14:30 TO 16:20

GaS Lasers and Others

Session Chairs: **Ji Won Kim,** Hanyang Univ. (Korea, Republic of); **Huailiang Xu,** Jilin Univ. (China)

14:30: **Air Lasing: current status and future opportunities** *(Invited Paper)*, Huailiang Xu, Jilin Univ. (China) . . . . . [11890-18]

15:00: **Investigation of a new kind of gas-flowing diode pumped**, You Wang, Guofei An, Jiao Yang, Jiawei Guo, Qing Luo, Hongyuan Wang, Feng Yang, Southwest Institute of Technical Physics (China) . . . . . [11890-19]

15:20: **Simulation analysis of photoacoustic signal Detection of micro-ring resonator based on COMSOL**, Xianlin Song, Ao Teng, Nanchang Univ. (China). . . . . [11890-20]

15:40: **Study on a gas-flowing diode-pumped cesium laser**, You Wang, Jiao Wang, Guofei An, Jiawei Guo, Qing Luo, He Cai, Hongyuan Wang, Feng Yang, Southwest Institute of Technical Physics (China). . . . . [11890-21]

16:00: **Sensing of airborne molecular contaminants based on Sagnac microfiber structure**, Guorui Zhou, Siheng Xiang, Longfei Niu, Yilan Jiang, Xinxiang Miao, China Academy of Engineering Physics (China) . . . . [11890-22]

ON DEMAND: **Vortex microlaser with ultrafast tunability,** Zhifeng Zhang, Xingdu Qiao, Bikashkali Midya, Kevin Liu, Haoqi Zhao, Univ. of Pennsylvania (United States); Jingbo Sun, Duke Univ. (United States); Tianwei Wu, Univ. of Pennsylvania (United States); Danilo Pires, Duke Univ. (United States); Wenjing Liu, Zihe Gao, Ritesh Agarwal, Univ. of Pennsylvania (United States); Josep Jornet, Northeastern Univ. (United States); Stefano Longhi, Politecnico di Milano (Italy) and Instituto de Fisica Interdisciplinar y Sistemas Complejos (Spain); Natalia Litchinitser, Duke Univ. (United States); Liang Feng, Univ. of Pennsylvania (United States) . . . . . [11890-23]

ON DEMAND: **Electro-optical modulator as controlled spark pre-ionizer for CO_2-TEA laser pulse shutter**, Taieb Gasmi, Saint Louis Univ. - Madrid Campus (Spain) . . . . . [11890-24]

TUESDAY 12 OCTOBER

SESSION 6

LOCATION: ROOM 209 . . . . . TUE 8:50 TO 10:00

Fiber/Solid Lasers III

Session Chair: **Fengqiu Wang,** Nanjing Univ. (China)

8:50: **Controlled nonlinearity in the high-power fiber femtosecond laser** *(Invited Paper)*, Minglie Hu, Tianjin Univ. (China). . . . . [11890-25]

9:20: **Design and characterization of large-mode-area multi-resonant all-solid photonic bandgap fiber with a 46μm-core diameter**, Xiao Chen, Liangjin Huang, Huan Yang, Xiaoming Xi, Yi An, Zhiping Yan, Zhiyong Pan, Pu Zhou, National Univ. of Defense Technology (China) . . . . . [11890-27]

9:40: **Efficient CW lasing of Tm:Y_2O_3 ceramic in-band pumped at 1620 nm**, Weiwei Huang, Fei Wang, Jun Wang, Deyuan Shen, Dingyuan Tang, Jiangsu Normal Univ. (China). . . . . [11890-28]

Tea/Coffee Break . . . . . Tue 10:00 to 10:20

SESSION 7

LOCATION: ROOM 209 . . . . . TUE 10:20 TO 12:10

Fiber/Solid Lasers IV

Session Chair: **Xueming Liu,** Zhejiang Univ. (China)

10:20: **Extending SESAM technology into the mid-infrared** *(Invited Paper)*, Fengqiu Wang, Nanjing Univ. (China) . . . . . [11890-29]

10:50: **Laser performances of Er-doped Y_2O_3 ceramic at ~3 μm prepared by the co-precipitation process and the solid-state reaction method**, Manman Ding, Fudan Univ. (China); Xuanxi Li, Jun Wang, Dingyuan Tang, Jiangsu Normal Univ. (China); Deyuan Shen, Jiangsu Normal Univ. (China) and Jiangsu Institute of Mid Infrared Laser Technology & Applications (China); Heyuan Zhu, Fudan Univ. (China) . . . . . [11890-30]

11:10: **Thermal effects of diode-end-pumped dual-wavelength solid-state lasers with coaxially arranged dual laser crystals**, Yizhe Zheng, Kai Zhong, Kefei Liu, Hongzhan Qiao, Xianzhong Zhang, Degang Xu, Jianquan Yao, Tianjin Univ. (China) . . . . . [11890-31]

11:30: **MIL-68(Al) for stable watt-level nanosecond mid-infrared Q-switched laser pulses generation**, Le Zheng, Chen Wei, Univ. of Electronic Science and Technology of China (China); Shurong Jiang, Sichuan Univ. (China); Hongrong Zhou, Univ. of Electronic Science And Technology of China (China); Han Zhang, Sichuan Univ. (China); Yong Liu, Univ. of Electronic Science and Technology of China (China). . . . . [11890-32]

11:50: **3.5 μm mid-infrared gain-switched fiber laser**, Shurong Jiang, Sichuan Univ. (China) and Univ. of Electronic Science and Technology of China (China); Chen Wei, Univ. of Electronic Science and Technology of China (China); Le Zheng, Hongrong Zhou, Univ. of Electronic Science and Technology of China (China); Han Zhang, Jing Zhang, Sichuan Univ. (China); Yong Liu, Univ. of Electronic Science and Technology of China (China). . . . . [11890-33]

ON DEMAND: **Self-sweeping Yb-doped fiber laser generating ultra long single-frequency pulses,** Roman V. Drobyshev, Institute of Automation and Electrometry of the SB (Russian Federation); Nikita R. Poddubrovskii, Institute of Automation and Electrometry of the SB (Russian Federation) and Novosibirsk State Univ. (Russian Federation); Ivan A. Lobach, Sergey I. Kablukov, Institute of Automation and Electrometry of the SB (Russian Federation) . . . . . [11890-34]

CONFERENCE 11891 • LOCATION: ROOM 205

Monday–Tuesday 11–12 October 2021 • Proceedings of SPIE Vol. 11891

Semiconductor Lasers and Applications XI

Conference Chairs: **Wei Li,** Institute of Semiconductors, Chinese Academy of Sciences (China); **Werner H. Hofmann,** Technische Univ. Berlin (Germany); **Yikai Su,** Shanghai Jiao Tong Univ. (China)

Program Committee: **Minghua Chen,** Tsinghua Univ. (China); **Xiangfei Chen,** Nanjing Univ. (China); **Nan Chi,** Fudan Univ. (China); **Brian Corbett,** Tyndall National Institute (Ireland); **Dawei Di,** Zhejiang Univ. (China); **Qianggao Hu,** Accelink Technologies Co., Ltd. (China); **Weisheng Hu,** Shanghai Jiao Tong Univ. (China); **Ming Li,** Institute of Semiconductors, Chinese Academy of Sciences (China); **Xianjie Li,** China Electronics Technology Group Corp. (China); **Yong Liu,** Univ. of Electronic Science and Technology of China (China); **Xiaoyu Ma,** Institute of Optics and Electronics, Chinese Academy of Sciences (China); **Frank Hudson Peters,** Tyndall National Institute (Ireland); **Edwin Y. Pun,** City Univ. of Hong Kong (Hong Kong, China); **Hong-Bo Sun,** Tsinghua Univ. (China); **Lijun Wang,** Changchun Univ. of Science and Technology (China); **Shawn Wang,** Luxtera, Inc. (United States); **Yixin Wang,** Institute for Infocomm Research (Singapore); **Guang-Qiong Xia,** Southwest Univ. (China); **Kun Xu,** Beijing Univ. of Posts and Telecommunications (China); **Lianshan Yan,** Southwest Jiaotong Univ. (China); **Jinlong Yu,** Tianjin Univ. (China); **Siyuan Yu,** Univ. of Bristol (United Kingdom); **Li Zeng,** Huawei Technologies Co., Ltd. (China); **Baoping Zhang,** Xiamen Univ. (China); **Guo-yi Zhang,** Peking Univ. (China); **Shangjian Zhang,** Univ. of Electronic Science and Technology of China (China); **Xinliang Zhang,** Wuhan National Research Ctr. for Optoelectronics (China); **Zhiping Zhou,** Peking Univ. (China); **Ning Hua Zhu,** Institute of Semiconductors, Chinese Academy of Sciences (China); **Sha Zhu,** Beijing Univ. of Technology (China); **Xihua Zou,** Southwest Jiaotong Univ. (China)

MONDAY 11 OCTOBER

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

Hybrid integrated modulation bandwidth enhanced laser based on self-injection locking to an external high-Q microring reflector, Shuai Shao, Yunhao Wu, Jiachen Li, Sigang Yang, Hongwei Chen, Minghua Chen, Tsinghua Univ. (China) . . . . . [11891-29]

The wavelength tuning performance of narrow linewidth laser-diode coupled to an external high-Q Si_3N_4 micro-ring resonator, Qi Jing, Jiachen Li, Baoyu Zhang, Yu Li, Sigang Yang, Hongwei Chen, Minghua Chen, Tsinghua Univ. (China) and Beijing National Research Ctr. for Information Science & Technology (China) . . . . . [11891-30]

Hertz-linewidth hybrid integrated laser based on high-Q Si_3N_4 microring reflectors, Jiachen Li, Minghua Chen, Hongwei Chen, Sigang Yang, Beijing National Research Ctr. for Information Science and Technology (China) and Tsinghua Univ. (China). . . . . [11891-31]

Laser phase noise measurement based on modified self-homodyne optical coherent receiver with a Faraday rotating mirror, Jie Chen, Guan Wang, Lingjie Zhang, Yaowen Zhang, Zhiyao Zhang, Yali Zhang, Shangjian Zhang, Yong Liu, Univ. of Electronic Science and Technology of China (China) . . . . . [11891-32]

Characterization of microwave interaction in electroabsorption-modulated DFB lasers, Chao Jing, Yutong He, Yali Zhang, Zhiyao Zhang, Shangjian Zhang, Yong Liu, Univ. of Electronic Science and Technology of China (China) . . . . . [11891-33]

Thermal tuning characteristics of distributed feedback laser with alternating structure of active- and passive-cavity, ChangDa Xu, Ya Jin, Yinfang Chen, Ning Hua Zhu, Institute of Semiconductors (China) . . [11891-34]

Microlens: components to systems, Hua Liu, Luoyang Electro-optical Equipment Research Institute (China). . . . . [11891-35]

A novel optical frequency-hopping scheme based on a dual parallel structure for secure fiber-optic communications, Ya Jin, Yichao Qi, Yinfang Chen, Wei Chen, Ning Hua Zhu, Institute of Semiconductors (China). . . . . [11891-36]

ON DEMAND: **Dynamics of self-injection locked multimode diode laser**, Ramzil R. Galiev, Valery Lobanov, Nikita Kondratiev, Igor Bilenko, Russian Quantum Ctr. (Russian Federation) . . . . . [11891-37]

SESSION 1

LOCATION: ROOM 205 . . . . . MON 14:30 TO 16:00

Applications of Laser Diodes I

Session Chair: **Shangjian Zhang,** Univ. of Electronic Science and Technology of China (China)

14:30: **Optical domain control-based frequency chirped microwave waveform generation and anti-dispersion transmission over optical fiber** *(Invited Paper)*, Sha Zhu, Beijing Univ. of Technology (China) and Institute of Semiconductors (China); Ming Li, Ning Hua Zhu, Wei Li, Institute of Semiconductors (China). . . . . [11891-1]

15:00: **Carrier phase recovery in optical fiber communication systems using high-order modulation formats**, Yunfan Zhang, Tianhua Xu, Jiazheng Ding, Ziyihui Wang, Jian Zhao, Tiegen Liu, Tianjin Univ. (China). . . . . [11891-2]

15:20: **Fiber-optic communication method applied to high-temperature environment**, Yue Wang, Bo Li, Pengfei Liu, Fenghuan Hao, Hangzhou Applied Acoustics Research Institute (China). . . . . [11891-3]

15:40: **High-speed visible-light communication based on a laser diode and 16-QAM-OFDM in the foggy channel**, Pengjiang Qiu, Ganggang Cui, Xiaoli Zhou, Xugao Cui, Pengfei Tian, Fudan Univ. (China) . . . . . [11891-4]

Tea/Coffee Break . . . . . Mon 16:00 to 16:20

SESSION 2

LOCATION: ROOM 205 . . . . . MON 16:20 TO 17:40

Applications of Laser Diodes II

Session Chair: **Shangjian Zhang,** Univ. of Electronic Science and Technology of China (China)

16:20: **Accuracy of EGN model under large bandwidth in optical fiber communication systems**, Zheng Liu, Tianjin Univ. (China); Tianhua Xu, Tianjin Univ. (China) and The Univ. of Warwick (United Kingdom) and Univ. College London (United Kingdom); Yunfan Zhang, Jianzheng Ding, Tiegen Liu, Mupeng Li, Tianjin Univ. (China). . . . . [11891-5]

16:40: **Influence of equalization-enhanced phase noise on digital nonlinearity compensation in optical fiber communication systems**, Jiazheng Ding, Tianjin Univ. (China); Tianhua Xu, Tianjin Univ. (China) and The Univ. of Warwick (United Kingdom) and Univ. College London (United Kingdom); Yunfan Zhang, Zheng Liu, Jian Zhao, Tiegen Liu, Tianjin Univ. (China). . . . . [11891-6]

17:00: **A scheme for generating multi-channel chaotic signals with time-delay signature suppression**, Liang Peng, Fei Wang, Guang-Qiong Xia, Zheng-Mao Wu, Southwest Univ. (China) . . . . . [11891-8]

17:20: **Evaluation of transmission reach and information rates in nonlinear optical fiber communication systems**, Mupeng Li, Tianjin Univ. (China); Tianhua Xu, Tianjin Univ. (China) and The Univ. of Warwick (United Kingdom) and Univ. College London (United Kingdom); Jiazheng Ding, Zheng Liu, Junfeng Jiang, Tiegen Liu, Tianjin Univ. (China). . . . . [11891-9]

TUESDAY 12 OCTOBER

SESSION 3

LOCATION: ROOM 205 . . . . . TUE 8:30 TO 10:00

Semiconductor Lasers I

Session Chair: **Sha Zhu,** Institute of Semiconductors, Chinese Academy of Sciences (China)

8:30: **SOI substrate-based quantum-well nanobeam lasers monolithic integration with silicon photonics** *(Invited Paper)*, Yaoran Huang, Zhaoyu Zhang, The Chinese Univ. of Hong Kong, Shenzhen (China) . . . . . .[11891-10]

9:00: **Iterative learning pre-distortion linearization for hybrid integrated frequency-modulated continuous-wave laser source**, Hongxiang Jia, Liwei Tang, Shuai Shao, Hongwei Chen, Sigang Yang, Minghua Chen, Tsinghua Univ. (China) . . . . . .[11891-11]

9:20: **Low-cost 1.3 µm InGaAlAs/InP laser integrated with laterally tapered SSC in reverse mesa shape**, Xiaobo La, Xuyuan Zhu, Jing Guo, Song Liang, Institute of Semiconductors (China) . . . . . .[11891-12]

9:40: **Structural optimization of reducing the thermal stress and smile in packaging a high-power diode laser array on a microchannel cooler using gold-tin hard solder**, Jingwei Wang, Tuanwei Fu, Dong Hou, Lijun Gao, Chung-en Zah, Xingsheng Liu, Focuslight Technologies, Inc. (China) [11891-13]

Tea/Coffee Break . . . . . .Tue 10:00 to 10:30

ON DEMAND: **High injection current density via Al-graded undoped-AlGaN cladding layer and Al-graded p-AlGaN hole source layer in AlGaN UVB LDs,** Muhammad Ajml Khan, RIKEN Ctr. for Advanced Photonics (Japan). . . . . .[11891-14]

ON DEMAND: **Gain-switched pulses from quantum-dot laser excited state,** Nuran Dogru, Hilal S. Duranoglu Tunc, Gaziantep Üniv. (Turkey); Ali M. Al-Dabbagh, Tishk International Univ. (Iraq) . . . . . .[11891-15]

SESSION 4

LOCATION: ROOM 205 . . . . . .TUE 10:30 TO 11:50

Semiconductor Lasers II

Session Chair: **Sha Zhu,** Institute of Semiconductors, Chinese Academy of Sciences (China)

10:30: **Secure key distribution based on chaos in optically pumped QD spin-polarization- VCSELs**, Yu Huang, Soochow Univ. (China) . . . .[11891-16]

10:50: **VCSEL line-beam module for LiDAR applications**, Yingmin Fan, Dandan Zhou, Hongtao Chong, Bin Zhao, Peng Wang, Ke Yuan, Chung-en Zah, Xingsheng Liu, Focuslight Technologies, Inc. (China) . . . . . .[11891-17]

11:10: **UVC vertical-cavity surface-emitting laser**, Zhongming Zheng, Yang Mei, Hao Long, Xiamen Univ. (China); Jason Hoo, Shiping Guo, Advanced Micro-Fabrication Equipment, Inc. (China); Leiying Ying, Zhiwei Zheng, Baoping Zhang, Xiamen Univ. (China). . . . . .[11891-18]

11:30: **Stability analysis of interband cascade laser subject to optical feedback**, Xumin Cheng, Hong Han, Li Li, Zhi Wei Jia, Taiyuan Univ. of Technology (China). . . . . .[11891-19]

Lunch Break . . . . . Tue 11:50 to 13:20

SESSION 5

LOCATION: ROOM 205 . . . . . .TUE 13:20 TO 15:00

Subsystems Using Laser Diodes I

Session Chair: **Yali Zhang,** Univ. of Electronic Science and Technology of China (China)

13:20: **Self-calibrated electrical spectrum measurement of optical frequency comb based on segmental electro-optic up-conversion** *(Invited Paper)*, Mengke Wang, Yutong He, Ying Xu, Zhao Liu, Yali Zhang, Zhiyao Zhang, Shangjian Zhang, Yong Liu, Univ. of Electronic Science and Technology of China (China) . . . . . [11891-20]

13:50: **Optical frequency comb generation seeded by optical injection** *(Invited Paper)*, Yali Zhang, Guan Wang, Zhiyao Zhang, Shangjian Zhang, Yong Liu, Univ. of Electronic Science and Technology of China (China). . . . . [11891-21]

14:20: **Handwritten numeral recognition utilizing optoelectronic reservoir computing with double reservoir layers**, Wei-Lai Wu, Dian-Zuo Yue, Guang-Qiong Xia, Zheng-Mao Wu, Southwest Univ. (China). . . . . [11891-22]

14:40: **Security-enhanced high-speed messages transmission based on chaos synchronization system with phase modulation and phase-to-intensity conversion**, Jun Wang, Xiao-Dong Lin, Southwest Univ. (China); Yu Liu, Chongqing Univ. of Posts and Telecommunications (China); Zi-Ye Gao, Xi Tang, Qiu-Lan Zheng, Zheng-Mao Wu, Guang-Qiong Xia, Tao Deng, Southwest Univ. (China) . . . . . [11891-23]

Tea/Coffee Break . . . . . .Tue 15:00 to 15:30

SESSION 6

LOCATION: ROOM 205 . . . . . .TUE 15:30 TO 17:10

Subsystems Using Laser Diodes II

Session Chair: **Yali Zhang,** Univ. of Electronic Science and Technology of China (China)

15:30: **Optical frequency comb generation by mutual injection in twin-stripe semiconductor laser**, Ke Yang, Yali Zhang, Shuxu Liao, Guan Wang, Zhiyao Zhang, Shangjian Zhang, Yong Liu, Univ. of Electronic Science and Technology of China (China) . . . . . [11891-24]

15:50: **Random-modulation continuous-wave mid-infrared quantum cascade laser lidar with high-resolution and strong anti-jamming capability**, Hong Han, Zhi Wei Jia, Taiyuan Univ. of Technology (China); K. Alan Shore, Bangor Univ. (United Kingdom); An Bang Wang, Jian Guo Zhang, Taiyuan Univ. of Technology (China) . . . . . [11891-25]

16:10: **Six-primary-laser projection display system compatible with 2D and 3D display**, LiQuan Zhu, Guan Wang, Yuhua Yang, Binghui Yao, Chun Gu, Lixin Xu, Univ. of Science and Technology of China (China) . . . . . [11891-26]

16:30: **Numerical investigation on the frequency-modulated continuous-wave generation based on a semiconductor laser under optical injection from a directly current-modulated semiconductor laser**, Li Zhang, Xiao-Dong Lin, Guang-Qiong Xia, Zheng-Mao Wu, Southwest Univ. (China). . . . . [11891-27]

16:50: **Research on VCSEL transmitter modules for intelligent driving**, Dandan Zhou, Bin Zhao, Yingmin Fan, Hongtao Chong, Gang Wang, Peng Wang, Ke Yuan, Leon Li, Lei Gao, Chung-en Zah, Xingsheng Liu, Focuslight Technologies, Inc. (China) . . . . . [11891-28]

Advanced Laser Processing and Manufacturing V

Conference Chairs: **Rongshi Xiao,** Beijing Univ. of Technology (China); **Minghui Hong,** National Univ. of Singapore (Singapore); **Jianhua Yao,** Zhejiang Univ. of Technology (China); **Yuji Sano,** Institute for Molecular Science (Japan)

Program Committee: **Jing Chen,** Northwestern Polytechnical Univ. (China); **Ting Huang,** Beijing Univ. of Technology (China); **Jian Liu,** PolarOnyx, Inc. (United States); **Tomokazu Sano,** Osaka Univ. (Japan); **Xiahui Tang,** Huazhong Univ. of Science and Technology (China); **Peng Wen,** Tsinghua Univ. (China); **Haibin Zhang,** ESI, Inc. (United States); **Wenwu Zhang,** Ningbo Institute of Materials Technology and Engineering (China); **Jianzhong Zhou,** Jiangsu Univ. (China)

MONDAY 11 OCTOBER

SESSION 1

LOCATION: ROOM 206 . . . . . MON 8:00 TO 10:00

Laser Cladding/Surface Modification and Additive Manufacturing I

Session Chair: **Zhehe Yao,** Zhejiang Univ. of Technology (China)

8:00: **In situ regulation of Laves phase and its cooperative strengthening mechanism with γ" phase in IN718 superalloy fabricated by laser-additive manufacturing** *(Invited Paper)*, Jing Chen, Northwestern Polytechnical Univ. (China) . . . . . [11892-1]

8:30: **Effect of scanning strategy on microstructure and properties of duplex stainless steels fabricated by laser powder bed fusion**, Di Zhang, Central Research Institute of Building and Construction Co., Ltd. of the MCC Group (China); Aobo Liu, Bangzhao Yin, Peng Wen, Tsinghua Univ. (China) . . . . . [11892-2]

8:50: **Shape memory NiTi powders produced by Electrode Induction Melting Gas Atomization (EIGA) method for additive manufacturing**, Junwei Wang, Dingyong He, Xu Wu, Xingye Guo, Zhen Tan, Zheng Zhou, Wei Shao, Beijing Univ. of Technology (China) . . . . . [11892-3]

9:10: **The microstructure evolution and tensile properties of Inconel 718 fabricated by high-deposition-rate laser metal deposition**, Zuo Li, Northwestern Polytechnical Univ. (China) . . . . . [11892-4]

9:30: **The growth characteristics and properties of the composite coating on titanium alloy prepared by laser processing combined with micro-arc oxidation**, Jianhua Yao, Wu Guolong, Wang Ye, Zhejiang Univ. of Technology (China) . . . . . [11892-5]

Tea/Coffee Break . . . . . Mon 10:00 to 10:30

SESSION 2

LOCATION: ROOM 206 . . . . . MON 10:30 TO 12:00

Laser Cladding/Surface Modification and Additive Manufacturing II

Session Chair: **Yue Zhao,** Tsinghua Univ. (China)

10:30: **Effects of ultrasonic vibration on microstructure and crack of laser surface modification** *(Invited Paper)*, Zhehe Yao, Jian Chen, Zhen Wang, Zhenqiang Sun, Jianhua Yao, Zhejiang Univ. of Technology (China) . . . . . [11892-6]

11:00: **The effect of additive manufacturing and subtractive manufacturing interactive inconel 718 matrix temperature state on surface quality**, Yufan Liu, Zifa Xu, Wentai Ouyang, Ningbo Institute of Materials Technology and Engineering (China); Junke Jiao, Yangzhou Univ. (China); Mina Zhang, Qi Zou, Wenwu Zhang, Ningbo Institute of Materials Technology and Engineering (China) . . . . . [11892-7]

11:20: **Grain refinement and improved tensile properties of $Ti_5Al_2Sn_2Zr_4Mo_4Cr$ titanium alloy fabricated by laser solid forming**, Siyu Zhang, Northwestern Polytechnical Univ. (China) . . . . . [11892-8]

11:40: **Effect of heat treatment on microstructure and properties of laser welded AlSi10Mg aluminum alloy fabricated by selective laser melting**, Can Wang, Li Cui, Dingyong He, Beijing Univ. of Technology (China); Qing Cao Sr., Jiangsu Spray Technology Co., Ltd. (China) . . . . . [11892-9]

Lunch Break . . . . . Mon 12:00 to 13:30

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

Study on laser surface hardening process of 30CrMnSiNi2A ultra-high strength steel fabricated by laser deposition manufacturing, Zifa Xu, CNITECH (China) . . . . . [11892-33]

Process parameters and interfacial characterization of Ti/Al multi-material structure fabricated by selective laser melting, Xuping Wu, Dongyun Zhang, Ziming Kang, Tingting Huang, Xingtao Feng, Beijing Univ. of Technology (China) . . . . . [11892-34]

Photon transmission and heat transfer between pulsed laser and human brain using finite element analysis, Jiahao Zeng, Xianlin Song, Nanchang Univ. (China) . . . . . [11892-35]

Rapid two-photon polymerization of arbitrary 3D microstructure with femtosecond laser 3D focal field engineering, Linyu Yan, Dong Yang, Peking Univ. (China); Qihuang Gong, Yan Li, Peking Univ. (China) and Peking Univ. Yangtze Delta Institute of Optoelectronics (China) . . . . . [11892-36]

Study of the temperature distribution of the substrate in the laser cleaning process, Haoran Li, JianGuo Xin, Junli Ma, Ping Fang, Beijing Institute of Technology (China) . . . . . [11892-37]

Improving the strength and ductility of laser cladding manufactured superalloy Inconel718 by laser shock peening, Hongyu Quan, Ningbo Institute of Materials Technology and Engineering (China) . . . . . [11892-38]

Stereo nerve network: systematic construction, computational process, and intelligent manufacturing, Hua Liu, Luoyang Electro-optical Equipment Research Institute (China) . . . . . [11892-39]

Theoretical study of characteristics of laser-drilling with a Gaussian beam and a top-flat beam in time domain, You Wang, Southwest Institute of Technical Physics (China); Hao Xing, Southwest Institute of Technical Physics (China) and Univ. of Electronic Science and Technology of China (China); Weijiang Wang, Ruina Fang, Southwest Institute of Technical Physics (China); Yun Huang, Yunru Fan, Univ. of Electronic Science and Technology of China (China); Ying Zhang, Southwest Institute of Technical Physics (China); Chaoqun Ma, Southwest Institute of Technical Physics (China) and Univ. of Electronic Science and Technology of China (China); Shiheng Zhang, Univ. of Electronic Science and Technology of China (China); Jiao Yang, Qing Luo, Jieping Luo, Southwest Institute of Technical Physics (China) . . . . . [11892-40]

Simulation study on physical features of a silicon substrate during stealth dicing with a constrained interpolation profile procedure, You Wang, Southwest Institute of Technical Physics (China); Yun Huang, Univ. of Electronic Science and Technology of China (China); Hao Xing, Univ. of Electronic Science and Technology of China (China) and Southwest Institute of Technical Physics (China); Jiao Yang, Southwest Institute of Technical Physics (China); Yunru Fan, Univ. of Electronic Science and Technology of China (China); Ruina Fang, Weijiang Wang, Southwest Institute of Technical Physics (China); Shiheng Zhang, Univ. of Electronic Science and Technology of China (China); Chaoqun Ma, Univ. of Electronic Science and Technology of China (China) and Southwest Institute of Technical Physics (China); Ying Zhang, Qing Luo, Southwest Institute of Technical Physics (China); Qiang Zhou, Guangwei Deng, Univ. of Electronic Science and Technology of China (China); Hai-Zhi Song, Univ. of Electronic Science and Technology of China (China) and Southwest Institute of Technical Physics (China) . . . . . [11892-41]

ON DEMAND: **Rational design of OLED devices**, Chengkai Xia, ILWOL ROAD (Korea, Republic of) . . . . . [11892-42]

ON DEMAND: **Ultrashort pulse laser processing of a nodeless antiresonant hollow-core fiber for laser-based gas sensing applications**, Paweł E. Kozioł, Piotr Jaworski, Karol Krzempek, Viktoria Hoppe, Grzegorz Dudzik, Wroclaw Univ. of Science and Technology (Poland); Fei Yu, Dakun Wu, Meisong Liao, Shanghai Institute of Optics and Fine Mechanics (China); Krzysztof Abramski, Wroclaw Univ. of Science and Technology (Poland) . . . . . [11892-43]

SESSION 3

LOCATION: ROOM 206 . . . . . MON 14:30 TO 17:20

Laser Cladding/Surface Modification and Additive Manufacturing III

Session Chair: **Jing Chen,** Northwestern Polytechnical Univ. (China)

14:30: **Control strategy and its mechanism of the liquation cracking induced in laser cladding of nickel-based superalloy with high Ti and Al** *(Invited Paper)*, Yue Zhao, Tsinghua Univ. (China). . . . . [11892-10]

15:00: **Preparation and properties of Mo-62Si-5B pre-alloyed powders for laser cladding**, Ming Jin, Dingyong He, Wei Shao, Zhen Tan, Xingye Guo, Zheng Zhou, Guohong Wang, Xu Wu, Li Cui, Lian Zhou, Beijing Univ. of Technology (China) . . . . . .[11892-11]

15:20: **On the role of energy input in the surface morphology and microstructure during selective laser melting of Inconel 718 alloy**, Min Zheng, Northwestern Polytechnical Univ. (China) . . . . . [11892-12]

Tea/Coffee Break . . . . . Mon 15:40 to 16:00

16:00: **Microstructure characteristics of tungsten with different geometrical morphologies, support structure, and second phase combination fabricated by selective laser melting**, Zhenlu Zhou, Dingyong He, Zhen Tan, Yiming Wang, Zheng Zhou, Xingye Guo, Wei Shao, Li Cui, Guohong Wang, Beijing Univ. of Technology (China); Ying Yang, Beijing Ctr. for Physical and Chemical Analysis (China) . . . . . [11892-13]

16:20: **Laser powder bed fusion of WE43 magnesium alloy porous scaffolds: investigation on densification behavior and dimensional accuracy**, Jinge Liu, Bangzhao Yin, Peng Wen, Tsinghua Univ. (China); Yun Tian, Peking Univ. Third Hospital (China). . . . . .[11892-14]

16:40: **Simulation-assisted investigation on the band formation and microstructural evolution of laser solid formed Ti_6Al_4V blocks**, Guohao Zhang, Northwestern Polytechnical Univ. (China) . . . . . [11892-15]

17:00: **Microstructure and properties evolution of selective laser melting Cu-10Sn alloy with various heat treatment conditions**, Peng Yang, Dingyong He, Zhen Tan, Wei Shao, Hanguang Fu, Zhenlu Zhou, Xiaoya Zhang, Xingye Guo, Beijing Univ. of Technology (China) . . . . . [11892-16]

TUESDAY 12 OCTOBER

SESSION 4

LOCATION: ROOM 206 . . . . . TUE 9:00 TO 10:30

Laser Welding/Joining and Laser Peening I

Session Chair: **Ting Huang,** Beijing Univ. of Technology (China)

9:00: **A mechanism for the microstructure formation in welds of laser welded aluminium-lithium alloy 2A97**, Yingkai Shao, Xiaoyang Li, Beijing Univ. of Technology (China); Li Chen, Enguang He, Beijing Aeronautical Manufacturing Technology Research Institute (China). . . . . [11892-17]

9:20: **Experimental investigation of laser peening effects on tensile properties of AA2195-T6 friction stir welded joints**, Maziar Toursangsaraki, Yongxiang Hu, Jiancheng Jiang, Shanghai Jiao Tong Univ. (China) . [11892-18]

9:40: **Effect of beam shaping on laser joining of CFRP and Al-Li alloy**, Jiejie Xu, Dong Wang, Rongshi Xiao, Ting Huang, Beijing Univ. of Technology (China). . . . . [11892-19]

10:10: **Research on measuring stress of glass welding based on DOAP stokes**, Rong Chen, South China Normal Univ. (China). . . . . [11892-20]

Tea/Coffee Break . . . . . Tue 10:30 to 11:00

ON DEMAND: **Improving fatigue performance of laser-welded 2024-T3 aluminum alloy using dry laser peening** *(Invited Paper),* Tomokazu Sano, Osaka Univ. (Japan) . . . . . [11892-21]

SESSION 5

LOCATION: ROOM 206 . . . . . TUE 11:00 TO 12:00

Laser Welding/Joining and Laser Peening II

Session Chair: **Ting Huang,** Beijing Univ. of Technology (China)

11:00: **Gradient plastic strain, microstructural response, and improvement of mechanical property of mild steel induced by laser cavitation peening**, Jiayang Gu, Chunhui Luo, Xudong Ren, Jiangsu Univ. (China). . . . . [11892-22]

11:20: **Improvement of numerical instabilities in process planning of laser peen forming based on perimeter constraint**, Jiancheng Jiang, Yongxiang Hu, Maziar Toursangsaraki, Shanghai Jiao Tong Univ. (China) . . . . . [11892-23]

11:40: **effect of laser shock peening on corrosion behavior of AZ31B magnesium alloy**, Pengkai Liu, Ningbo Institute of Materials Technology and Engineering (China) . . . . . [11892-24]

Lunch Break . . . . . Tue 12:00 to 13:30

ON DEMAND: **Improvement of residual stress and fatigue properties of high-strength steel by low-pulse energy microchip laser,** Yoshio Mizuta, SANKEN, Osaka Univ. (Japan); Yuji Sano, Institute for Molecular Science, National Institutes of Natural Sciences (Japan); Satoshi Tamaki, LAcubed Co., Ltd. (Japan); Yoshihiro Sagisaka, Hamamatsu Technical Support Ctr., Industrial Research Institute of Shizuoka Prefecture (Japan); Tomoharu Kato, Yoshihiro Sakino, Kindai Univ. (Japan); Tomonao Hosokai, SANKEN, Osaka Univ. (Japan) . . . . . [11892-25]

SESSION 6

LOCATION: ROOM 206 . . . . . TUE 13:30 TO 15:30

Laser Micro-/Nanofabrication and Ultrafast Laser Processing

Session Chairs: **Lisha S. Fan,** Zhejiang Univ. of Technology (China); **Xiaohui Ye,** Shaanxi Univ. of Science & Technology (China)

13:30: **Ultrafast laser fabrication of patterned graphene-based sensors** *(Invited Paper)*, Xiaohui Ye, Shaanxi Univ. of Science & Technology (China). . . . . [11892-26]

14:00: **Helix-based pressure sensor implemented by modified two-photon polymerizations**, Xinggang Shang, Ning Wang, Nanjia Zhou, Min Qiu, Westlake Univ. (China) . . . . . [11892-27]

14:20: **Nonlinearity modulated structure in a type-II lithium niobate waveguide by femtosecond laser direct writing**, Tingge Yuan, Xiongshuo Yan, Yuping Chen, Xianfeng Chen, Shanghai Jiao Tong Univ. (China)[11892-29]

14:40: **Laser-enabled multi-energy processing to grow high-quality boron-doped diamond** *(Invited Paper)*, Lisha Fan, Shuowen Zhang, Qingyu Yan, Qunli Zhang, Zhejiang Univ. of Technology (China); Yongfeng Lu, Univ. of Nebraska-Lincoln (United States); Jianhua Yao, Zhejiang Univ. of Technology (China). . . . . [11892-30]

15:10: **Transient-excited surface effect on the periodic surface structures of silicon induced by femtosecond laser**, Nan Zhang, Nankai Univ. (China). . . . . [11892-31]

ON DEMAND: **Formation of thermochemical laser-induced periodic structures on titanium films in a nitrogen-rich atmosphere,** Kirill Bronnikov, Institute of Automation and Electrometry (Russian Federation) and Novosibirsk State Univ. (Russian Federation); Alexandr Dostovalov, Institute of Automation and Electrometry (Russian Federation) and Novosibirsk State Univ. (Russian Federation); Konstantin Okotrub, Institute of Automation and Electrometry (Russian Federation); Aleksandr Kuchmizhak, Institute for Automation and Control Processes (Russian Federation) and Far Eastern Federal Univ. (Russian Federation); Viktor Korolkov, Sergey Babin, Institute of Automation and Electrometry (Russian Federation) and Novosibirsk State Univ. (Russian Federation) . . . . . [11892-32]

Photonics for Energy

Conference Chairs: **Rui Zhu,** Peking Univ. (China); **Samuel D. Stranks,** Univ. of Cambridge (United Kingdom); **Jianpu Wang,** Nanjing Univ. of Technology (China)

Program Committee: **Tae-Woo Lee,** Seoul National Univ. (Korea, Republic of); **Qihua Xiong,** Tsinghua Univ. (China); **Yabing Qi,** Okinawa Institute of Science and Technology Graduate Univ. (Japan); **Anita Ho-Baillie,** The Univ. of Sydney (Australia); **Osman M. Bakr,** King Abdullah Univ. of Science and Technology (Saudi Arabia); **Sheng Xu,** Univ. of California, San Diego (United States); **Feng Gao,** Linköping Univ. (Sweden); **Jia Zhu,** Nanjing Univ. (China); **Michael Saliba,** Univ. Stuttgart (Germany), Forschungszentrum Jülich (Germany); **Wolfgang R. Tress,** Zurich Univ. of Applied Sciences (Switzerland); **Yuan Yang,** Columbia Univ. (United States); **Haizheng Zhong,** Beijing Institute of Technology (China); **Wei Zhang,** Univ. of Surrey (United Kingdom); **Feng Liu,** Shanghai Jiao Tong Univ. (China); **Hin-Lap Yip,** City Univ. of Hong Kong (Hong Kong, China); **Jingshan Luo,** Nankai Univ. (China); **Zhi-Kuang Tan,** National Univ. of Singapore (Singapore); **Guichuan Xing,** Univ. of Macau (Macao, China)

SUNDAY 10 OCTOBER

OPENING CEREMONY AND PLENARY SESSION I

LOCATION: INTERNATIONAL HALL A . . . . . SUN 9:00 TO 12:00

9:00: Opening Ceremony

9:20: Awards and Recognition

9:30: **Low-cost optical technologies to improve global health equity: examples from newborn health, women's health, and COVID-19** *(Plenary)*, Rebecca R. Richards-Kortum, Director, Rice 360 Institute for Global Health Technologies (United States) and Rice Univ. (United States). . . . . [11900-501]

Tea/Coffee Break . . . . . .Sun 10:10 to 10:40

10:40: **High-quality electron beams and free-electron lasing based on laser-wakefield accelerator** *(Plenary)*, Wentao Wang, State Key Lab. of High Field Laser Physics (China) and CAS Ctr. for Excellence in Ultra-intense Laser Science (China) and Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China) . . . . . [11890-502]

11:20: **Advances of perovskite solar cell technology** *(Plenary)*, Rui Zhu, Peking Univ. (China) . . . . . [11893-503]

Lunch Break . . . . . Sun 12:00 to 13:20

SESSION 1

LOCATION: ROOM 106B . . . . . SUN 13:20 TO 15:20

Photonics for Energy I

Session Chair: **Haiming Zhu,** Zhejiang Univ. (China)

13:20: **Interface energetics in perovskite solar cells** *(Invited Paper)*, Qinye Bao, East China Normal Univ. (China) . . . . . [11893-1]

13:40: **Bi-based lead-free perovskite solar cells** *(Invited Paper)*, Lixin Xiao, Peking Univ. (China) . . . . . [11893-2]

14:00: **Efficient perovskite solar cells with various bandgaps** *(Invited Paper)*, Jingbi You, Institute of Semiconductors (China) . . . . . [11893-3]

14:20: **Ionic liquid-based perovskite solar cells** *(Invited Paper)*, Yonghua Chen, Nanjing Univ. of Technology (China) . . . . . [11893-4]

14:40: **Regulating carrier transport to realize high efficiency perovskite solar cells** *(Invited Paper)*, Mingzhen Liu, Univ. of Electronic Science and Technology of China (China) . . . . . [11893-5]

15:00: **Real-time observation of ion migration in metal halide perovskite and its influence on device stability** *(Invited Paper)*, Cheng Li, Xiamen Univ. (China) . . . . . [11893-6]

Tea/Coffee Break . . . . . .Sun 15:20 to 15:30

PLENARY SESSION II

LOCATION: INTERNATIONAL HALL A . . . . . SUN 15:30 TO 16:20

15:30: Welcome and Introduction

Q&A period will follow after the talk

15:35: **The UK National Quantum Technology Programme** *(Plenary)*, Peter L. Knight, Blackett Lab., Imperial College London (United Kingdom) and UK National Quantum Technology Strategic Advisory Board for UKRI (United Kingdom). . . . . [11905-504]

Tea/Coffee Break . . . . . Sun 16:20 to 16:30

SESSION 2

LOCATION: ROOM 106B . . . . . SUN 16:30 TO 18:10

Photonics for Energy II

Session Chair: **Qinye Bao,** East China Normal Univ. (China)

16:30: **Excitons in 2D lead halide perovskites** *(Invited Paper)*, Haiming Zhu, Zhejiang Univ. (China). . . . . [11893-7]

16:50: **Highly efficient and stable black phase $FAPbI_3$ perovskite solar cells** *(Invited Paper)*, Yiqiang Zhan, Fudan Univ. (China) . . . . . [11893-8]

17:10: **Antimony selenosulfide: an emerging solar material** *(Invited Paper)*, Tao Chen, Univ. of Science and Technology of China (China) . . . . . [11893-9]

17:30: **Highly efficient all-perovskite tandem photovoltaic devices** *(Invited Paper)*, Hairen Tan, Nanjing Univ. (China). . . . . [11893-10]

17:50: **Transfer the carrier transport layers for OPVs/perovskites to crystalline silicon solar cells** *(Invited Paper)*, Xinbo Yang, Soochow Univ. (China). . . . . .[11893-11]

ON DEMAND: **Development of high-performance inverted perovskite solar cells** *(Invited Paper),* Wei Zhang, Univ. of Surrey (United Kingdom). . . . . [11893-12]

MONDAY 11 OCTOBER

SESSION 3

LOCATION: ROOM 106B . . . . . MON 8:30 TO 10:10

Photonics for Energy III

Session Chair: **Yongbo Yuan,** Central South Univ. (China)

8:30: **Identification of embedded nanotwins at c-Si/a-Si:H interface limiting the performance of high-efficiency silicon heterojunction solar cells** *(Invited Paper)*, Yongzhe Zhang, Beijing Univ. of Technology (China). . . . . [11893-13]

8:50: **Fabrication of large-area perovskite solar cells** *(Invited Paper)*, Fuzhi Huang, Wuhan Univ. of Technology (China) . . . . . [11893-14]

9:10: **Suppressing Ionic defect in perovskite single crystals for highly stable optical-electric devices** *(Invited Paper)*, Qingfeng Dong, Jilin Univ. (China). . . . . [11893-15]

9:30: **Improving efficiency and stability of perovskite solar cells enabled by a near-infrared-absorbing moisture barrier** *(Invited Paper)*, Qin Hu, Univ. of Science and Technology of China (China); Wei Chen, The Univ. of Hong Kong (China); Wenqiang Yang, Peking Univ. (China); Yu Li, Univ. of Science and Technology of China (China); Feng Liu, Shanghai Jiao Tong Univ. (China); Zhubing He, Southern Univ. of Science and Technology of China (China); Rui Zhu, Peking Univ. (China); Thomas P. Russell, Lawrence Berkeley National Lab. (United States). . . . . [11893-16]

9:50: **Lattice robustness for highly efficient and stable perovskite solar cells** *(Invited Paper)*, Hua Dong, Jingrui Li, Zhaoxin Wu, Xi'an Jiaotong Univ. (China). . . . . [11893-17]

Tea/Coffee Break . . . . . Mon 10:10 to 10:40

ON DEMAND: **Surface science in metal halide perovskite materials and devices** *(Invited Paper)*, Yabing Qi, Okinawa Institute of Science and Technology Graduate Univ. (Japan). . . . . [11893-18]

SESSION 4

LOCATION: ROOM 106B . . . . . MON 10:40 TO 12:00

Photonics for Energy IV

Session Chair: **Qin Hu,**
Univ. of Science and Technology of China (China)

10:40: **Integration design and printing process of flexible perovskite solar cells** *(Invited Paper)*, Yiwang Chen, Jiangxi Normal Univ. (China) . . . [11893-20]

11:00: **Ion migration in hybrid perovskites and its impacts on photo-oxygen-induced degradation** *(Invited Paper)*, Yongbo Yuan, Central South Univ. (China) . . . . . [11893-21]

11:20: **Evaporation for high efficiency stable perovskite solar cells** *(Invited Paper)*, Chenyi Yi, Tsinghua Univ. (China) . . . . . [11893-22]

11:40: **Engineering the surface and interface of catalysts for photoelectrochemical water splitting** *(Invited Paper)*, PengYi Tang, Shanghai Institute of Microsystem and Information Technology (China) . . . . . [11893-23]

Lunch Break . . . . . Mon 12:00 to 13:30

ON DEMAND: **Perovskite semiconductor interfaces** *(Invited Paper)*, Yuanyuan Zhou, Hong Kong Baptist Univ. (Hong Kong, China) . . . . . [11893-19]

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

Optical management in perovskite/silicon tandem solar cell with nanocones array, Yawei Kuang IV, Changshu Institute of Technology (China) . . . . . [11893-45]

Unveiling "buried secrets" in halide perovskite photovoltaics, Xiaoyu Yang, Rui Zhu, Peking Univ. (China) . . . . . [11893-46]

Self-powered dynamic plasmonic color display, Jie Liang, Nanjing Univ. (China) . . . . . [11893-47]

Self-induced type-I band alignment at surface grain boundary for highly efficient and stable perovskite solar cells, Qing Zhao, Peking Univ. (China) . . . . . [11893-48]

Triggering high-efficiency organic solar cells through multi-length scaled morphology: approaching 19% efficiencies, Lei Zhu, Ming Zhang, Feng Liu, Shanghai Jiao Tong Univ. (China) . . . . . [11893-49]

Manipulating the crystalline morphology in the eutectic mixture to accelerate the carrier transport and suppress the energetic loss, Ming Zhang, Lei Zhu, Feng Liu, Shanghai Jiao Tong Univ. (China) . . [11893-50]

Improving efficiency of non-fullerene polymer solar cells by using non-halogenated solvents, Kang An, Lei Ying, Fei Huang, Yong Cao, South China Univ. of Technology (China) . . . . . [11893-51]

Advances of perovskite solar cell technology, Rui Zhu, Peking Univ. (China) . . . . . [11893-52]

Generalized inverse source: matter, information, and energy, Hua Liu, Luoyang Electro-optical Equipment Research Institute (China) . . . . [11893-53]

ON DEMAND: **Samarium-doped TiO_2photoanodes for the molecular devices for solar energy conversion**, Venkata Seshaiah Katta, Vishnuvardhan Reddy Chappidi, Indian Institute of Technology Hyderabad (India) . . . . . [11893-54]

SESSION 5

LOCATION: ROOM 106B . . . . . MON 14:30 TO 16:10

Photonics for Energy V

Session Chair: **Ke Gao,** Shandong Univ. (China)

14:30: **Organic solar cells based on multilength-scale morphology** *(Invited Paper)*, Feng Liu, Shanghai Jiao Tong Univ. (China) . . . . . [11893-24]

14:50: **N-type organic optoelectronic materials and high-performance energy conversion devices** *(Invited Paper)*, Xiaozhang Zhu, Institute of Chemistry (China) . . . . . [11893-25]

15:10: **Charge separation from intramoeity delocalized excitations in OPV blends** *(Invited Paper)*, Chunfeng Zhang, Nanjing Univ. (China) . . . . [11893-26]

15:30: **Design and optimization of A-D-A type molecules for high-performance organic solar cells** *(Invited Paper)*, Xiangjian Wan, Nankai Univ. (China) . . . . . [11893-27]

15:50: **Aggregate control of organic solar cells** *(Invited Paper)*, Tao Wang, Wuhan Univ. of Technology (China) . . . . . [11893-28]

Tea/Coffee Break . . . . . Mon 16:10 to 16:20

SESSION 6

LOCATION: ROOM 106B . . . . . MON 16:20 TO 18:00

Photonics for Energy VI

Session Chairs: **Feng Liu,** Shanghai Jiao Tong Univ. (China);
Lei Ying, South China Univ. of Technology (China)

16:20: **Realizing approaching 100% IQE of polymer solar cells using TzBI-based conjugated polymer** *(Invited Paper)*, Meijing Li, Baobing Fan, Lei Ying, Fei Huang, Yong Cao, South China Univ. of Technology (China) . . . . . [11893-29]

16:40: **Functionalized organic semiconductors for high-performance perovskite/organic solar cells** *(Invited Paper)*, Yaowen Li, Soochow Univ. (China) . . . . . [11893-30]

17:00: **High-efficiency narrow bandgap donor materials and multidimensional morphology in organic photovoltaics** *(Invited Paper)*, Ke Gao Sr., Shandong Univ. (China) . . . . . [11893-31]

17:20: **The effect of chromophore coupling on intramolecular singlet fission** *(Invited Paper)*, Jianlong Xia, Wuhan Univ. of Technology (China) . . . . . [11893-32]

17:40: **Optical structure design for highly efficient organic optoelectronic devices** *(Invited Paper)*, Jiang Huang, Univ. of Electronic Science and Technology of China (China) . . . . . [11893-33]

ON DEMAND: **Minimizing voltage losses in organic solar cells with a low energy offset** *(Invited Paper),* Feng Gao, Linköping Univ. (Sweden) [11893-34]

TUESDAY 12 OCTOBER

SESSION 7

LOCATION: ROOM 106B . . . . . TUE 8:45 TO 10:00

Photonics for Energy VII

Session Chairs: **Meijie Chen,** Central South Univ. (China); **Guangming Tao,** Huazhong Univ. of Science and Technology (China)

8:45: **Manipulating the flow of light and heat at nanoscale** *(Invited Paper)*, Jia Zhu, Nanjing Univ. (China) . . . . . [11893-35]

9:05: **Hierarchical-morphology metafabric for scalable passive daytime radiative cooling** *(Invited Paper)*, Guangming Tao, Huazhong Univ. of Science and Technology (China); Yaoguang Ma, Zhejiang Univ. (China); Shaoning Zeng, Huazhong Univ. of Science and Technology (China); Xin Li, China Textile Academy (China); Sijie Pian, Zhejiang Univ. (China) . . . . . [11893-36]

9:25: **Passive daytime radiative cooling of hollow dielectric microsphere coatings** *(Invited Paper)*, Dan Pang, Xingyu Chen, Meijie Chen, Hongjie Yan, Central South Univ. (China) . . . . . [11893-37]

9:45: **Performance analysis of a thermoelectric system based on radiative cooling and greenhouse effects**, Cun-Hai Wang, Hao Chen, Univ. of Science and Technology Beijing (China) . . . . . [11893-38]

Tea/Coffee Break . . . . . Tue 10:00 to 10:30

ON DEMAND: **Scalable radiative cooling paints based on random porous polymers** *(Invited Paper),* Yuan Yang, Columbia Univ. (United States) . . . . . [11893-39]

SESSION 8

LOCATION: ROOM 106B . . . . . TUE 10:30 TO 11:45

Photonics for Energy VIII

Session Chairs: **Mingjian Yuan,** Nankai Univ. (China);
Chuanjiang Qin, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences (China)

10:30: **Intelligent optoelectronic devices based on luminescent quantum dots** *(Invited Paper)*, Fushan Li, Fuzhou Univ. (China) . . . . . [11893-41]

10:50: **Control exciton for highly efficient perovskite light-emitting diodes** *(Invited Paper)*, Chuanjiang Qin, Changchun Institute of Applied Chemistry (China) . . . . . [11893-42]

11:10: **Quasi-2D perovskite for efficient optoelectronics** *(Invited Paper)*, Mingjian Yuan, Nankai Univ. (China) . . . . . [11893-43]

11:30: **Low-dimensional tin perovskite solar cells**, Zhijun Ning, Xianyuan Jiang, Hansheng Li, ShanghaiTech Univ. (China) . . . . . [11893-44]

ON DEMAND: **Optical engineering for efficient white perovskite light-emitting devices** *(Invited Paper)*, Hin-Lap Yip, City Univ. of Hong Kong (Hong Kong, China) . . . . . [11893-40]

CONFERENCE 11894 • LOCATION: ROOM 101B

Monday–Tuesday 11–12 October 2021 • Proceedings of SPIE Vol. 11894

Optoelectronic Devices and Integration X

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)

Program Committee: **Dayan Ban,** Univ. of Waterloo (Canada); **Zhongping Chen,** Beckman Laser Institute and Medical Clinic (United States); **Daoxin Dai,** Zhejiang Univ. (China); **Ho-Pui Ho,** The Chinese Univ. of Hong Kong (Hong Kong, China); **Jan Ingenhoff,** Ionexphotonics Inc. (Canada); **Zhongcheng Liang,** Nanjing Univ. of Posts and Telecommunications (China); **Xuejun Lu,** Univ. of Massachusetts Lowell (United States); **Ali Masoudi,** Univ. of Southampton (United Kingdom); **Hai Ming,** Univ. of Science and Technology of China (China); **Gang-Ding Peng,** The Univ. of New South Wales (Australia); **Yaocheng Shi,** Zhejiang Univ. (China); **Yuan Shi,** Allwave Lasers Devices Inc. (United States); **Anna K. Swan,** Boston Univ. (United States); **Frank Vollmer,** Univ. of Exeter (United Kingdom); **Daniel M. Wasserman,** The Univ. of Texas at Austin (United States); **Lixin Xu,** Univ. of Science and Technology of China (China); **Yang Yang,** Zhejiang Univ. of Technology (China); **Yu Yu,** Huazhong Univ. of Science and Technology (China); **Ningmu Zou,** Advanced Micro Devices, Inc. (United States)

MONDAY 11 OCTOBER

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

Ring-resonator-coupled Mach-Zehnder interferometers for integrated photonics by 3D direct laser writing, Jianjun Xiao, Chuanyi Tao, Yan Zhao, Hao Wang, Chongqing Univ. of Technology (China); Jingke Li, Chongqing Medical and Pharmaceutical College (China) . . . . . [11894-22]

Optimization of resource scheduling algorithms for visible light communication and WiFi heterogeneous networks, Furong Zhu, Liwei Yang, Wenlong Xu, Xinlai Liu, China Agricultural Univ. (China) . . . . . [11894-23]

Experimental study on longitudinal mode dynamics of a chaotic fiber ring laser, Mingxiang Ma, Fufang Xu, Yingying Li, National Innovation Institute of Defense Technology (China) and Beijing Academy of Quantum Information Sciences (China); Jie Wang, Yubo Xie, National Innovation Institute of Defense Technology (China) . . . . . [11894-24]

Resource allocation of visible light communication/WiFi hybrid networks based on improved proportional fairness algorithm, Liwei Yang, Ziyi Huang, Xiangcheng Yi, Wenlong Xu, China Agricultural Univ. (China) . . . . . [11894-25]

Solutions to improve novel multiple configurations, Hua Liu, Luoyang Electro-optical Equipment Research Institute (China) . . . . . [11894-26]

On-chip erbium-doped lithium niobate microcavity laser and spiral waveguide amplifier, Xiongshuo Yan, Yi'an Liu, Jiangwei Wu, Yuping Chen, Xianfeng Chen, Shanghai Jiao Tong Univ. (China) . . . . . [11894-27]

High Performance Demonstration of a 16 x 16 Silica-based Cyclic Arrayed-Waveguide Grating Router, Zhuping Fan, Jian-jun He, Zhejiang Univ. (China) . . . . . [11894-28]

Resource management algorithm of indoor visible light communication and WiFi heterogeneous network, Liwei Yang, Wenlong Xu, Ziyi Huang, Xiangcheng Yi, China Agricultural Univ. (China) . . . . . [11894-29]

Hybrid PWoF-RoF-PON for next-generation access network, Liwei Yang, Xiangcheng Yi, Wenlong Xu, Ziyi Huang, China Agricultural Univ. (China) . . . . . [11894-31]

Optical trapping of microparticles with cascaded tapered waveguides, Zhi Cheng, Lin Zhang, Tianjin Univ. (China) . . . . . [11894-32]

Injection-locked optoelectronic oscillator based on frequency conversion filtering, Yuchong Su, Jiu Min, Zhen Zeng, Zhiyao Zhang, Heping Li, Yong Liu, Univ. of Electronic Science and Technology of China (China) . . . . . [11894-33]

Research on 5G-oriented millimeter-wave RoF-WDM-PON system, Lin Li, Liwei Yang, Furong Zhu, Jiacheng Lai, Junxiu Cheng, China Agricultural Univ. (China) . . . . . [11894-34]

Reconfigurable all-optical logic AND and OR gates based on VCSEL-SA subject to optical pulse injection, Lu-Yao Xiao, Zi-Ye Gao, Southwest Univ. (China); Yu Liu, Chongqing Univ. of Posts and Telecommunications (China); Xiao-Dong Lin, Xi Tang, Fan Ma, Zheng-Mao Wu, Guang-Qiong Xia, Tao Deng, Southwest Univ. (China) . . . . . [11894-37]

Thin-film lithium-niobate-based acousto-optic modulators working at higher-order TE modes, Yang Yang, Yin Xu, Jiangnan Univ. (China); Dongmei Huang, The Hong Kong Polytechnic Univ. (China); Feng Li, Shenzhen Research Institute, The Hong Kong Polytechnic Univ. (China); Yue Dong, Bo Zhang, Yi Ni, Jiangnan Univ. (China) . . . . . [11894-38]

Design of electro-optically tuned silicon microring resonator for tunable laser application with nanosecond switching time, Guangcan Mi, Chen Liu, Huawei Technologies Co., Ltd. (China) . . . . . [11894-39]

Broadband antireflection silicon metasurfaces in infrared, Yongjun Guo, Tianjin Univ. (China) . . . . . [11894-40]

All-optical nonlinear activation functions based on germanium-silicon hybrid integration, Jianji Dong, Hengkang Li, Xinliang Zhang, Huazhong Univ. of Science and Technology (China) . . . . . [11894-41]

Photon-assisted phase slips in superconducting nanowires, Biao Zhang, LaBao Zhang, Rui Ge, Qi Chen, Jiayu Lyu, Guanglong He, Haochen Li, Feiyan Li, Xiaohan Wang, Hao Wang, Xiaoqing Jia, Lin Kang, Peiheng Wu, Shunli Yu, Nanjing Univ. (China) . . . . . [11894-42]

Ultra-compact optical spectrometer based on silicon random medium, Xingkai Sun, Nanjing Univ. of Aeronautics and Astronautics (China); Qixiang Cheng, Univ. of Cambridge (United Kingdom); Rui Cheng, Hefei Univ. of Technology (China); Yuxin Liang, United Microelectronics Ctr. (China); Shilong Pan, Ang Li, Nanjing Univ. of Aeronautics and Astronautics (China) . [11894-43]

Parallel all-optical programmable logic array based on multichannel four-wave mixing, Wenchan Dong, Wentao Gu, Xiaoyan Gao, Xinliang Zhang, Wuhan National Research Ctr. for Optoelectronics (China) . . . . . [11894-44]

All-dielectric nanostructures for high-efficient angular emission from polarized LEDs, Miao Wang, Juemin Yi, Yumin Zhang, Suzhou Institute of Nano-Tech and Nano-Bionics (China); Bing Cao, Soochow Univ. (Chile); Chinhua Wang, Soochow Univ. (China); Jianfeng Wang, Ke Xu, Suzhou Institute of Nano-Tech and Nano-Bionics (China). . . . . [11894-45]

Research on the narrow impulse response of planar structure 4H-SiC photoconductive switch, Haiyang Ding, Jiyang Shang, Shanghai Aerospace Electronic Technology Institute (China) . . . . . [11894-46]

A novel silicon-based spot size converter, Kunpeng Zhai, Ya Jin, Yinfang Chen, Jian Wang, Xin Wang, Ning Hua Zhu, Institute of Semiconductors (China) . . . . . [11894-47]

Research on on-resistance of 4H-SiC photoconductive switch, Jiyang Shang, Shanghai Aerospace Electronic Technology Institute (China) [11894-48]

RF spectrum measurement of the versatile microcavity soliton combs, Hao Hu, Ruolan Wang, Liao Chen, Huazhong Univ. of Science and Technology (China); Weiqiang Wang, Xi'an Institute of Optics and Precision Mechanics (China); Chi Zhang, Huazhong Univ. of Science and Technology (China); Wenfu Zhang, Xi'an Institute of Optics and Precision Mechanics (China); Xinliang Zhang, Huazhong Univ. of Science and Technology (China) [11894-49]

Terahertz polarization rotator based on silicon asymmetrical structure, Wentao Deng, Liao Chen, Yu Yu, Huazhong Univ. of Science and Technology (China); Xiaojun Wu, Beihang Univ. (China); Xinliang Zhang, Huazhong Univ. of Science and Technology (China) . . . . . [11894-50]

Architecture of wavelength switching network based on ns-switching for HPC-DC, Guangcan Mi, Chen Liu, Huawei Technologies Co., Ltd. (China) . . . . . [11894-51]

High-sensitive Bloch surface wave sensing with metasurface/photonic crystal structure, Weijing Kong, Wenhui Zhao, Xiaochang Ni, Tianjin Univ. of Technology and Education (China) . . . . . [11894-52]

ON DEMAND: **Add/drop CWDM channels based in double micro-ring resonators for O, E, S, C, L and U optical bands**, Josino Villela, William O. F. Carvalho, Jorge Ricardo Mejía Salazar, Instituto Nacional de Telecomunicações (Brazil) . . . . . [11894-53]

ON DEMAND: **Heterogeneous integration of transfer bonded terahertz quantum cascade lasers for improved heat management and light coupling**, Siyi Wang, Chao Xu, Zbigniew Wasilewski, Dayan Ban, Univ. of Waterloo (Canada) . . . . . [11894-54]

ON DEMAND: **Efficiency improvement for micro light-emitting diodes with n-doped quantum barriers and single quantum well**, Jian Yin, Dayan Ban, Univ. of Waterloo (Canada). . . . . [11894-55]

ON DEMAND: **Modeling of high-speed uni-traveling carrier photodiodes**, Yegao Xiao, Zhiqiang Li, Zhanming S. Li, Crosslight Software Inc. (Canada) . . . . . [11894-56]

ON DEMAND: **SAHS detection using contact-free MZI-BCG sensor**, Changyuan Yu, Shenzhen Research Institute, The Hong Kong Polytechnic Univ. (China); Xinning Jiang, Soochow Univ. (China); Wei Xu, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China); Cheung Chuen Yu, Haina-Intelligent Photonic System Research Ctr. (China) and Yangtze Delta Region Institute, Tsinghua Univ. (China); Wenye Sun, The Second Affiliated Hospital of Soochow Univ. (China); Bo Dong, College of New Materials and New Energy, Shenzhen Technology Univ. (China); Wei Zhao, Yishan Wang, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China) and Collaborative Innovation Ctr. of Extreme Optics, Shanxi Univ. (China) . . . . . [11894-35]

ON DEMAND: **High-sensitivity fiber interference strain sensor based on polarized mode coupling and TFBG**, Yifan Liu, Zongru Yang, Changyuan Yu, The Hong Kong Polytechnic Univ. (Hong Kong, China) . . . . . [11894-36]

ON DEMAND: **DNN-assisted activity classification using fiber interferometer sensor**, Guohao Zhu, Shenzhen Univ. (China); Wei Xu, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China); Cheung Chuen Yu, Yangtze Delta Region Institute, Tsinghua Univ. (China); Wenye Sun, The Second Affiliated Hospital of Soochow Univ. (China); Bo Dong, Shenzhen Technology Univ. (China); Changyuan Yu, The Hong Kong Polytechnic Univ. (China) and Shenzhen Research Institute (Hong Kong, China); Wei Zhao, Yishan Wang, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China) and Collaborative Innovation Ctr. of Extreme Optics, Shanxi Univ. (China) . . . . . [11894-30]

SESSION 1

LOCATION: ROOM 101B . . . . . MON 14:30 TO 15:30

Integrated Optical Devices I

Session Chair: **Xuping Zhang,** Nanjing Univ. (China)

14:30: **Upgrading all-optical signal processing using spatial mode dimension** *(Invited Paper)*, Jing Xu, Yuhang Hu, Hanwen Hu, Bowen Zhang, Xinda Lu, Boqing Zhang, Yuntian Chen, Xinliang Zhang, Huazhong Univ. of Science and Technology (China) . . . . . [11894-1]

15:00: **Highly nonlinear silicon-organic slot waveguide for all-optical signal processing** *(Invited Paper)*, Lei Lei, Shenzhen Univ. (China) . . [11894-2]

Tea/Coffee Break . . . . . Mon 15:30 to 16:00

SESSION 2

LOCATION: ROOM 101B . . . . . MON 16:00 TO 17:40

Integrated Optical Devices II

Session Chair: **Baojun Li,** Jinan Univ. (China)

16:00: **All-optical signal regeneration and coherent data receiving aided by integrated Kerr frequency comb** *(Invited Paper)*, Heng Zhou, Boyuan Liu, Xinjie Han, Qiang Zhang, Yong Geng, Kun Qiu, Univ. of Electronic Science and Technology of China (China) . . . . . [11894-3]

16:30: **Monolithically integrated semiconductor lasers for microwave photonics** *(Invited Paper)*, Jilin Zheng, Tao Pu, Xin Zhang, Jin Li, The PLA Univ. of Science and Technology (China) . . . . . [11894-4]

17:00: **Nonlinear optical waveguides based on c-axis oriented $Zn_{1-x}Mg_xO$ thin-films**, Lei Meng, Tao T. Yang, Institute of Semiconductors (China) . . . . . [11894-5]

17:20: **Athermal fabrication-tolerant and flat-topped CWDM (de) multiplexer based on cascaded Mach-Zehnder interferometers on silicon-on-insulator**, Zixu Xu, Yaocheng Shi, Zhejiang Univ. (China) [11894-6]

TUESDAY 12 OCTOBER

SESSION 3

LOCATION: ROOM 101B . . . . . TUE 9:00 TO 10:00

Fiber-based Devices for Sensing and Communication I

Session Chair: **Xiaobei Zhang,** Shanghai Univ. (China)

9:00: **GaN-based optoelectronic devices for light communication and integration** *(Invited Paper)*, Li-Xia Zhao, Tiangong Univ. (China) and Institute of Semiconductors (China). . . . . [11894-7]

9:30: **Structure health monitoring of power transmission and generation equipment based on Φ-OTDR sensing system** *(Invited Paper)*, Yixin Zhang, Nanjing Univ. (China). . . . . [11894-8]

Tea/Coffee Break . . . . . Tue 10:00 to 10:30

ON DEMAND: **Directly modulated quantum cascade laser and its application in free-space communications** *(Invited Paper),* Xiaodan Pang, Richard Schatz, Mahdieh Joharifar, KTH Royal Institute of Technology (Sweden); Aleksejs Udalcovs, RISE Research Institutes of Sweden (Sweden); Vjaceslavs Bobrovs, Riga Technical Univ. (Latvia); Lu Zhang, Xianbin Yu, Zhejiang Univ. (China); Yan-Ting Sun, Sergei Popov, Sebastian Lourdudoss, KTH Royal Institute of Technology (Sweden); Oskars Ozolins, RISE Acreo AB (Sweden) and KTH Royal Institute of Technology (Sweden) and Riga Technical Univ. (Latvia) . . . . . [11894-9]

SESSION 4

LOCATION: ROOM 101B . . . . . TUE 10:30 TO 11:50

Fiber-based Devices for Sensing and Communication II

Session Chair: **Xinliang Zhang,** Wuhan National Research Ctr. for Optoelectronics (China)

10:30: **Liquid flow direction and rate vector sensor based on a partially gold-coated TFBG** *(Invited Paper)*, Changyu Shen, China Jiliang Univ. (China) . . . . . [11894-10]

11:00: **Visible light communication technologies in 6G** *(Invited Paper)*, Nan Chi, Fudan Univ. (China) . . . . . .[11894-11]

11:30: **High-accuracy distributed optical fiber transfer delay measurement based on optical frequency-stepped chirp signal**, Cong Ma, Nanjing Univ. of Aeronautics and Astronautics (China) and Suzhou Research Institute of NUAA (China); Yue Yang, Fengting Cao, Xin Jiang, Shangzhe Xu, Xiangchuan Wang, Nanjing Univ. of Aeronautics and Astronautics (China); Shifeng Liu, Nanjing Univ. of Aeronautics and Astronautics (China) and Suzhou Research Institute of NUAA (China); Shilong Pan, Nanjing Univ. of Aeronautics and Astronautics (China) [11894-12]

Lunch Break . . . . . Tue 11:50 to 13:20

SESSION 5

LOCATION: ROOM 101B . . . . . TUE 13:20 TO 14:50

Nanophotonic and Metamaterial Devices

Session Chair: **Xiaobei Zhang,** Shanghai Univ. (China)

13:20: **Metamaterial-assisted silicon-photonic devices for optical signal manipulation** *(Invited Paper)*, Xuhan Guo, An He, Jinlong Xiang, Yaotian Zhao, Yikai Su, Shanghai Jiao Tong Univ. (China). . . . . [11894-13]

13:50: **Subwavelength metamaterial engineering for silicon-photonic devices** *(Invited Paper)*, Yaocheng Shi, Zhejiang Univ. (China) . . . . . [11894-14]

14:20: **Nanophotonic antenna for optical trapping applications** *(Invited Paper)*, Lin Zhang, Tianjin Univ. (China). . . . . [11894-15]

ON DEMAND: **Phenothiazine-benzimidazole based architecture as an efficient interfacial charge transport layers for perovskite blue light-emitting diodes**, Keval K. Sonigara, Oxford Suzhou Ctr. for Advanced Research (China); Hailong Wang, Changchun Institute of Applied Chemistry (China); Jingsong Huang, Oxford Suzhou Ctr. for Advanced Research (China); Jian Fan, Institute of Functional Nano & Soft Materials (China); Zhiyuan Xie, Changchun Institute of Applied Chemistry (China); Paul N. Stavrinou, Univ. of Oxford (United Kingdom); Donal D. C. Bradley, King Abdullah Univ. of Science and Technology (Saudi Arabia) . . . . . [11894-16]

Tea/Coffee Break . . . . . Tue 14:50 to 15:20

SESSION 6

LOCATION: ROOM 101B . . . . . TUE 15:20 TO 16:50

Optoelectronic Devices

Session Chair: **Xuping Zhang,** Nanjing Univ. (China)

15:20: **New characteristics of the RIN spectral profile of ASE sources** *(Invited Paper)*, Jianzhong Zhang, Harbin Engineering Univ. (China). [11894-17]

15:50: **Tunable and narrow-band Au/TiO_2 hot-electron photodetection based on optical surface waves**, Tong Yu, Cheng Zhang, Shaolong Wu, Xiaofeng Li, Soochow Univ. (China). . . . . [11894-18]

16:10: **The Rb-Xe coupling effect in optically pumped NMR gyroscopes**, Yi Zhang, Jiajia Li, Qiyuan Jiang, Zhiguo Wang, Hui Luo, Kaiyong Yang, National Univ. of Defense Technology (China) . . . . . [11894-19]

16:30: **Tailoring the luminescence processes from lanthanides and transition metals activated phosphors through physical methods**, Yang Zhang, Nankai Univ. (China) . . . . . [11894-20]

ON DEMAND: **Polygon coherent modes in weakly perturbed microcavities** *(Invited Paper),* Zhiwei Fang, East China Normal Univ. (China); Sanaul Haque, Farajollahi Saeed, Haipeng Luo, Univ. of Victoria (Canada); Jintian Lin, Rongbo Wu, Jianhao Zhang, Zhe Wang, Shanghai Institute of Optics and Fine Mechanics (China); Min Wang, East China Normal Univ. (China); Ya Cheng, East China Normal Univ. (China) and Shanghai Institute of Optics and Fine Mechanics (China); Tao Lu, Univ. of Victoria (Canada) . . . . . [11894-21]

CONFERENCE 11895 • LOCATION: ROOM 207

Sunday–Monday 10–11 October 2021 • Proceedings of SPIE Vol. 11895

Optical Design and Testing XI

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

Program Committee: **Yasuhiro Awatsuji,** Kyoto Institute of Technology (Japan); **Jian Bai,** Zhejiang Univ. (China); **Dewen Cheng,** Beijing Institute of Technology (China); **Chunlei Du,** Chongqing Institute of Green and Intelligent Technology, Chinese Academy of Sciences (China); **Fabian Duerr,** Vrije Univ. Brussel (Belgium); **Yi-Chin Fang,** National Kaohsiung First Univ. of Science and Technology (Taiwan, China); **Zexin Feng,** Beijing Institute of Technology (China); **Weichuan Gao,** Facebook Technologies, LLC (United States); **Sen Han,** Univ. of Shanghai for Science and Technology (China); **Jae Young Joo,** Korea Photonics Technology Institute (Korea, Republic of); **Jaisoon Kim,** Myongji Univ. (Korea, Republic of); **Tsuyoshi Konishi,** Osaka Univ. (Japan); **Jaejoong Kwon,** Samsung Display Co., Ltd. (Korea, Republic of); **Yun Woo Lee,** Korea Research Institute of Standards and Science (Korea, Republic of); **Rongguang Liang,** Wyant College of Optical Sciences (United States); **Irina L. Livshits,** ITMO Univ. (Russian Federation); **Donglin Ma,** Huazhong Univ. of Science and Technology (China); **Youri Meuret,** KU Leuven (Belgium); **Takanori Nomura,** Wakayama Univ. (Japan); **Sung Chan Park,** Dankook Univ. (Korea, Republic of); **Gilles Pauliat,** Institut d'Optique Graduate School (France); **Xiang Peng,** Shenzhen Univ. (China); **Sandy To,** The Hong Kong Polytechnic Univ. (Hong Kong, China); **H. Paul Urbach,** Technische Univ. Delft (Netherlands); **Daodang Wang,** China Jiliang Univ. (China); **Chunyu Zhao,** Arizona Optical Metrology LLC (United States); **Jun Zhu,** Tsinghua Univ. (China)

SUNDAY 10 OCTOBER

OPENING CEREMONY AND PLENARY SESSION I

LOCATION: INTERNATIONAL HALL A . . . . . SUN 9:00 TO 12:00

9:00: Opening Ceremony

9:20: Awards and Recognition

9:30: **Low-cost optical technologies to improve global health equity: examples from newborn health, women's health, and COVID-19** *(Plenary)*, Rebecca R. Richards-Kortum, Director, Rice 360 Institute for Global Health Technologies (United States) and Rice Univ. (United States). . . . . [11900-501]

Tea/Coffee Break . . . . . .Sun 10:10 to 10:40

10:40: **High-quality electron beams and free-electron lasing based on laser-wakefield accelerator** *(Plenary)*, Wentao Wang, State Key Lab. of High Field Laser Physics (China) and CAS Ctr. for Excellence in Ultra-intense Laser Science (China) and Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China) . . . . . [11890-502]

11:20: **Advances of perovskite solar cell technology** *(Plenary)*, Rui Zhu, Peking Univ. (China) . . . . . [11893-503]

Lunch Break . . . . . Sun 12:00 to 13:30

SESSION 1

LOCATION: ROOM 207 . . . . . SUN 13:30 TO 15:20

Fabrication and Testing

Session Chair: **Yongtian Wang,** Beijing Institute of Technology (China)

13:30: **Freeform optics: manufacturing and measurement** *(Invited Paper)*, Fengzhou Fang, Tianjin Univ. (China) . . . . . [11895-1]

14:00: **High-precision deflectometric measurement of freeform optics** *(Invited Paper)*, Xiangchao Zhang, Min Xu, Fudan Univ. (China) . . . . . [11895-2]

14:30: **Deep-learning-based deflectometry for simultaneous multi-surface measurement of freeform refractive optics** *(Invited Paper)*, Zhendong Wu, Daodang Wang, Jinchao Dou, Ming Kong, China Jiliang Univ. (China); Lihua Lei, Shanghai Institute of Measurement and Testing Technology (China); Rongguang Liang, Wyant College of Optical Sciences, The Univ. of Arizona (United States). . . . . [11895-3]

15:00: **3D printing active variable curvature mirror research for zoom imaging**, Xiaopeng Xie, Liang Xu, Yongjie Wang, Le Shen, Xi'an Institute of Optics and Precision Mechanics (China); Mingyang Yang, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China); Wenhui Fan, Hui Zhao, Xi'an Institute of Optics and Precision Mechanics (China) . . . . . [11895-4]

Tea/Coffee Break . . . . . .Sun 15:20 to 15:30

PLENARY SESSION II

LOCATION: INTERNATIONAL HALL A . . . . . SUN 15:30 TO 16:20

15:30: Welcome and Introduction

Q&A period will follow after the talk

15:35: **The UK National Quantum Technology Programme** *(Plenary)*, Peter L. Knight, Blackett Lab., Imperial College London (United Kingdom) and UK National Quantum Technology Strategic Advisory Board for UKRI (United Kingdom). . . . . [11905-504]

Tea/Coffee Break . . . . . Sun 16:20 to 16:30

SESSION 2

LOCATION: ROOM 207 . . . . . SUN 16:30 TO 18:00

Advanced Optical Systems

Session Chair: **Fengzhou Fang,** Tianjin Univ. (China)

16:30: **Iterative freeform lens design for extended light source** *(Invited Paper)*, Zexin Feng, Dewen Cheng, Yongtian Wang, Beijing Institute of Technology (China). . . . . [11895-5]

17:00: **Optical design of freeform lenses for illuminating hard-to-reach areas**, Lin Yang, Jinlei Zhang, Yijie Dai, Rengmao Wu, Zhejiang Univ. (China). . . . . [11895-6]

17:20: **A modified chromatic confocal system for spectral reflectance measurement**, Jiao Bai, Jingwen Li, Xiaohao Wang, Qian Zhou, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China) . . . . [11895-7]

17:40: **Compact transmission imaging spectrometer based on metasurfaces**, Shan Du, Jun Chang, Yue Zhong, Xuehui Zhao, Beijing Institute of Technology (China); Quanquan Mu, Changchun Institute of Optics, Fine Mechanics and Physics (China). . . . . [11895-8]

ON DEMAND: **Light-folding architectures in virtual reality optics** *(Invited Paper)*, Pablo Benítez, Juan C. Miñano, Univ. Politécnica de Madrid (Spain), Limbak 4PI S.L. (Spain); Pablo Zamora, Milena Nikolic, Dejan Grabovičkić, Marina Buljan, Rubén Mohedano, Julio Chaves, Eduardo Sanchez, Jesús López, Juan Vilaplana, Eduardo Pérez, Limbak 4PI S.L. (Spain); Juan Carlos González, Univ. Politécnica de Madrid (Spain) . . [11895-9]

MONDAY 11 OCTOBER

SESSION 3

LOCATION: ROOM 207 . . . . . MON 9:20 TO 10:20

Novel Imaging/Lighting Techniques

Session Chair: **Rengmao Wu,** Zhejiang Univ. (China)

9:20: **Variable curvature mirror-based focus adjusting without moving elements designed for large aperture space-borne optical camera**, Hui Zhao, Xiaopeng Xie, Gangyi Zou, Liang Xu, Xuewu Fan, Xi'an Institute of Optics and Precision Mechanics (China); Jingxuan Wei, Xidian Univ. (China). . . . . [11895-10]

9:40: **Design and verification of a large-field hyperspectral imaging system**, ZhengHui Zhang, Jingyang Pei, Mailing Xing, Beijing Institute of Space Mechanics and Electricity (China) . . . . . .[11895-11]

10:00: **Optical design of a novel Wynne-Offner snapshot hyperspectral imaging system,** Fenli Tan, Chenxin Zeng, Yiqun Ji, Soochow Univ. (China). . . . . [11895-12]

Tea/Coffee Break . . . . . Mon 10:20 to 10:50

ON DEMAND: **Using metasurface extreme dispersion to design advance optical system for consumer applications** *(Invited Paper)*, Simon Thibault, Univ. Laval (Canada). . . . . [11895-13]

ON DEMAND: **Freeform imaging system design with multiple reflection surfaces** *(Invited Paper)*, Yunfeng Nie, Vrije Univ. Brussel (Belgium); David R. Shafer, David Shafer Optical Design (United States); Heidi Ottevaere, Hugo Thienpont, Fabian Duerr, Vrije Univ. Brussel (Belgium) . . . . . [11895-14]

SESSION 4

LOCATION: ROOM 207 . . . . . MON 10:50 TO 12:00

Computational Imaging

Session Chair: **Zexin Feng,** Beijing Institute of Technology (China)

10:50: **Single-pixel imaging and single-photon imaging** *(Invited Paper)*, Mingjie Sun, Beihang Univ. (China) . . . . . [11895-15]

11:20: **Experimental research on wavefront coded imaging technique applied to large aperture spaceborne optical camera**, Hui Zhao, Jiao Mi, Chuang Li, Gangyi Zou, Zhihai Pang, Meng Xiang, Xuewu Fan, Xi'an Institute of Optics and Precision Mechanics (China); Jingxuan Wei, Xidian Univ. (China) . . . . . [11895-16]

11:40: **Design of a lightfield microscope with uniform spatial resolution across an extended 3D volume**, Qi Zheng, Xin Jin, Yanqin Chen, Tsinghua Univ. (China) . . . . . [11895-17]

Lunch Break . . . . . Mon 12:00 to 13:30

ON DEMAND: **Multi-camera computational imaging** *(Invited Paper)*, Andrew R. Harvey, Tomas Aidukas, Univ. of Glasgow (United Kingdom); James Babington, Qioptiq (United Kingdom); Guillem Carles, Laura V. Cowan, Miguel Preciado, Univ. of Glasgow (United Kingdom); Andy Wood, Qioptiq (United Kingdom) . . . . . [11895-18]

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

Design of athermalized wide-angle low-distortion lens using freeform surface, Chengxi Zhu, Jian Bai, Zhejiang Univ. (China). . . . . [11895-30]

Methods to improve multiple configurations, Hua Liu, Luoyang Electro-optical Equipment Research Institute (China). . . . . [11895-32]

Adaptive liquid lens actuated by dielectric elastomer with transparent conductive droplet, Yang Cheng, Chuanxun Chen, Jie Cao, Qun Hao, Beijing Institute of Technology (China) . . . . . [11895-33]

Automatic design of machine vision lens based on improved genetic algorithm and damped least squares, Ji Feng Sun, Zhejiang Univ. (China). . . . . [11895-34]

Stray light analysis and optical design improvement of visible light detection camera on space platform, Yu Zhang, Shanghai Aerospace Electronic Technology Institute (China). . . . . [11895-35]

Numbers of stable equilibrium points of sine-Gaussian beams in vacuum optical tweezers based on Mento Carlo method, Jingjing Su, Nan Li, Jiapeng Mou, Yishi Liu, Xingfan Chen, Huizhu Hu, Zhejiang Univ. (China). . . . . [11895-36]

A new approach for tolerance sensitivity reduction in lens optimization by controlling the first order derivatives of real ray height on pupil, Yimou Luo, Zhejiang Univ. (China). . . . . [11895-37]

3D-printing-based microfluidic device for fast light scattering imaging of single cells, Meiai Lin, Xiaohang Zhou, Zejie Lin, Jiale Chen, Shantou Univ. (China). . . . . [11895-38]

Research on a simple longfocus optical modality using optical/image co-design method, Jiarui Ji, Tong Yang, Jie Chen, Lei Yang, Hongbo Xie, Tianjin Univ. (China) . . . . . [11895-39]

Time filtering method to detect asymmetry and mitigate time asynchronization of two-way fiber time transfer technique, Chenlin Zhang, Institute of Southwestern Communication (China); Jingtang Luo, State Grid Sichuan Economic Research Institute (China); Yang Li, Lifeng Fu, Heng Wang, Wei Huang, Bingjie Xu, Institute of Southwestern Communication (China). . . . . [11895-40]

Research on the method of reducing speckle in laser display, Xu Sun, Jia Yu, Huiping Liu, Ocean Univ. of China (China) . . . . . [11895-41]

A novel method for generating linear structured illumination using phase modulation, Xianlin Song, Nanchang Univ. (China). . . . . [11895-42]

Design of linear dispersion spectral confocal objective lens with wide measurement range, Niuhu Wang, Aijun Zeng, Wenqing Jiang, Baoxi Yang, Shanghai Institute of Optics and Fine Mechanics (China) . . . . . [11895-43]

Optimal design of Bessel acoustic lens for large volumetric photoacoustic microscopy based on ray tracing, Zouhua Chen, Yuwei Zhu, Xianlin Song, Nanchang Univ. (China). . . . . [11895-44]

A real-time processing system for dual-channel six-degree-of-freedom grating ruler based on FPGA, Ningning Shi, Mengfang Liu, Yaodong Han, Tsinghua Univ. (China); Junhao Zhu, Tsinghua Univ. (China); Kai Ni, Xiaohao Wang, Xinghui Li, Tsinghua Univ. (China) . . . . . [11895-45]

Weight distributions of spherical and cylindrical power deviations for progressive addition lens design, Huazhong Xiang, Jiandong Gao, Lu Zhang, Yaqiong Wang, Xiaodie Zhan, Cheng Wang, Gang Zheng, Songlin Zhuang, Dawei Zhang, Univ. of Shanghai for Science and Technology (China). . . . . [11895-47]

A broadband athermal waveguide with low anomalous dispersion, Jianbin Ma, Guangzhen Luo, Pengfei Wang, Xuliang Zhou, Yejin Zhang, Jiaoqing Pan, Key Lab. of Semiconductor Materials Science, Institute of Semiconductors (China) and Ctr. of Materials Science and Optoelectronics Engineering, Univ. of Chinese Academy of Sciences (China) . . . . . [11895-48]

ON DEMAND: **Diffraction method for estimation of positioning errors that occurred during the writing of computer-generated holograms,** Ruslan V. Shimansky, Dmitrij Belousov, Victor Korolkov, Roman I. Kuts, Institute of Automation and Electrometry of the SB RAS (Russian Federation) . [11895-28]

ON DEMAND: **Gold/zinc oxide nanoparticles functionalized tapered SMF-MMF-SMF-based sensor probe for uric acid detection**, Muyang Li, Ragini Singh, Bingyuan Zhang, Santosh Kumar, Liaocheng Univ. (China) . . [11895-31]

ON DEMAND: **Sectorized variable duty cycle f/1 diffractive transmission sphere for compensation of negative diffractive effects**, Victor P. Korolkov, Ruslan K. Nasyrov, Andrey G. Sedukhin, Dmitry A. Belousov, Roman I. Kuts, Institute of Automation and Electrometry of the SB RAS (Russian Federation) . . . . . [11895-49]

ON DEMAND: **Development of microscope lenses with uniform separation of optical illumination**, Elena A. Tsyganok, Anastasiya D. Kozhina, ITMO Univ. (Russian Federation); Shaohua Gao, Changchun Univ. of Science and Technology (China) . . . . . [11895-50]

ON DEMAND: **The luminance value calculation in a gradient refractive index media**, Andrey D. Zhdanov, Andrei Lemeshev, Dmitry Zhdanov, Vadim Sokolov, ITMO Univ. (Russian Federation); Eugene Denisov, M. V. Keldysh Institute of Applied Mathematics (Russian Federation) . . . . . [11895-51]

ON DEMAND: **Optical design of microscope objectives with low magnification**, Alla Uvarova, Khyng Nguen-Zui, Alexey Bakholdin, ITMO Univ. (Russian Federation); Shaohua Gao, Changchun Univ. of Science and Technology (China). . . . . [11895-52]

ON DEMAND: **Use of the photon mapping methods for the optical systems stray light analysis**, Andrey D. Zhdanov, Igor Kinev, ITMO Univ. (Russian Federation); Ludmila Arhipova, Sergei Larionov, S. I. Vavilov State Optical Institute (Russian Federation); Dmitry Zhdanov, Igor Potemin, Andrei Lemeshev, ITMO Univ. (Russian Federation) . . . . . [11895-53]

ON DEMAND: **High-resolution with low F-number optical design for infrared search and track system**, Dat Nguyen-Van, Xuan Du Dang, Thanh Dat Vu, Viettel High Technology Industry Corp. (Vietnam). . . . . [11895-54]

ON DEMAND: **Development of methods for the formation and control of a given distribution of the photoresist thickness for conformal correctors fabrication**, Victor P. Korolkov, Ruslan K. Nasyrov, Vladimir Khomutov, Dmitry A. Belousov, Roman I. Kuts, Institute of Automation and Electrometry of the SB RAS (Russian Federation) . . . . . [11895-55]

SESSION 5

LOCATION: ROOM 207 . . . . . MON 14:30 TO 15:50

Optical System Designs I

Session Chair: **Daodang Wang,** China Jiliang Univ. (China)

14:30: **Calculating aberration fields of freeform imaging optics with field-dependent footprints**, Yijie Dai, Yingli Liu, Fanqi Shen, Rengmao Wu, Zhejiang Univ. (China). . . . . [11895-19]

14:50: **Lightweight diffractive telescope**, Yue Zhong, Jun Chang, Shan Du, Jiajing Cao, Beijing Institute of Technology (China); Jie Sui, Beijing Institute of Control Engineering (China); Huilin Jiang, Beijing Institute of Technology (China). . . . . [11895-20]

15:10: **Research on the design of Kepler refractive shaping system with the long working focal depth**, Yihan Wang, Xiaotong Li, Zhaofeng Cen, State Key Lab. of Modern Optical Instrumentation, Zhejiang Univ. (China) [11895-21]

15:30: **Optical design of a cascade airborne spectral imaging system with wide FOV and compactness**, Chenxin Zeng, Fenli Tan, Yiqun Ji, Soochow Univ. (China) . . . . . [11895-22]

SESSION 6:
LOCATION: ON DEMAND AT SPIE.ORG/PA

Optical System Designs II

ON DEMAND: **Role of the orthogonal aberrations theory in improving the efficiency of the optical systems design,** Sergey N. Bezdidko, Nadezhda R. Kaminina, Moscow State Univ. of Geodesy and Cartography (Russian Federation) . . . . . [11895-23]

ON DEMAND: **Optical time-of-flight with autofocus using a variable focal lens,** Juan Manuel Franco Sanchez, Utsunomiya Univ. (Japan); Joel Cervantes Lozano, Ctr. Universitario de Ciencias Exactas e Ingenierías, Univ. de Guadalajara (Mexico); Keiichiro Kagawa, Research Institute of Electronics, Shizuoka Univ. (Japan); Hajime Nagahara, Institute for Datability Science, Osaka Univ. (Japan); Yoshio Hayasaki, Utsunomiya Univ. (Japan). . . [11895-24]

ON DEMAND: **Comparative studies of optical systems using curved imaging sensors: from design to tolerancing,** Gregoire Hein, Michael Bailly, SILINA (France). . . . . [11895-25]

ON DEMAND: **Design of a high-resolution high-magnification MWIR continuous zoom lens system,** Thanh Dat Vu, Xuan Du Dang, Dat Nguyen-Van, Viettel High Technology Industry Corp. (Vietnam) . . . . . [11895-26]

ON DEMAND: **Study of alignment sensitivity of NLOT primary mirror segments on image quality,** Varun Prakash Padikal, Athul Kurian, Christ Univ. (India); Amirul Hasan, Indian Institute of Astrophysics (India); Sriram Sripadmanaban, Indian Institute of Astrophysics (India), Christ Univ. (India); Vineeth Valsan, Christ Univ. (India) . . . . . [11895-27]

ON DEMAND: **Method for adaptation of algorithms for efficient execution on GPUs,** Vadim Bulavintsev, Dmitry Zhdanov, ITMO Univ. (Russian Federation) 11895-29

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Advanced Optical Imaging Technologies IV

Conference Chairs: **Xiao-Cong Yuan,** Shenzhen Univ. (China); **P. Scott Carney,** The Institute of Optics, Univ. of Rochester (United States); **Kebin Shi,** Peking Univ. (China)

Program Committee: **Benfeng Bai,** Tsinghua Univ. (China); **David J. Brady,** Duke Univ. (United States); **Liangyi Chen,** Peking Univ. (China); **Xiang Hao,** Zhejiang Univ. (China); **Yoshio Hayasaki,** Utsunomiya Univ. Ctr. for Optical Research & Education (Japan); **Minghui Hong,** National Univ. of Singapore (Singapore); **Zhenli Huang,** Wuhan National Research Ctr. for Optoelectronics (China); **Wei Ji,** Institute of Biophysics, Chinese Academy of Sciences (China); **Dayong Jin,** Univ. of Technology, Sydney (Australia); **Cuifang Kuang,** Zhejiang Univ. (China); **Malgorzata Kujawi?ska,** Warsaw Univ. of Technology (Poland); **Puxiang Lai,** The Hong Kong Polytechnic Univ. (Hong Kong, China); **Byoungho Lee,** Seoul National Univ. (Korea, Republic of); **Xu Liu,** Zhejiang Univ. (China); **Changjun Min,** Shenzhen Univ. (China); **Wolfgang Osten,** Institut für Technische Optik (Germany); **Michelle Y. Sander,** Boston Univ. (United States); **Guohai Situ,** Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **Michael G. Somekh,** Shenzhen Univ. (China); **Wei Song,** Shenzhen Univ. (China); **Peter Török,** Nanyang Technological Univ. (Singapore); **Lidai Wang,** City Univ. of Hong Kong (Hong Kong, China); **Changfeng Wu,** Southern Univ. of Science and Technology of China (China); **Pingyong Xu,** Institute of Biophysics, Chinese Academy of Sciences (China); **Baoli Yao,** Xi'an Institute of Optics and Precision Mechanics of CAS (China); **Shian Zhang,** East China Normal Univ. (China); **Chao Zuo,** Nanjing Univ. of Science and Technology (China)

SUNDAY 10 OCTOBER

OPENING CEREMONY AND PLENARY SESSION I

LOCATION: INTERNATIONAL HALL A . . . . . SUN 9:00 TO 12:00

9:00: Opening Ceremony

9:20: Awards and Recognition

9:30: **Low-cost optical technologies to improve global health equity: examples from newborn health, women's health, and COVID-19** *(Plenary)*, Rebecca R. Richards-Kortum, Director, Rice 360 Institute for Global Health Technologies (United States) and Rice Univ. (United States). . . . . [11900-501]

Tea/Coffee Break . . . . . .Sun 10:10 to 10:40

10:40: **High-quality electron beams and free-electron lasing based on laser-wakefield accelerator** *(Plenary)*, Wentao Wang, State Key Lab. of High Field Laser Physics (China) and CAS Ctr. for Excellence in Ultra-intense Laser Science (China) and Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China) . . . . . [11890-502]

11:20: **Advances of perovskite solar cell technology** *(Plenary)*, Rui Zhu, Peking Univ. (China) . . . . . [11893-503]

Lunch Break . . . . . Sun 12:00 to 13:30

SESSION 1

LOCATION: ROOM 103A . . . . . SUN 13:30 TO 15:00

Deep-Learning-Enhanced Imaging Technologies

Session Chair: **Kebin Shi,** Peking Univ. (China)

13:30: **Deep-learning-based stimulated Raman scattering histology** *(Invited Paper)*, Minbiao Ji, Fudan Univ. (China) . . . . . [11896-1]

14:00: **Deep-learning-enhanced high-throughput fluorescence microscopy** *(Invited Paper)*, Peng Fei, Fang Zhao, Yuxuan Zhao, Lanxin Zhu, Huazhong Univ. of Science and Technology (China) . . . . . [11896-2]

14:30: **SHIELD: Second harmonic imaging based on deep-learning decipher** *(Invited Paper)*, Delong Zhang, Zhejiang Univ. (China). . . . . [11896-3]

Tea/Coffee Break . . . . . Sun 15:00 to 15:30

PLENARY SESSION II

LOCATION: INTERNATIONAL HALL A . . . . . SUN 15:30 TO 16:20

15:30: Welcome and Introduction

Q&A period will follow after the talk

15:35: **The UK National Quantum Technology Programme** *(Plenary)*, Peter L. Knight, Blackett Lab., Imperial College London (United Kingdom) and UK National Quantum Technology Strategic Advisory Board for UKRI (United Kingdom). . . . . [11905-504]

Tea/Coffee Break . . . . . Sun 16:20 to 16:30

SESSION 2

LOCATION: ROOM 103A . . . . . SUN 16:30 TO 17:40

Computational Imaging

Session Chair: **Minbiao Ji,** Fudan Univ. (China)

16:30: **Transport-of-intensity quantitative phase imaging (TIQPI) and transport-of-intensity diffraction tomography (TIDT)** *(Invited Paper)*, Chao Zuo, Nanjing Univ. of Science and Technology (China) . . . . . [11896-4]

17:00: **Label free imaging of cellular activities with computed specificity**, Kaiqin Chu, Siyue Guo, Zachary J. Smith, Univ. of Science and Technology of China (China) . . . . . [11896-5]

17:20: **Optimization analysis of partially coherent illumination for refractive index tomographic microscopy**, Jiaji Li, Ning Zhou, Zhidong Bai, Shun Zhou, Qian Chen, Chao Zuo, Nanjing Univ. of Science and Technology (China). . . . . [11896-6]

ON DEMAND: **Computational imaging with randomness** *(Invited Paper)*, Ryoichi Horisaki, The Univ. of Tokyo (Japan) . . . . . [11896-7]

MONDAY 11 OCTOBER

SESSION 3

LOCATION: ROOM 103A . . . . . MON 8:30 TO 10:10

Super-Resolution Imaging I

Session Chair: **Shian Zhang,** East China Normal Univ. (China)

8:30: **Single-molecule localization by interferometric and cryogenic imaging** *(Invited Paper)*, Wei Ji, Lusheng Gu, Tao Xu, Institute of Biophysics (China). . . . . [11896-8]

9:00: **3D adaptive optical nanoscopy for thick specimen imaging at sub-50nm resolution** *(Invited Paper)*, Xiang Hao, Zhejiang Univ. (China) . [11896-9]

9:30: **Super-resolution imaging by nonlinear four-wave mixing excited evanescent waves**, Zhihao Zhou, Wei Liu, Jiajing He, Lei Chen, Xin Luo, Dongyi Shen, Shanghai Jiao Tong Univ. (China); Jianjun Cao, Jiangnan Univ. (China); Yaping Dan, Xianfeng Chen, Wenjie Wan, Shanghai Jiao Tong Univ. (China). . . . . [11896-10]

9:50: **Tunable and deep spatial frequency shift chip for super-resolution imaging**, Mingwei Tang, Qianwei Zhang, Muchun Lin, Yubing Han, Qing Yang, Xu Liu, Zhejiang Univ. (China) . . . . . .[11896-11]

Tea/Coffee Break . . . . . Mon 10:10 to 10:40

SESSION 4

LOCATION: ROOM 103A . . . . . MON 10:40 TO 12:00

Super-Resolution Imaging II

Session Chair: **Xiang Hao,** Zhejiang Univ. (China)

10:40: **Low-power single-wavelength-pair multicolor nanoscopy with NIR-II depletion** *(Invited Paper)*, Xin Guo, Rui Pu, Zhimin Zhu, Shuqian Qiao, Yusen Liang, Qiuqiang Zhan, South China Normal Univ. (China). . . . [11896-12]

11:10: **Label-free microscopic imaging technology based on optical surface wave sensing** *(Invited Paper)*, Chonglei Zhang, Shenzhen Univ. (China). . . . . [11896-13]

11:40: **Label-free imaging platform for living cells with enhanced spatio-temporal resolution and stability**, Ying Ma, Xidian Univ. (China). . [11896-14]

Lunch Break . . . . . Mon 12:00 to 13:30

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

Effect of echinomycin on mechanical properties of ovarian cancer cells examined by atomic force microscopy, Yan Zhang, Xiaoqiong Tang, Mengdan Chen, Yuhua Wang, Zhengchao Wang, Hongqin Yang, Fujian Normal Univ. (China) . . . . . [11896-23]

Solutions on high-resolution multiple configuration, Hua Liu, Luoyang Electro-optical Equipment Research Institute (China) . . . . . [11896-24]

2D sizing measuring system of regular particles by semi-automatic image analysis technique, Sen Zhou, Chongqing Institute of Metrology and Quality Inspection (China) . . . . . [11896-25]

Optical sectioning in an epi-illumination dark-field microscope for high-resolution high-speed imaging of unlabeled small organisms, Kaiqin Chu, Ruijie Shi, Zachary J. Smith, Univ. of Science and Technology of China (China) . . . . . [11896-26]

Simultaneous contrast enhancement and halo removal via three-dimensional deconvolution for spatial light interference microscopy, Yang Pan, Kaiqin Chu, Zachary J. Smith, Univ. of Science and Technology of China (China) . . . . . [11896-27]

Phase retrieval at all defocus distances, Hong Cheng, Xiaotian Zhu, Yong Liu, Li Wang, Yi Wu, Chuan Shen, Anhui Univ. (China) . . . . . [11896-28]

Depth resolution enhancement using light-field light-sheet fluorescence microscopy, Xiaoting Peng, Dong Liang, Shanshan Zheng, Yuyao Hu, Jun Liu, Guohai Situ, Shanghai Institute of Optics and Fine Mechanics (China) . . . . . [11896-29]

The measurability analysis of abnormality detection based on DOT method using stack auto-encoding neural network model, Guang Han, Yutong Wang, Tiangong Univ. (China); Xinming Dong, Tianjin Rehabilitation Ctr. (China); Zhe Zhao, Huiquan Wang, Jinhai Wang, Tiangong Univ. (China); Ximing Li, Tianjin Chest Hospital (China). . . . . [11896-30]

Digital holographic phase reconstruction technology based on Hilbert transform, Qian Shen, Jiasong Sun, Qian Chen, Chao Zuo, Nanjing Univ. of Science and Technology (China) . . . . . [11896-31]

Hybrid calibration for structured light-field system, Shuo Peng, Qun Hao, Yao Hu, Shaohui Zhang, Beijing Institute of Technology (China) . . . . [11896-32]

Effective frequency band and signal extraction of dynamic Stokes vector measurements, Wei Guo, Nan Zeng, Jiawei Song, Hui Ma, Tsinghua Univ. Shenzhen International Graduate School (China) . . . . . [11896-33]

Single-photon counting compressive imaging based on autoencoder network prior, Cong Peng, Qiurong Yan, Wencheng Li, Nanchang Univ. (China) . . . . . [11896-34]

Simulation on the photoacoustic effect of finite-width Gaussian laser pulse with gastric tumor based on finite element method, Anqing Chen, Xianlin Song, Nanchang Univ. (China) . . . . . [11896-35]

Virtual compressed sensing photoacoustic tomography for high-speed imaging using k-wave, Aojie Zhao, Xianlin Song, Nanchang Univ. (China) . . . . . [11896-36]

Airy-beam photoacoustic microscopy with large depth of field, Ganyu Chen, Xianlin Song, Nanchang Univ. (China). . . . . [11896-37]

Super-resolution photoacoustic microscopy using deep-learning network, Zhuangzhuang Wang, Xianlin Song, Nanchang Univ. (China) . . . . . [11896-38]

Research on the suppression of aerodynamic thermal radiation effect by the thickness of optical dome in complex thermal environment, Lei Gao, Changchun Univ. of Science and Technology (China); Mingna Liu, Huan Li, Shuang Wang, Shanghai Institute of Aerospace Control Technology (China) . . . . . [11896-39]

An improved phase measuring deflectometry technique applied to the detection of specular reflection surface defects, Weijian Shi, Shihao Lu, Xiang Qian, Xiaohao Wang, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China) . . . . . [11896-40]

Quantitative phase retrieval based on phase modulations, Zhan Tong, Shanghai Jiao Tong Univ. (China) . . . . . [11896-41]

infrared image enhancement based on Res-UNet, Bowen Wang, Nanjing Univ. of Science and Technology (China); Yuhai Li, Science and Technology on Electro-Optical Information Security Control Lab. (China); Yan Zou, Sheng Li, Le Li, Chao Zuo, Nanjing Univ. of Science and Technology (China) . [11896-42]

A visible-light photon-counting imaging detector based on induction readout, Yong'an Liu, Yonglin Wei, Ruili Zhang, Xianghui Yang, Hui Zhao, Lizhi Sheng, Jinshou Tian, Baosheng Zhao, Xi'an Institute of Optics and Precision Mechanics (China) . . . . . [11896-43]

Light controlling and imaging through strong scattering media with one pseudo-transmission matrix, Wenjian Lu, Guangbin Ren, Jiaxing Gong, Qi Li, Hui Zhang, Jing Wang, Huazhong Univ. of Science and Technology (China) . . . . . [11896-44]

Tilt and displacement correction for digital holographic multi-aperture imaging, Bo Chen, Yusi Shan, North China Univ. of Science and Technology (China) . . . . . [11896-45]

Two-step spatial-temporal compressive sensing imaging, Dingaoyu Zhao, Jun Ke, Beijing Institute of Technology (China). . . . . [11896-46]

Dual-camera phase retrieval based on fast adaption image restoration and transport of intensity equation, Hong Cheng, Xinyu Xiang, Qiyang Zhang, Xiaotian Zhu, Anhui Univ. (China) . . . . . [11896-47]

SESSION 5

LOCATION: ROOM 103A . . . . . MON 14:30 TO 17:30

Novel Imaging Technologies

Session Chair: **Kebin Shi,** Peking Univ. (China)

14:30: **Single-shot ultrafast optical imaging: towards higher quality and higher dimension** *(Invited Paper)*, Yunhua Yao, Pengpeng Ding, Jiali Yao, Chengshuai Yang, Dalong Qi, Shian Zhang, East China Normal Univ. (China) . . . . . [11896-15]

15:00: **High stable wavefront shaping multimode fiber imaging and integrated multifunctional sensing** *(Invited Paper)*, Qing Yang, Zhong Wen, Jinggang Xu, Zhenyu Dong, Qilin Deng, Liqiang Wang, Xu Liu, Zhejiang Univ. (China) . . . . . [11896-16]

15:30: **Diarylethene-based photochromic probes for reversible switchable vibrational imaging**, Jianpeng Ao, Fudan Univ. (China) [11896-17]

Tea/Coffee Break . . . . . Mon 15:50 to 16:10

16:10: **Optical volumetric projection with large NA objectives for fast high-resolution 3D imaging of neural signals**, Kaiqin Chu, Qi Meng, Zachary J. Smith, Univ. of Science and Technology of China (China) [11896-18]

16:30: **High-resolution microscopic imaging based on dark-field transport of intensity equation**, Linpeng Lu, Jialin Zhang, Jiasong Sun, Yao Fan, Yefeng Shu, Qian Chen, Chao Zuo, Nanjing Univ. of Science and Technology (China). . . . . [11896-19]

16:50: **Optofluidic varifocal lens actuated by dielectric elastomer sandwiched by two conductive liquids with different refractive indexes**, Qun Hao, Chuanxun Chen, Jie Cao, Yang Cheng, Beijing Institute of Technology (China). . . . . [11896-21]

17:10: **Snapshot ghost diffraction imaging based on spatial averaging**, Yanyan Huang, Vinu R.V., Ziyang Chen, Huaqiao Univ. (China); Rakesh K. Singh, Indian Institute of Technology (BHU), Varanasi (India); Jixiong Pu, Huaqiao Univ. (China). . . . . [11896-22]

ON DEMAND: **A new multimode fiber micro-endoscopy utilizing a fluorescence-based reflection matrix**, Shengfu Cheng, Tianting Zhong, Li Jin, Puxiang Lai, The Hong Kong Polytechnic Univ. (Hong Kong, China) . . . . . [11896-20]

Optoelectronic Imaging and Multimedia Technology VIII

Conference Chairs: **Qionghai Dai,** Tsinghua Univ. (China); **Tsutomu Shimura,** The Univ. of Tokyo (Japan); **Zhenrong Zheng,** Zhejiang Univ. (China)

Program Committee: **Moshe Ben-Ezra,** MIT Media Lab. (United States); **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, China); **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)

SUNDAY 10 OCTOBER

OPENING CEREMONY AND PLENARY SESSION I

LOCATION: INTERNATIONAL HALL A . . . . . SUN 9:00 TO 12:00

9:00: Opening Ceremony

9:20: Awards and Recognition

9:30: **Low-cost optical technologies to improve global health equity: examples from newborn health, women's health, and COVID-19** *(Plenary)*, Rebecca R. Richards-Kortum, Director, Rice 360 Institute for Global Health Technologies (United States) and Rice Univ. (United States). . . . . [11900-501]

Tea/Coffee Break . . . . . Sun 10:10 to 10:40

10:40: **High-quality electron beams and free-electron lasing based on laser-wakefield accelerator** *(Plenary)*, Wentao Wang, State Key Lab. of High Field Laser Physics (China) and CAS Ctr. for Excellence in Ultra-intense Laser Science (China) and Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China) . . . . . [11890-502]

11:20: **Advances of perovskite solar cell technology** *(Plenary)*, Rui Zhu, Peking Univ. (China) . . . . . [11893-503]

Lunch Break . . . . . Sun 12:00 to 13:30

SESSION 1

LOCATION: ROOM 101B . . . . . SUN 13:30 TO 15:10

Computer Vision and Graphics

Session Chairs: **Qionghai Dai,** Tsinghua Univ. (China); **Zhenrong Zheng,** Zhejiang Univ. (China)

13:30: **A neural network for underwater polarization dehazing imaging**, Yanfa Xiang, Qiming Ren, Rui-pin Chen, Zhejiang Sci-Tech Univ. (China) . . . . . [11897-2]

13:50: **Focusing of scattering light based on wavefront feedback shaping technology**, Lihua Shen, Rui-pin Chen, Bote Qi, Zhejiang Sci-Tech Univ. (China) . . . . . [11897-3]

14:10: **Simultaneous image deblurring and inpainting via learned convolutional sparse coding**, ShengBiao Wang, Bolun Chen, Huasong Chen, Shixuan Gao, Junhao Wang, Qiansheng Feng, Nina Hua, Huaiyin Institute of Technology (China) . . . . . [11897-4]

14:30: **Adaptive obstacle avoidance algorithm of collaborative unmanned vehicles integrated monocular cameras in dynamic scene**, Yuqi Han, Tsinghua Univ. (China) . . . . . [11897-5]

14:50: **Wide field-of-view waveguide coupling metasurfaces used on augmented reality system**, Yan Sun, Chang Wang, Qin Xie, Jinlei Zhang, Xinyu Liu, Zhenrong Zheng, Zhejiang Univ. (China) . . . . . [11897-6]

Tea/Coffee Break . . . . . Sun 15:10 to 15:30

PLENARY SESSION II

LOCATION: INTERNATIONAL HALL A . . . . . SUN 15:30 TO 16:20

15:30: Welcome and Introduction

Q&A period will follow after the talk

15:35: **The UK National Quantum Technology Programme** *(Plenary)*, Peter L. Knight, Blackett Lab., Imperial College London (United Kingdom) and UK National Quantum Technology Strategic Advisory Board for UKRI (United Kingdom). . . . . [11905-504]

Tea/Coffee Break . . . . . Sun 16:20 to 16:30

SESSION 2

LOCATION: ROOM 101B . . . . . SUN 16:30 TO 18:00

Hyperspectral and Single-Pixel Imaging

Session Chair: **Hui Qiao,** Tsinghua Univ. (China)

16:30: **Improved CTIS imaging reconstruction with limited projected angles by generative adversarial network** *(Invited Paper)*, Shaogang Chen, Xiaojian Hao, Xiaodong Huang, Wenyuan Hao, North Univ. of China (China). . . . . [11897-7]

17:00: **Single-pixel multispectral imaging based on macropixel segmentation method**, Qin Xie, Chenning Tao, Xinyu Liu, Yan Sun, Chang Wang, Jinlei Zhang, Zhenrong Zheng, Zhejiang Univ. (China) . . . . . [11897-8]

17:20: **Perovskite monocrystal growth based on micro-hyperspectral imaging**, Qian Zhou, Bo Zhao, Zhe Zhang, Run Tan, Shanshan He, Lin Liu, Beijing Jiaotong Univ. (China) . . . . . [11897-9]

17:40: **Image processing of fluorescent molecules based on microscopic hyperspectral with transmission mode**, Run Tan, Zhe Zhang, Bo Zhao, Qian Zhou, Shanshan He, Lin Liu, Beijing Jiaotong Univ. (China). . . . . .[11897-10]

MONDAY 11 OCTOBER

SESSION 3

LOCATION: ROOM 101B . . . . . MON 10:00 TO 11:50

Biomedical Imaging and Microscopy

Session Chair: **Jiamin Wu,** Tsinghua Univ. (China)

10:00: **Medical CT image amplification and reconstruction system based on deep learning** *(Invited Paper)*, Yun Wang, Hebei Univ. of Science and Technology (China). . . . . .[11897-11]

10:30: **Compressed sensing photoacoustic tomography with high-detection efficiency using k-wave: a simulation study**, Aojie Zhao, Xianlin Song, Nanchang Univ. (China). . . . . .[11897-12]

10:50: **Wavefront modulation with spatial light modulator for Fourier ptychographic microscopy**, Jinlei Zhang, Xiao Tao, Qin Xie, Yan Sun, Zhenrong Zheng, Zhejiang Univ. (China). . . . . .[11897-13]

11:10: **Optical logic gate operations with single-pixel imaging**, Shuming Jiao, Jun Feng, Peng Cheng Lab. (China). . . . . .[11897-14]

11:30: **Image reconstruction from optical speckle pattern based on deep learning**, Lihua Shen, Bote Qi, Rui-pin Chen, Zhejiang Sci-Tech Univ. (China). . . . . [11897-37]

Lunch Break . . . . . Mon 11:50 to 13:30

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

Underwater polarization imaging based on waveplate modulation for typical marine organism, Dongsheng Xu, Yantai Univ. (China); Weiwei Feng, Yantai Institute of Coastal Zone Research (China) . . . . . .[11897-1]

Detection of transmission line defects with improved DeepLabV3+, Yonglong Sang, Jun Han, Shanghai Univ. (China) . . . . . .[11897-15]

Surface scattering properties based on Kirchhoff approximation, Zhao Yingran, Xi'an Technological Univ. (China) . . . . . .[11897-16]

Design of synchronous imaging for multi-channel CMOS camera, Bin Tai, Xiaojian Hao, Jia Wang, Haoliang Sun, North Univ. of China (China) .[11897-17]

Thin filament pyrometry to measurement the oxygen-ethanol combustion flame, Haoliang Sun, Xiaojian Hao, Jia Wang, Bin Tai, North Univ. of China (China). . . . . .[11897-18]

Convolutional sparse coding and directional gradient prior based method for single image rain streak removal, ShengBiao Wang, Nina Hua, Jian Li, Yuanyuan Zheng, Pengfei Xie, Junhao Wang, Huasong Chen, Huaiyin Institute of Technology (China) . . . . . .[11897-19]

Single frame infrared small target detection based on local gradient and directional curvature, Minjie Wan, Yunkai Xu, Qinyan Huang, Weixian Qian, Guohua Gu, Qian Chen, Nanjing Univ. of Science and Technology (China). . . . . [11897-20]

Adaptive window stereo matching algorithm for weak texture region, Qian Xu, Xiaobing Chen, Shaozhang Xiao, ShengBiao Wang, Huaiyin Institute of Technology (China). . . . . .[11897-21]

color correction and dynamic range expansion of underwater images based on lightfield technology, Ma Zhen, Jia Yu, Huiping Liu, Ouyang Feng, Ocean Univ. of China (China). . . . . [11897-22]

Zoom imaging system using liquid crystal lens array, Yi Yao Hu, Mao Ye, Xiaoxi Chen, Univ. of Electronic Science and Technology of China (China). . . . . [11897-23]

Few-shot deep model of waste classification based on model agnostic meta-learning, Bo Feng, Ren Kun, Qingyang Tao, Han Honggui, Beijing Univ. of Technology (China). . . . . [11897-24]

Similarity perception siamese network for real-time object tracking, Jiaqi Xi, Yi Wang, Huaiyu Cai, Xiaodong Chen, Tianjin Univ. (China). [11897-25]

Point cloud registration algorithm based on curvature and direction vector threshold, Zhiyong Liu, Qun Hao, Yao Hu, Shaohui Zhang, Beijing Institute of Technology (China) . . . . . [11897-26]

An improved method based on twIst and dual-camera design for hyperspectral image reconstruction, Xinyu Liu, Chenning Tao, Qin Xie, Yan Sun, Jinlei Zhang, Qiangbo Zhang, Zhenrong Zheng, Zhejiang Univ. (China). . . . . [11897-27]

Underwater image enhancement based on computational imaging and deep learning, Xiao Yu, Jia Yu, Ma Zhen, Ouyang Feng, Bing Zheng, Ocean Univ. of China (China). . . . . [11897-28]

Spherical triangle mesh representation and multi-channel residual graph convolution network-based blind omnidirectional image quality assessment, Yong Chao, Zhidi Jiang, Liuyan Cao, Mei Yu, Gangyi Jiang, Ningbo Univ. (China). . . . . [11897-29]

MRI image recognition of thyroid-associated ophthalmopathy based on meta-learning, Ren Kun, Beijing Univ. of Technology (China); Lihua Luo, Beijing Friendship Hospital, Capital Medical Univ. (China); Qingyang Tao, Bo Feng, Beijing Univ. of Technology (China). . . . . [11897-30]

Dark object three-dimensional reconstruction enhancement for indirect time-of-flight camera, Zhuang Ma, Liqiang Wang, Qing Yang, Zhejiang Univ. (China). . . . . [11897-31]

Plume segmentation based on genetic algorithm with two-dimensional maximum entropy and multi-domain value segmentation, Yinsheng Lv, zhidong zhang, Univ. of Science and Technology of China (China). . [11897-32]

Multi-feature fusion gaze estimation based on attention mechanism, Zhangfang Hu, Yanling Xia, Yuan Luo, Lan Wang, Chongqing Univ. of Posts and Telecommunications (China). . . . . [11897-33]

Enhanced phase retrieval for non-ideal in-line phase contrast x-ray imaging based on deep learning, Yue Wu, Tianjin Univ. (China) . . [11897-34]

Multiframe image super-resolution using deep convolutional networks, WangCai Zhao, Can Cui, Jun Ke, Beijing Institute of Technology (China); Xiaoli Long, Guangzhou Univ. (China) . . . . . [11897-35]

Eliminating multi-aberrations in optical imaging systems with scattering media, Fu Zhao, Shuman Du, Dong Liang, Jun Liu, Shanghai Institute of Optics and Fine Mechanics (China). . . . . [11897-36]

Denoising of event-based sensors with deep neural networks, Zhihong Zhang, Jinli Suo, Qionghai Dai, Tsinghua Univ. (China) . . . . [11897-38]

Depth neural network wavefront restoration method for wavefront curvature sensor, Bo Chen, Jiaqi Wang, North China Univ. of Science and Technology (China). . . . . [11897-39]

ON DEMAND: **The realistic rendering of scenes defined by the cloud of points**, Andrey Zhdanov, Anatoli Lisih, Dmitry Zhdanov, Aleksandr Anikeev, ITMO Univ. (Russian Federation) . . . . . [11897-40]

ON DEMAND: **Evaluation of deep-learning-based myocardial infarction quantification using Segment CMR software**, Olivier Rukundo, Lund Univ. (Sweden) . . . . . .[11897-41]

ON DEMAND: **Effect of the regularization hyperparameter on deep-learning-based segmentation in LGE-MRI**, Olivier Rukundo, Lund Univ. (Sweden) . . . . . [11897-42]

ON DEMAND: **Synthetic data generation for direct visual odometry tasks**, Larisa A. Zherdeva, Evgeniy Minaev, Denis Zherdev, Vladimir Fursov, Samara Univ. (Russian Federation) . . . . . [11897-43]

ON DEMAND: **Human hit map prediction using machine learning and synthetic data**, Larisa A. Zherdeva, Denis Zherdev, Evgeniy Minaev, Samara Univ. (Russian Federation) . . . . . [11897-44]

ON DEMAND: **Real-time tracking of surrounding objects in augmented and mixed reality applications**, Andrey Zhdanov, ITMO University (Russian Federation); Vitalii Nezhelskii, Dmitry Zhdanov, ITMO Univ. (Russian Federation); Iuliia Golovchanskaia, ITMO University (Russian Federation) . . . . . [11897-45]

Holography, Diffractive Optics, and Applications XI

Conference Chairs: **Yunlong Sheng,** Univ. Laval (Canada); **Changhe Zhou,** Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **Liangcai Cao,** Tsinghua Univ. (China)

Program Committee: **Linsen Chen,** Soochow Univ. (China); **Min Gu,** Univ. of Shanghai for Science and Technology (China); **Yoshio Hayasaki,** Utsunomiya Univ. Ctr. for Optical Research & Education (Japan); **Byoungho Lee,** Seoul National Univ. (Korea, Republic of); **Ai Qun Liu,** Nanyang Technological Univ. (Singapore); **Xu Liu,** Zhejiang Univ. (China); **Xiang Peng,** Shenzhen Univ. (China); **Ting-Chung Poon,** Virginia Polytechnic Institute and State Univ. (United States); **Xinzhu Sang,** Beijing Univ. of Posts and Telecommunications (China); **Ching-Cherng Sun,** National Central Univ. (Taiwan, China); **Xiaodi Tan,** Fujian Normal Univ. (China); **Peter W.M. Tsang,** City Univ. of Hong Kong (Hong Kong, China); **Vladimir Y. Venediktov,** Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation), Saint Petersburg State Univ. (Russian Federation); **Chinhua Wang,** Soochow Univ. (China); **Baoli Yao,** Xi'an Institute of Optics and Precision Mechanics of CAS (China); **Toyohiko Yatagai,** Utsunomiya Univ. Ctr. for Optical Research & Education (Japan); **Xiao-Cong Yuan,** Shenzhen Univ. (China); **Yan Zhang,** Capital Normal Univ. (China); **Jianlin Zhao,** Northwestern Polytechnical Univ. (China)

SUNDAY 10 OCTOBER

OPENING CEREMONY AND PLENARY SESSION I

LOCATION: INTERNATIONAL HALL A . . . . . SUN 9:00 TO 12:00

9:00: Opening Ceremony

9:20: Awards and Recognition

9:30: **Low-cost optical technologies to improve global health equity: examples from newborn health, women's health, and COVID-19** *(Plenary)*, Rebecca R. Richards-Kortum, Director, Rice 360 Institute for Global Health Technologies (United States) and Rice Univ. (United States). . . . . [11900-501]

Tea/Coffee Break . . . . . .Sun 10:10 to 10:40

10:40: **High-quality electron beams and free-electron lasing based on laser-wakefield accelerator** *(Plenary)*, Wentao Wang, State Key Lab. of High Field Laser Physics (China) and CAS Ctr. for Excellence in Ultra-intense Laser Science (China) and Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China) . . . . . [11890-502]

11:20: **Advances of perovskite solar cell technology** *(Plenary)*, Rui Zhu, Peking Univ. (China) . . . . . [11893-503]

Lunch Break . . . . . Sun 12:00 to 13:30

SESSION 1

LOCATION: ROOM 106A . . . . . SUN 13:30 TO 15:10

Diffractive Optics

Session Chair: **Changhe Zhou,** Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China)

13:30: **Spatiotemporally sculpturing of light** *(Invited Paper)*, Qiwen Zhan, Univ. of Shanghai for Science and Technology (China) . . . . . [11898-1]

14:00: **Metalens as an eyepiece for three-dimensional holographic near-eye display using Fraunhofer diffraction**, Zeqing Yu, Chang Wang, Lingmei Chen, Qin Xie, Xinyu Liu, Fei Wu, Zhenrong Zheng, Zhejiang Univ. (China). . . . . [11898-2]

14:20: **Topology-optimized freeform metasurfaces** *(Invited Paper)*, Mingfeng Xu, Institute of Optics and Electronics (China). . . . . [11898-3]

14:50: **Metasurface-based vectorial holography**, Dandan Wen, Northwestern Polytechnical Univ. (China); Jasper J. Cadusch, Jiajun Meng, Kenneth B. Crozier, The Univ. of Melbourne (Australia) . . . . . [11898-4]

Tea/Coffee Break . . . . . .Sun 15:10 to 15:30

ON DEMAND: **Speckle-free reconstruction and distortion-free scaling of holographic three-dimensional images using hologram-light field conversion** *(Invited Paper),* Jae-Hyeung Park, Dae-Youl Park, Inha Univ. (Korea, Republic of) . . . . . [11898-6]

ON DEMAND: **Integration of genetic and bat algorithms towards a parameter-free optimization scheme in iterative wavefront shaping**, Qi Zhao, Chi Man Woo, Huanhao Li, Tianting Zhong, Zhipeng Yu, Puxiang Lai, The Hong Kong Polytechnic Univ. (Hong Kong, China) . . . . . [11898-5]

PLENARY SESSION II

LOCATION: INTERNATIONAL HALL A . . . . . SUN 15:30 TO 16:20

15:30: Welcome and Introduction

Q&A period will follow after the talk

15:35: **The UK National Quantum Technology Programme** *(Plenary)*, Peter L. Knight, Blackett Lab., Imperial College London (United Kingdom) and UK National Quantum Technology Strategic Advisory Board for UKRI (United Kingdom). . . . . [11905-504]

Tea/Coffee Break . . . . . Sun 16:20 to 16:30

SESSION 2

LOCATION: ROOM 106A . . . . . SUN 16:30 TO 18:00

Novel Holography

Session Chair: **Qiwen Zhan,** Univ. of Shanghai for Science and Technology (China)

16:30: **Improved dual-wavelength digital holography with high speed and quality** *(Invited Paper)*, Mingguang Shan, Zhi Zhong, Lei Liu, Harbin Engineering Univ. (China). . . . . [11898-7]

17:00: **A method of three-dimensional cell morphology analysis based on digital holography**, Zhuoshi Li, Nanjing Univ. of Science and Technology (China). . . . . [11898-8]

17:20: **Fresnel incoherent correlation holographic localization microscopy with enhanced localization accuracy by employing autofocus algorithm**, Qin Zhang, Mengjing Jian, Chao Liu, Yuhong Wan, Beijing Univ. of Technology (China) . . . . . [11898-9]

17:40: **Tailored beams as advanced optical trapping**, Jila Rafighdoost, Xing Li, Yuan Zhou, Meiling Zhou, Manman Li, Shaohui Yan, Baoli Yao, Chinese Academy of Sciences (China) . . . . . [11898-78]

ON DEMAND: **Portable digital holographic microscope using volume holographic optical element** *(Invited Paper),* Yeh-Wei Yu, Chih-Yuan Song, Po-Kai Hsieh, Ching-Cherng Sun, Yi-Hao Huang, Tsung-Hsun Yang, National Central Univ. (Taiwan, China). . . . . [11898-10]

ON DEMAND: **Incoherent digital holographic microscopy for high-speed three-dimensional motion-picture sensing** *(Invited Paper),* Tatsuki Tahara, National Institute of Information and Communications Technology (Japan); Yuichi Kozawa, Tohoku Univ. (Japan); Takako Koujin, Atsushi Matsuda, Ryutaro Oi, National Institute of Information and Communications Technology (Japan). . . . . .[11898-11]

ON DEMAND: **Holographic subdiffraction limit illumination and its application,** *(Invited Paper)* Yusuke Ogura, Osaka Univ. (Japan) . . . [11898-12]

MONDAY 11 OCTOBER

SESSION 3

LOCATION: ROOM 106A . . . . . .MON 8:50 TO 9:30

3D Holographic Reconstruction

Session Chair: **Yaping Zhang,** Kunming Univ. of Science and Technology (China)

8:50: **Single-shot 3D reconstruction imaging approach based on polarization properties of reflection lights**, Feiya Ma, Fang Wang, Rui Yang, Jian Liang, Liyong Ren, Shaanxi Normal Univ. (China). . . . . [11898-13]

9:10: **Investigation on three-dimensional localization characteristics of fluorescence self-interference digital holography**, Mengjing Jian, Chao Liu, Qin Zhang, Yuhong Wan, Beijing Univ. of Technology (China) . . [11898-14]

ON DEMAND: **Three-dimensional holographic laser reconstruction and processing with optimized computer-generated hologram** *(Invited Paper),* Honghao Zhang, Satoshi Hasegawa, Utsunomiya Univ. Ctr. for Optical Research & Education (Japan); Haruyoshi Toyoda, Hamamatsu Photonics K.K. (Japan); Yoshio Hayasaki, Utsunomiya Univ. Ctr. for Optical Research & Education (Japan) . . . . . [11898-16]

ON DEMAND: **Recovery of 3D particles distribution from digital hologram using a one-stage detection network**, Yunping Zhang, Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China) . . . . . [11898-15]

SESSION 4

LOCATION: ROOM 106A . . . . . MON 9:30 TO 10:30

Scanning Holography

Session Chair: **Xiaodi Tan,** Fujian Normal Univ (China)

9:30: **Review on edge extraction as pre-processing in optical scanning holography** *(Invited Paper)*, Yaping Zhang, Bin Wang, Houxin Fan, Kunming Univ. of Science and Technology (China); Ting-Chung Poon, Virginia Polytechnic Institute and State Univ. (United States) . . . . . [11898-17]

10:00: **Maxwellian see-through near-eye display with tunable viewpoints for extending eyebox** *(Invited Paper),* Juan Liu, Xueliang Shi, Zhiqi Zhang, Zijie Zhao, Shijie Zhang, Beijing Institute of Technology (China) . . . . . [11898-18]

Tea/Coffee Break . . . . . Mon 10:30 to 11:00

SESSION 5

LOCATION: ROOM 106A . . . . . MON 11:00 TO 11:50

Near-Eye Displays

Session Chair: **Juan Liu,** Beijing Institute of Technology (China)

11:00: **Physics-driven topological optimization of diffractive elements for augmented reality** *(Invited Paper)*, Qiang Song Sr., Hongfeng Ma Sr., Shenzhen Lochn Optics Technology Co., Ltd. (China) . . . . . [11898-20]

11:30: **Design of near-eye display with cylindrical holographic waveguide**, Yu Mei, Xinxing Xia, Shanghai Univ. (China) and Science and Technology on Electro-optic Control Lab. (China); Fei Peng, Mingwu Kang, Luoyang Institute of Electro-Optical Equipment, AVIC (China) and Science and Technology on Electro-optic Control Lab. (China); Yingjie Yu, Banghua Yang, Shanghai Univ. (China) . . . . . [11898-21]

Lunch Break . . . . . Mon 11:50 to 13:30

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

Common path off-axis digital holographic microscopy platform, Zhengyuan Tang, Kevin O'Dwyer, Bryan Hennelly, National Univ. of Ireland, Maynooth (Ireland) . . . . . [11898-26]

A variable profile depth crossed-grating-based exit pupil expander with improved imaging brightness uniformity, Qimeng Wang, Lijiang Zeng, Tsinghua Univ. (China); Yuxuan Zhao, Greatar Tech (China) . . . . . [11898-53]

High-resolution reconstruction in off-axis digital holographic imaging by using aliasing-spectrum filtering, Yiwei Liu, Yibo Wang, Hao Chen, Qiuya Sun, Hongpeng Qin, Zhuqing Jiang, Beijing Univ. of Technology (China) . . . . . [11898-54]

An ultracompact high-resolution displacement sensor based on self-interference effect of single optical nanograting, Jie Qi, Chenguang Xin, North Univ. of China (China). . . . . [11898-55]

Automatic filtering processing by clustering algorithm in off-axis digital holography, Qiuya Sun, Beijing Univ.of Technology (China); Yiwei Liu, Hao Chen, Yibo Wang, Zhuqing Jiang, Beijing Univ. of Technology (China) . . . . . [11898-56]

Elimination of the zero-order term in off-axis digital holography by multiplexing of light intensity ratio, Hao Chen, Yiwei Liu, Qiuya Sun, Zhuqing Jiang, Beijing Univ. of Technology (China) . . . . . [11898-57]

Digital holographic microscopy with divergent spherical illumination, Xin Fan, Shanghai Institute of Optics and Fine Mechanics (China); Zhengyuan Tang, National Univ. of Ireland, Maynooth (Ireland); John Healy, Univ. College Dublin (Ireland); Bryan Hennelly, National Univ. of Ireland, Maynooth (Ireland) . . . . . [11898-58]

Optical convolutional neural network based on an amplitude modulation SLM and a 4-level phase plate, Li Fan, Biaohan Liu, Xilin Long, Jianjun He, Zhejiang Univ. (China). . . . . [11898-59]

Development of velocity flow field measurement method based on digital holography and convolutional neural network, Han Ouyang, Jia Yu, Huiping Liu, Buyu Guo, Ocean Univ. of China (China) . . . . . [11898-60]

Research on the fusion method of virtual and real light field of holographic stereogram, Yunpeng Liu, Chenqing Wang, Tao Jing, Xingpeng Yan, The Academy of Armored Forces Engineering of PLA (China). . [11898-61]

Non prior digital holographic reconstruction based on coupled retrieval, Zhengzhong Huang, Liangcai Cao, Tsinghua Univ. (China) . . . . . [11898-62]

A simple and flexible method for generating structured illumination of three-dimensional shape measurement using phase modulation, Xianlin Song, Nanchang Univ. (China) . . . . . [11898-63]

Optimal design of conical concave acoustic lens for large volumetric photoacoustic microscopy, Zouhua Chen, Xianlin Song, Nanchang Univ. (China) . . . . . [11898-64]

Encrypting information through controlling polarization distributions in far field, Weiping Wan, Hang Feng, Sheng Ye, Qihuang Gong, Yan Li, Peking Univ. (China) . . . . . [11898-65]

Optical design of grating Fresnel lens array spectrometer, Peiyuan Liu, Jiao Bai, Qian Zhou, Gaopeng Xue, Xiaohao Wang, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China). . . . . [11898-66]

Precise measurement of grating diffraction using a microscope with big numerical aperture, Jiao Bai, Xiaohao Wang, Kai Ni, Qian Zhou, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China) . . . [11898-67]

Experimental study on angular memory effect of dynamic turbid medium and imaging through it, Runze Li, Tong Peng, Chen Bai, Meiling Zhou, Baoli Yao, Xi'an Institute of Optics and Precision Mechanics (China). . . . . [11898-68]

Computer-generated hologram compression with attention-based deep convolutional neural network, Zhelun Shen, Guanglin Yang, Peking Univ. (China); Haiyan Xie, China Science Patent & Trademark Agent Ltd. (China) . . . . . [11898-69]

A method for compressing computer-generated hologram using genetic algorithm optimized quantum-inspired neural network, Jingyuan Ma, Guanglin Yang, Peking Univ. (China); Haiyan Xie, China Science Patent & Trademark Agent Ltd. (China) . . . . . [11898-70]

Study on immersion grating with dielectric film, Zongqing Wu, Quan Liu, Jinchao Lu, Nenghua Zhou, Soochow Univ. (China); Bin Huang, Soochow Univ. (China) and Collaborative Innovation Ctr. of Suzhou Nano Science and Technology (China). . . . . [11898-71]

Adaptive method of computational imaging based on super-resolution technology, Hua Liu, Luoyang Electro-optical Equipment Research Institute (China) and Science and Technology on Electro-optic Control Lab.. (China) . . . . . [11898-72]

Wide field-of-view super-resolution integral hologram generation based on Fourier ptychography, Xin Qian, Lingyu Ai, Jiangnan Univ. (China) . . . . . [11898-73]

ON DEMAND: **Phase-integrated double-frequency grating shearing interferometer of a holographic data storage system**, Ching-Cherng Sun, Yeh-Wei Yu, National Central Univ. (Taiwan, China) . . . . . [11898-74]

ON DEMAND: **Imaging harmonic diffractive lens for RGB LED radiation**, Grigoriy Greisukh, Evgeny Ezhov, Artem I. Antonov, Penza State Univ. of Architecture and Construction (Russian Federation) . . . . . [11898-75]

ON DEMAND: **Visible color routing metasurface using dual focal phase profile in green light**, Changhyun Kim, Jongwoo Hong, Byoungho Lee, Seoul National Univ. (Korea, Republic of) . . . . . [11898-76]

ON DEMAND: **Generating elliptical zero-order Bessel beams with a tilted diffraction grating**, Raphael A. Guerrero, Ateneo de Manila Univ. (Philippines); Paz Victoria T. Ramos, Ateneo de Manila Univ. (Philippines) and Isabela State Univ. (Philippines). . . . . [11898-77]

SESSION 6

LOCATION: ROOM 106A . . . . . MON 14:30 TO 17:20

Holographic Microscopy

Session Chair: **Liyong Ren,** Shaanxi Normal Univ. (China)

14:30: **Color holographic Maxwellian near-eye display based on hybrid wavefront reconstruction** *(Invited Paper)*, Zi Wang, Xu Zhang, Guoqiang Lv, Hefei Univ. of Technology (China); Hai Ming, Anting Wang, Univ. of Science and Technology of China (China) . . . . . [11898-22]

15:00: **Lloyd's mirror-based holographic lithography for fabrication of pixelated micro-polarizer array**, Gaopeng Xue, Qihang Zhai, Liyu Lin, Qian Zhou, Kai Ni, Xiaohao Wang, Xinghui Li, Tsinghua Univ. (China) . . . . [11898-23]

15:20: **Coherent diffraction imaging using structured phase modulation**, Rujia Li, Liangcai Cao, Tsinghua Univ. (China) . . . . . [11898-24]

Tea/Coffee Break . . . . . Mon 15:40 to 16:00

16:00: **Compressive phase retrieval via complex total variation regularization**, Yunhui Gao, Liangcai Cao, Tsinghua Univ. (China) . [11898-25]

16:20: **Faithful reconstruction of polarization holography independent of exposure time**, Zhiyun Huang, Ayuan Lin, Jinyu Wang, Fujian Normal Univ. (China); Xiaodi Tan, Fujian Normal Univ (China) . . . . . [11898-27]

16:40: **Computed photoacoustic microscopy based on single-pixel imaging**, Kaicheng Yu, Xianlin Song, Nanchang Univ. (China) . . . . . [11898-28]

17:00: **Interferenceless coded aperture correlation holography with enhanced reconstruction image quality by employing an optimization coded phase mask**, Teng Ma, Chao Liu, Yuhong Wan, Beijing Univ. of Technology (China). . . . . [11898-29]

ON DEMAND: **Towards the multichannel holographic wavefront sensor** (*Invited Paper),* Vladimir Y. Venediktov, Saint Petersburg Electrotechnical Univ. (Russian Federation); Vyacheslav V. Orlov, ITMO Univ. (Russian Federation) . . . . . [11898-30]

ON DEMAND: **Reconstruction algorithms for lensless inline digital holographic microscopy** *Invited Paper),* Renu John, Indian Institute of Technology Hyderabad (India). . . . . [11898-31]

ON DEMAND: **Transport of Intensity equation for low-light quantitative phase imaging and security applications,** Naveen K. Nishchal, Indian Institute of Technology Patna (India) . . . . . [11898-32]

ON DEMAND: **Study on object wavefront sensing in parallel phase-shifting camera with geometric phase lens,** Nikolay V. Petrov, Aleksei S. Ezerskii, Aleksey V. Chernykh, Alexandra O. Georgieva, ITMO Univ. (Russian Federation) . . . . . [11898-33]

TUESDAY 12 OCTOBER

SESSION 7

LOCATION: ROOM 106A . . . . . TUE 8:30 TO 10:20

Deep-Learning for Computational Imaging

Session Chair: **Chao Zuo,** Nanjing Univ. of Science and Technology (China)

8:30: **Physics-driven untrained deep neural networks for computational imaging** *(Invited Paper)*, Guohai Situ, Fei Wang, Xiangyu Zhang, Shanghai Institute of Optics and Fine Mechanics (China) . . . . . [11898-34]

9:00: **Deep-learning image enhancement technology based on model guidance**, Hangying Zhang, Liangcai Cao, Feng Yang, Tsinghua Univ. (China). . . . . [11898-35]

9:20: **A learning approach toward computational imaging with model uncertainty**, Xiangyu Zhang, Fei Wang, Guohai Situ, Shanghai Institute of Optics and Fine Mechanics (China). . . . . [11898-36]

9:40: **Super-resolution quantitative phase imaging of out-of-focus images based on deep learning**, Hao Ding, Fajing Li, Xin Qian, Shaotong Feng, Shouping Nie, Caojin Yuan, Nanjing Normal Univ. (China). . . . [11898-37]

10:00: **Large field-of-view rapid imaging through scattering media via deep learning,** Meiling Zhou, Chen Bai, Xi'an Institute of Optics and Precision Mechanics (China); Yang Zhang, Shaanxi Normal Univ. (China); Runze Li, Tong Peng, Jia Qian, Dan Dan, Junwei Min, Yuan Zhou, Xi'an Institute of Optics and Precision Mechanics (China); Baoli Yao, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China). . . . . [11898-38]

Tea/Coffee Break . . . . . Tue 10:20 to 10:50

ON DEMAND: **Image descattering with synthetic polarization imaging and untrained network,** Yanmin Zhu, Tianjiao Zeng, The Univ. of Hong Kong (Hong Kong, China); Kewei Liu, Zhenbo Ren, Northwestern Polytechnical Univ. (China); Chok Hang Yeung, Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China). . . . . [11898-39]

SESSION 8

LOCATION: ROOM 106A . . . . . TUE 10:50 TO 12:10

Novel Techniques

Session Chair: **Guohai Situ,** Shanghai Institute of Optics and Fine Mechanics (China)

10:50: **Laser interference patterning induced quantum structure arrays by molecular beam epitaxy** *(Invited Paper)*, Changsi Peng, Soochow Univ. (China). . . . . [11898-40]

11:20: **Diffraction-free optical holography** *(Invited Paper)*, Baoli Li, Xinyuan Fang, Min Gu, Univ. of Shanghai for Science and Technology (China)[11898-41]

11:50: **Fabrication of large-aperture polarization-independent two-dimensional displacement measurement grating based on reactive ion beam processing technology**, Wei Zhang, Yanxiu Jiang, Zhongming Zheng, Tong Zhang, Zhendong Chi, Wenhao Li, Changchun Institute of Optics, Fine Mechanics and Physics (China). . . . . [11898-42]

Lunch Break . . . . . Tue 12:10 to 13:40

ON DEMAND: **Single-shot full resolution digital holographic microscopy: new algorithms and applications** *(Invited Paper),* Kedar Khare, Indian Institute of Technology Delhi (India). . . . . [11898-43]

SESSION 9

LOCATION: ROOM 106A . . . . . TUE 13:40 TO 14:40

Grating Fabrication

Session Chair: **Changhe Zhou,** Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China)

13:40: **Super-resolution photolithography for fabrication of deep subwavelength grating**, Min Han, Gaopeng Xue, Qian Zhou, Xiaohao Wang, Xinghui Li, Tsinghua Univ. (China) . . . . . [11898-44]

14:00: **A mechanical mosaic method for two-dimensional planar grating based on diffracted beams orientation**, Qihang Zhai, Gaopeng Xue, Liyu Lin, Qian Zhou, Kai Ni, Xiaohao Wang, Xinghui Li, Tsinghua Univ. (China). . . . . [11898-45]

14:20: **Shallow-etched silicon grating waveguide based polarizing beam splitter**, Haipeng Liu, Shanqin Zhuang, Shuo Yuan, Yishu Chen, Jijun Feng, Univ. of Shanghai for Science and Technology (China) . . . . . [11898-46]

SESSION 10

LOCATION: ROOM 106A . . . . . TUE 14:40 TO 15:30

Optical Computing

Session Chair: **Kehan Tian,** Jiaxing Yuguang Technology Development Co., Ltd. (China)

14:40: **Roadmap of optical computing** *(Invited Paper)*, Changhe Zhou, Junjie Yu, Guoqing Ma, Guowei Li, Shanghai Institute of Optics and Fine Mechanics (China) . . . . . [11898-47]

15:10: **High-precision optical convolution computing based on arbitrary-base hybrid analog-digital coding**, Guoqing Ma, JunJie Yu, Changhe Zhou, Shanghai Institute of Optics and Fine Mechanics (China) . . . . . [11898-48]

Tea/Coffee Break . . . . . Tue 15:30 to 16:00

SESSION 11

LOCATION: ROOM 106A . . . . . TUE 16:00 TO 17:20

Holographic Applications

Session Chair: **Liangcai Cao,** Tsinghua Univ. (China)

16:00: **Bragg PMMA tube based THz grating waveguide for sensing applications** *(Invited Paper)*, Jian Chen, Univ. of Shanghai for Science and Technology (China); Qi Yao, Henan Agricultural Vocational College (China); Jijun Feng, Dawei Zhang, Univ. of Shanghai for Science and Technology (China). . . . . [11898-49]

16:30: **Fast growing consumer applications for DOE** *(Invited Paper)*, Kehan Tian Sr., Jiaxing Yuguang Technology Development Co., Ltd. (China). . . . . [11898-50]

17:00: **Z-axis correction based super-resolution algorithm for spore lensless microscope**, Yang Chen, Lin Lu, Xue Wu, Jia Zhang, Chao Zuo, Qian Chen, Nanjing Univ. of Science and Technology (China). . . . . [11898-51]

ON DEMAND: **Approaching the theoretical optimum of wavefront shaping by a genetic algorithm with ant colony optimization**, Chi Man Woo, Qi Zhao, Zhipeng Yu, Puxiang Lai, The Hong Kong Polytechnic Univ. (Hong Kong, China) . . . . . [11898-52]

Optical Metrology and Inspection for Industrial Applications VIII

Conference Chairs: **Sen Han,** Univ. of Shanghai for Science and Technology (China), Suzhou H&L Instruments LLC (China); **Gerd Ehret,** Physikalisch-Technische Bundesanstalt (Germany); **Benyong Chen,** Zhejiang Sci-Tech Univ. (China)

Program Committee: **Masato Aketagawa,** Nagaoka Univ. of Technology (Japan); **Yasuhiko Arai,** Kansai Univ. (Japan); **Yasuhiro Awatsuji,** Kyoto Institute of Technology (Japan); **James H. Burge,** Arizona Optical Metrology LLC (United States); **Garrett D. Cole,** Thorlabs Crystalline Solutions (United States); **Junfei Dai,** Zhejiang Univ. (China); **Fabian Duerr,** Vrije Univ. Brussel (Belgium); **Yuegang Fu,** Changchun Univ. of Science and Technology (China); **Ming Jiang,** Suzhou Univ. of Science and Technology (China); **Lianhua Jin,** Univ. of Yamanashi (Japan); **Kazuhide Kamiya,** Toyama Prefectural Univ. (Japan); **Tina E. Kidger,** Kidger Optics Associates (United Kingdom); **Malgorzata Kujawinska,** Warsaw Univ. of Technology (Poland); **Chao-Wen Liang,** National Central Univ. (Taiwan, China); **Yuxiang Lin,** ASML (United States); **Yasuhiro Mizutani,** Osaka Univ. (Japan); **Yukitoshi Otani,** Utsunomiya Univ. (Japan); **Giancarlo Pedrini,** Institut für Technische Optik (Germany); **Xiang Peng,** Shenzhen Univ. (China); **Qian Kemao,** Nanyang Technological Univ. (Singapore); **Jaejoong Kwon,** SAMSUNG Display Co., Ltd. (Korea, Republic of); **Guohai Situ,** Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **H. Philip Stahl,** NASA Marshall Space Flight Ctr. (United States); **John C. Stover,** The Scatter Works Inc. (United States); **Takamasa Suzuki,** Niigata Univ. (Japan); **Toshitaka Wakayama,** Saitama Medical Univ. (Japan); **Haoyu Wang,** Univ. of Shanghai for Science and Technology (China); **Xiangzhao Wang,** Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **Yajun Wang,** Wuhan Univ. (China); **Quanying Wu,** Suzhou Univ. of Science and Technology (China); **Jiangtao Xi,** Univ. of Wollongong (Australia); **Jing Xu,** Tsinghua Univ. (China); **Lianxiang Yang,** Oakland Univ. (United States); **Dawei Zhang,** Univ. of Shanghai for Science and Technology (China); **Hao Zhang,** Tianjin Univ. (China); **Qican Zhang,** Sichuan Univ. (China); **Xiangchao Zhang,** Fudan Univ. (China); **Zonghua Zhang,** Hebei Univ. of Technology (China); **Ping Zhou,** ASML US, Inc. (United States); **Ping Zhong,** Donghua Univ. (China); **Weihu Zhou,** Institute of Microelectronics, Chinese Academy of Sciences (China); **Chao Zuo,** Nanjing Univ. of Science and Technology (China)

MONDAY 11 OCTOBER

SESSION 1

LOCATION: ROOM 107A . . . . . MON 8:30 TO 10:30

Optical Metrology Methods I

Session Chairs: **Sen Han,** Univ. of Shanghai for Science and Technology (China); **Shijie Feng,** Nanjing Univ. of Science and Technology (China)

8:30: **Design principles of off-axis deflectometric measurement systems** *(Invited Paper)*, Xiangchao Zhang, Junhua Wang, Wei Wang, Fudan Univ. (China); Shaoliang Li, Shanghai Academy of Spaceflight Technology (China); Min Xu, Fudan Univ. (China) . . . . . [11899-1]

9:00: **Direct measurement of yaw and pitch using digital speckle pattern interferometry**, Miao Yan, Sijin Wu, Beijing Information Science & Technology Univ. (China); Fan Wu, Dawning Information Industry Co., Ltd. (China); Fenglong Yang, Beijing Spacecrafts Manufacturing Factory Corp. (China); Lili Shi, Weixian Li, Juanning Si, Beijing Information Science & Technology Univ. (China) . . . . . [11899-2]

9:20: **Frequency-domain-decomposition based white-light interferometry for noise-insensitive measurement**, Long Ma, Yuan Zhao, Xin Pei, Fengming Sun, Lei Shi, Yuzhe Liu, Ruijie Qian, Lingxuan Tang, Shengwei Guo, Civil Aviation Univ. of China (China). . . . . [11899-3]

9:40: **Learning-based single-shot superfast fringe projection profilometry** *(Invited Paper)*, Chao Zuo, Nanjing Univ. of Science and Technology (China) . . . . . [11899-4]

10:10: **Measurement of surface shape and deformation of small aperture mirrors based on digital image correlation speckle deflection**, Yu Zhang, Yao Hu, Qun Hao, Shaohui Zhang, Beijing Institute of Technology (China) . . . . . [11899-5]

Tea/Coffee Break . . . . . Mon 10:30 to 11:00

SESSION 2

LOCATION: ROOM 107A . . . . . MON 11:00 TO 12:10

Optical Metrology Methods II

Session Chairs: **Shijie Liu,** Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **Zhong Xing,** Changchun Institute of Optics, Fine Mechanics and Physics (China)

11:00: **Absolute calibration of smooth surface and cylindrical surface measurement** *(Invited Paper)*, Sen Han, Univ of Shanghai For Science and Technology (China) and Suzhou H&L Instruments LLC (China); Linghua Zhang, Univ. of Shanghai For Science and Technology (China); Wenxin Jia, Suzhou Univ. of Science and Technology (China) . . . . . [11899-6]

11:30: **Simulation and error analysis of non-null interferometry for measuring high-order aspheric surface parameter errors**, Yiming Liu, Xin Tao, Yao Hu, Qun Hao, Beijing Institute of Technology (China) . . . [11899-7]

11:50: **Clear imaging specular surface and fringe patterns by using a concave mirror in phase measuring deflectometry**, Ziyu Li, Xiaohong Liu, Caixia Chang, Yanqing Shi, Nan Gao, Zhaozong Meng, Zonghua Zhang, Hebei Univ. of Technology (China) . . . . . [11899-8]

Lunch Break . . . . . Mon 12:10 to 13:30

ON DEMAND: **Current status of highly accurate flatness metrology at PTB for optics with diameters up to 1.5 metres** *(Invited Paper),* Gerd Ehret, Jan Spichtinger, Michael Schulz, Physikalisch-Technische Bundesanstalt (Germany) . . . . . [11899-9]

ON DEMAND: **Large thickness measurement of glass plates with a spectrally resolved interferometer using two positions of a reference surface and a compensation glass,** Kaining Zhang, Samuel Choi, Niigata Univ. (Japan); Osami Sasaki, Niigata Univ. (Japan) and Huaqiao Univ. (China); Takamasa Suzuki, Niigata Univ. (Japan); Songjie Luo, Jixiong Pu, Huaqiao Univ. (China) . . . . . [11899-10]

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

Research on traceability technology of absolute radiometer, Junchao Zhang, Nan Xu, Ning Xu, Haifeng Meng, Wende Liu, Bifeng Zhang, Chuan Cai, Shuai Man, Meng Wang, Limin Xiong, National Institute of Metrology (China) . . . . . [11899-29]

Optimization method of the laser beam for 3D precise measurement, Fengjin Miao, Bin Wu, Zefeng Sun, Tianjin Univ. (China) . . . . . [11899-30]

A single-track absolute shaft encoding method, Fangqin Gai, Beijing Institute of Control Engineering (China). . . . . [11899-31]

Laser self-mixing grating interferometer for micro-displacement reconstruction, Dongmei Guo, Wei Xia, Hui Hao, Lei Chen, Nanjing Normal Univ. (China) . . . . . [11899-32]

Optimal inspection strategy planning for 3D geometric measurement based on laser scanning technique, Sen Zhou, Chongqing Institute of Metrology and Quality Inspection (China) . . . . . [11899-33]

Film thickness measurement by infrared transmission, Jingwen Li, Zhen Hua, Jiao Bai, Xiaohao Wang, Kai Ni, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China). . . . . [11899-34]

Refractive index measurement based on multi-wavelength laser interferometer, Dayong Zhu, Univ. of Shanghai for Science and Technology (China); Qiyuan Zhang, Changchun Univ. of Science and Technology (China); Wenxin Jia, Suzhou Univ. of Science and Technology (China); Huaikang Zhu, Univ. of Shanghai for Science and Technology (China); Sen Han, Suzhou Hui Li Instrument Co., Ltd. (China) . . . . . [11899-35]

Research on aperture area measurement technique based on optical flux comparison method, Zhiwei Liu, Weiqiang Zhao, Wende Liu, Yongjie Lin, Yandong Lin, Nan Xu, National Institute of Metrology (China) . . . . . [11899-36]

A feature separation method of optical elements surfaces with shearlet transform, Linfu Li, ChuanBo Zhang, Guizhou Minzu Univ. (China); Jianjun Chen, Xinjiang Medical Univ. (China); Hong Chen, Guizhou Minzu Univ. (China) . . . . . [11899-37]

Stress-induced birefringence calibration of large aperture dynamic interferometer based on the rotation of light source polarization state, XInyu Miao, Jun Ma, Nanjing Univ. of Science and Technology (China); Caojin Yuan, Nanjing Normal Univ. (China) . . . . . [11899-38]

On-line construction of dynamic control system in intelligent manufacturing, Hua Liu, Luoyang Electro-optical Equipment Research Institute (China) . . . . . [11899-39]

Depth-of-focus extension in null interferometric microscopy for ICF capsule surface-defects detection, Cong Wei, Jun Ma, Nanjing Univ. of Science and Technology (China) . . . . . [11899-40]

Fringe projection profilometry with phase-coded optics, Suodong Ma, Qi Yan, Feng Xu, Xu Chen, Qitai Huang, Soochow Univ. (China) . . . . [11899-41]

High precision roundness measurement with three chromatic confocal sensors, Yingzuo Wang, Jiao Bai, Guangyao Huang, Xiaohao Wang, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China) . . . . . [11899-42]

MEMS-mirror-based dynamic structured light for three-dimensional measurement with high precision, Yihao Tao, Gaopeng Xue, Ning Ding, Qian Zhou, Kai Ni, Xiaohao Wang, Xinghui Li, Tsinghua Univ. (China)[11899-43]

Research on compact multi degree of freedom grating interferometer based on ridge prism, Baiqi Liao, Kangning Yu, Xinghui Li, Xiaohao Wang, Xiang Xiao, Tsinghua Univ. (China) . . . . . [11899-44]

Long-term stability of LED filament standard lamps for total luminous flux, Jinyun Yan, Weiqiang Zhao, Hui Liu, Ying Su, National Institute of Metrology (China) . . . . . [11899-45]

An experimental study on extraction method of tobacco color distribution feature, Zaiqing Chen, Yunnan Normal Univ. (China). . [11899-46]

Measurement of phase retardation and fast axis of a quarter-wave plate using vector beams and Fourier analysis, Fanchun Tang, Yang Bu, Fang Wu, Xiangzhao Wang, Shanghai Institute of Optics and Fine Mechanics (China) . . . . . [11899-47]

High-accuracy centering of aspheric shell based on compressed sensing of interference fringes, Ming-e Gao, He Yuan, Xiangchao Zhang, Min Xu, Fudan Univ. (China) . . . . . [11899-48]

Research on the equal optical path interferometer, Huaikang Zhu, Univ. of Shanghai for Science and Technology (China); Qiyuan Zhang, Suzhou Hui Li Instrument Co., Ltd. (China); Wenxin Jia, Suzhou Univ. of Science and Technology (China); Dayong Zhu, Sen Han, Univ. of Shanghai for Science and Technology (China) . . . . . [11899-49]

Resolution-enhanced phase retrieval for fringe reflection technology with structured light illumination, Suodong Ma, Maoyun Ren, Shengzhi Xu, Mingrui Liu, LiChen Zheng, Soochow Univ. (China) . . . . . [11899-50]

SESSION 3

LOCATION: ROOM 107A . . . . . MON 14:30 TO 15:50

Optical Metrology Methods III

Session Chairs: **Chao Zuo,** Nanjing Univ. of Science and Technology (China); **Zhouling Wu,** ZC Optoelectronic Technologies Ltd. (China)

14:30: **Digitized fabrication and testing techniques for precision optics** *(Invited Paper)*, Yaolong Chen, Xi'an Jiaotong Univ. (China) . . . . . .[11899-11]

15:00: **A novel holographic method for generating structured illumination of three-dimensional shape measurement**, Xianlin Song, Nanchang Univ. (China) . . . . . [11899-12]

15:20: **A multimodal method for defect characterization of large-aperture optics** *(Invited Paper)*, Jian Chen, Weiyang Yu, Haifeng Zhou, Jian Zhang, Xi Wang, Wenyang Xu, Ming Huang, Zhouling Wu, ZC Optoelectronic Technologies Ltd. (China) . . . . . [11899-13]

Tea/Coffee Break . . . . . Mon 15:50 to 16:10

SESSION 4

LOCATION: ROOM 107A . . . . . MON 16:10 TO 17:20

Optical Metrology Methods IV

Session Chair: **Xiaohao Dong,** Shanghai Advanced Research Institute, Chinese Academy of Sciences (China)

16:10: **Polarization-sensitive optical coherence tomography imaging for high-speed non-destructive testing** *(Invited Paper)*, Yanqiu Li, Ke Liu, Lihui Liu, Meng Zheng, Jianfeng Wang, Beijing Institute of Technology (China) . . . . . [11899-15]

16:40: **A simplified two-phase differential decoding algorithm for high-precision grating encoder**, Junhao Zhu, Kangning Yu, Gaopeng Xue, Ningning Shi, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China) . . . . . [11899-14]

17:00: **Cooperative measurement accuracy evaluation method and software**, Yu Ren, Feng Zhang, Fangfang Liu, Xiaolei Hu, Shanghai Institute of Measurement and Testing Technology (China); Changyu Long, Beijing Satellite Environmental Engineering Institute (China); Yunxia Fu, Shanghai Institute of Measurement and Testing Technology (China) . . . . . [11899-16]

ON DEMAND: **Identification of aliasing effects in measurements of unknown MTFs** *(Invited Paper),* Markus Schake, Michael Schulz, Physikalisch-Technische Bundesanstalt (Germany) . . . . . [11899-18]

TUESDAY 12 OCTOBER

SESSION 5

LOCATION: ROOM 107A . . . . . TUE 8:00 TO 10:00

Optical Metrology Applications I

Session Chairs: **Benyong Chen,** Zhejiang Sci-Tech Univ. (China); **Xiangchao Zhang,** Fudan Univ. (China)

8:00: **Structured-light 3D shape measurements using deep learning** *(Invited Paper)*, Shijie Feng, Chao Zuo, Qian Chen, Nanjing Univ. of Science and Technology (China) . . . . . [11899-19]

8:30: **Fast 3D measurement method of complex surface based on multi-orientation speckle projection**, Wentao He, Kai Zhong, Zhongwei Li, Huazhong Univ. of Science and Technology (China) . . . . . [11899-20]

8:50: **Study on suppressing Doppler effect and non-linearity simultaneously in dynamic clearance measurement of frequency swept interferometry**, Hao Liu, Bin Shao, Wei Zhang, Weimin Chen, Chongqing Univ. (China); Bing Xiong, Sichuan Gas Turbine Research Institute of AVIC (China); Peng Zhang, Chongqing Univ. (China) . . . . . [11899-21]

9:10: **Advances in compact optical systems with high imaging quality for small satellites in CGSTL** *(Invited Paper)*, Xing Zhong, Changguang Satellite Technology Ltd., Co. (China) . . . . . [11899-22]

9:40: **The Space solar radiation simulation technology for spacecraft vacuum thermal test**, Linhua Yang, Shanping Jiang, Zhifei Gu, Gao Li, China Academy of Space Technology (China) . . . . . [11899-23]

Tea/Coffee Break . . . . . Tue 10:00 to 10:30

SESSION 6

LOCATION: ROOM 107A . . . . . TUE 10:30 TO 12:30

Optical Metrology Applications II

Session Chairs: **Yaolong Chen,** Xi'an Jiaotong Univ. (China); **Yanqiu Li,** Beijing Institute of Technology (China)

10:30: **Developments on metrology of mirrors for the Shanghai X-Ray Free-electron Laser Facility** *(Invited Paper)*, Xiaohao Dong, Shanghai Synchrotron Radiation Facility (China) . . . . . [11899-24]

11:00: **Mitigation of Doppler-frequency-shifts in coherent random modulation LiDAR via subcarrier phase-coded modulation**, Fengxi Yu, Bowen Qiu, Zhongyang Xu, Shilong Pan, Nanjing Univ. of Aeronautics and Astronautics (China) . . . . . [11899-25]

11:20: **Fast 3D data registration and fusion for a multi-cameras 3D measurement system in robot bin-picking applications**, Wu Lang, Zhongwei Li, Kai Zhong, Huazhong Univ. of Science and Technology (China) . . . . . [11899-26]

11:40: **A wide-spectrum plug-and-play Fizeau interferometric system** *(Invited Paper)*, Shijie Liu, Shanghai Institute of Optics and Fine Mechanics (China) . . . . . [11899-27]

12:10: **Virtual compressed sensing photoacoustic tomography for high-speed volumetric inspection using BPDN algorithm based on k-space**, Zihao Li, Xianlin Song, Nanchang Univ. (China) . . . . . [11899-28]

CONFERENCE 11900 • LOCATION: ROOM 105A

Sunday–Tuesday 10–12 October 2021 • Proceedings of SPIE Vol. 11900

Optics in Health Care and Biomedical Optics XI

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)

SUNDAY 10 OCTOBER

OPENING CEREMONY AND PLENARY SESSION I

ROOM: INTERNATIONAL HALL A . . . . . 9:00 TO 12:00

9:00: Opening Ceremony

9:20: Awards and Recognition

9:30: **Low-cost optical technologies to improve global health equity: examples from newborn health, women's health, and COVID-19** *(Plenary)*, Rebecca R. Richards-Kortum, Director, Rice 360 Institute for Global Health Technologies (United States) and Rice Univ. (United States). . . . . [11900-501]

Tea/Coffee Break . . . . . .Sun 10:10 to 10:40

10:40: **High-quality electron beams and free-electron lasing based on laser-wakefield accelerator** *(Plenary)*, Wentao Wang, State Key Lab. of High Field Laser Physics (China) and CAS Ctr. for Excellence in Ultra-intense Laser Science (China) and Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China) . . . . . [11890-502]

11:20: **Advances of perovskite solar cell technology** *(Plenary)*, Rui Zhu, Peking Univ. (China) . . . . . [11893-503]

Lunch Break . . . . . Sun 12:00 to 13:30

SESSION 1

LOCATION: ROOM 105A . . . . . SUN 13:30 TO 15:00

Novel Microscopy I

Session Chair: **Ying Gu,** Chinese PLA General Hospital (China)

13:30: **Deep-penetration superresolution imaging based on adaptive optics and multi-focal structured illumination** *(Invited Paper)*, Junle Qu, Shenzhen Univ. (China) . . . . . [11900-1]

14:00: **Dual DoFP polarimeters-based collinear reflection Mueller matrix microscope for fast process monitoring**, Tongyu Huang, Ruoyu Meng, Hui Ma, Tsinghua Univ. (China). . . . . [11900-3]

14:15: **Three-dimensional chemical imaging of human prostate cancer based on clearing-enhanced nonlinear optical microscopy**, Jing Huang, Fudan Univ. (China); Xiaoguang Shao, Jiahua Pan, Shanghai Jiao Tong Univ. (China); Minbiao Ji, Fudan Univ. (China) . . . . . [11900-4]

14:30: **Deep-learning-enhanced lightfield microscopy for capturing instantaneous biological dynamics at high spatiotemporal resolution**, Lanxin Zhu, Chengqiang Yi, Peng Fei, Huazhong Univ. of Science and Technology (China). . . . . [11900-5]

14:45: **Depth-recognizable time-domain fluorescence molecular tomography in reflectance geometry**, Jiaju Cheng, Tsinghua Univ. (China); Peng Zhang, Beijing Jiaotong Univ. (China) and Key Lab. of Molecular Imaging, Institute of Automation (China); Chuangjian Cai, Yang Gao, Tsinghua Univ. (China); Jie Liu, Beijing Jiaotong Univ. (China); Hui Hui, Key Lab. of Molecular Imaging, Institute of Automation (China); Jie Tian, Key Lab. of Molecular Imaging, Institute of Automation (China) and Beijing Advanced Innovation Ctr. for Big Data-Based Precision Medicine, Beihang Univ. (China); Jianwen Luo, Tsinghua Univ. (China) . . . . . [11900-10]

Tea/Coffee Break . . . . . Sun 15:00 to 15:30

ON DEMAND: **Recent development of optical wavefront shaping towards robust and optimum optical focusing and stimulation at depths in biological tissue** *(Invited Paper)*, Puxiang Lai, The Hong Kong Polytechnic Univ. (Hong Kong, China). . . . . [11900-2]

PLENARY SESSION II

LOCATION: INTERNATIONAL HALL A . . . . . SUN 15:30 TO 16:20

15:30: Welcome and Introduction

Q&A period will follow after the talk

15:35: **The UK National Quantum Technology Programme** *(Plenary)*, Peter L. Knight, Blackett Lab., Imperial College London (United Kingdom) and UK National Quantum Technology Strategic Advisory Board for UKRI (United Kingdom). . . . . [11905-504]

Tea/Coffee Break . . . . . Sun 16:20 to 16:30

SESSION 2

LOCATION: ROOM 105A . . . . . SUN 16:30 TO 17:45

Novel Microscopy II

Session Chair: **Junle Qu,** Shenzhen Univ. (China)

16:30: **Short-wavelength two-photon excitation autofluorescence imaging of live tissues** *(Invited Paper)*, Wei Zheng, Shenzhen Institutes of Advanced Technology (China) . . . . . [11900-6]

17:00: **Low-power emission depletion super-resolution microscopy by employing surface energy loss**, Rui Pu, Xin Guo, Qiuqiang Zhan, South China Normal Univ. (China) . . . . . [11900-7]

17:15: **Calibration of Mueller matrix derived parameters for multi-layered tissues**, Binguo Chen, Honghui He, Hui Ma, Tsinghua Univ. (China) . [11900-8]

17:30: **NIR-II excited three-photon microscopy for in vivo atherosclerotic plaque imaging**, Shaowei Wang, Xi'an Jiaotong Univ. (China) . . . . . [11900-9]

ON DEMAND: **Depth-dependent microscopic flow imaging with line scan laser speckle acquisition and analysis,** E. Du, Shuhao Shen, Anqi Qiu, Nanguang Chen, National Univ. of Singapore (Singapore) . . . . . [11900-49]

MONDAY 11 OCTOBER

SESSION 3

LOCATION: ROOM 105A . . . . . MON 8:30 TO 10:00

Advanced Optical Technologies I

Session Chair: **Dan Zhu,** Huazhong Univ. of Science and Technology (China)

8:30: **An all-glass microfluidic flow cytometer** *(Invited Paper)*, Jiayu Li, Yuhan Cui, Tianfeng Zhou, Qin Li, Beijing Institute of Technology (China) . . . . . [11900-11]

9:00: **Digital single molecule detection based on lens-free imaging** *(Invited Paper)*, Xiangwei Zhao, Southeast Univ. (China) . . . . . [11900-12]

9:30: **Quantitative characterization of tissue optical clearing with different agents by Mueller matrix parameters**, Jiawei Song, Nan Zeng, Hui Ma, Tsinghua Univ. Shenzhen International Graduate School (China) . . . . . [11900-13]

9:45: **Optical vortex microrheology of turbid viscoelastic tissue**, Jiaxing Gong, Qi Li, Hui Zhang, Jing Wang, Huazhong Univ. of Science and Technology (China). . . . . [11900-14]

Tea/Coffee Break . . . . . Mon 10:00 to 10:30

SESSION 4

LOCATION: ROOM 105A . . . . . MON 10:30 TO 12:00

Advanced Optical Technologies II

Session Chair: **Buhong Li,** Fujian Normal Univ. (China)

10:30: **In vivo optical clearing skull window for cortical vascular imaging and controlling** *(Invited Paper)*, Dan Zhu, Huazhong Univ. of Science and Technology (China) . . . . . [11900-15]

11:00: **A microfluidic cytometer with integrated on-chip optical systems for white blood cell analysis**, Xinyue Su, Tao Peng, Qin Li, Beijing Institute of Technology (China) . . . . . [11900-16]

11:15: **Assessing blood coagulation dynamics using a portable optical device**, Hui Zhang, Jiaxing Gong, Qi Li, Wenjian Lu, Yaowen Zhang, Jing Wang, Huazhong Univ. of Science and Technology (China). . . . . [11900-17]

11:30: **Research on evaluation optical parameters of bone thermal injury during microwave ablation**, Yangyang Liu, Lin Meng, Nanjing Institute of Technology (China); Weitao Li, Nanjing Univ. of Aeronautics and Astronautics (China) . . . . . [11900-18]

11:45: **Real-time monitoring multi-dosimetric parameters for vascular-targeted photodynamic therapy**, Jiaqing Tao, Tianlong Chen, Chenfei Ren, Huiyun Lin, Yi Shen, Buhong Li, Fujian Normal Univ. (China). . . . . [11900-19]

Lunch Break . . . . . Mon 12:00 to 13:30

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

Endoscope optical coherence tomography angiography using proximal scanning catheter, Lei Gao, Shanghai Institute of Technology (China) and Shenzhen Institutes of Advanced Technology (China); Song Yuting, Teng Ma, Qi Zhang, Ruiming Kong, Zhuoquan Chen, Shenzhen Institutes of Advanced Technology (China); Guogang Cao, Cuixia Dai, Shanghai Institute of Technology (China) . . . . . [11900-22]

Feature extraction of pulse diagnosis signal based on Hilbert yellow transform, Meng Wang, Hebei Univ. of Science and Technology (China) . . . . . [11900-51]

Line-scanning hybrid illumination technology based on multi-line detection for fluorescence sectioning imaging, Wei Qiao, Rui Jin, Tianpeng Luo, Yafeng Li, Guoqing Fan, Huazhong Univ. of Science and Technology (China); Qingming Luo, Huazhong Univ. of Science and Technology (China) and Hainan Univ. (China) and HUST-Suzhou Institute for Brainsmatics (China); Jing Yuan, Huazhong Univ. of Science and Technology (China) and HUST-Suzhou Institute for Brainsmatics (China) . . . . . [11900-52]

Detection of HAP/Ag as Raman-enhanced substrate, Mengmeng Zheng, Yamin Lin, Tingting Lin, Jiamin Gao, Shusen Xie, Fujian Normal Univ. (China); Yun Yu, Fujian Univ. of Traditional Chinese Medicine (China); Juqiang Lin, Fujian Normal Univ. (China) . . . . . [11900-53]

Surface-enhanced Raman spectroscopy of plasma for the noninvasive differentiation of renal-calculi, Dan Liu, Jiamin Gao, Yamin Lin, Fujian Normal Univ. (China); Xiang Wu, Qingjiang Xu, Tao Li, Fujian Provincial Hospital (China); Yun Yu, Provincial Clinical Medical College of Fujian Medical Univ. (China); Juqiang Lin, Fujian Normal Univ. (China) . . . . . [11900-54]

Label-free detection of prostate cancer and benign prostatic hyperplasia based on SERS spectroscopy of Plasma, Xin Zhao, Tingting Lin, Yamin Lin, Jiamin Gao, Fujian Normal Univ. (China); Xiang Wu, Fujian Provincial Hosipital (China); Yun Yu, Provincial Clinical Medical College of Fujian Medical Univ. (China); Juqiang Lin, Fujian Normal Univ. (China) . . . . . [11900-55]

Label-free detection of plasma using surface-enhanced Raman spectroscopy for bladder cancer screening, Xin Bai, Dan Liu, Yamin Lin, Fujian Normal Univ. (China); Xiang Wu, Qingjiang Xu, Tao Li, Fujian Provincial Hospital (China); Yun Yu, Fujian Univ. of Traditional Chinese Medicine (China); Juqiang Lin, Fujian Normal Univ. (China). [11900-56]

Analysis of prostate cancer using serum surface-enhanced Raman spectroscopy and multivariate statistical algorithm, Jiamin Gao, Xin Bai, Yamin Lin, Xin Zhao, Dan Liu, Yating Lin, Fujian Normal Univ. (China); Yun Yu, Fujian Univ. of Traditional Chinese Medicine (China); Juqiang Lin, Fujian Normal Univ. (China). . . . . [11900-57]

Distinction of true and fake blood based on near-infrared spectroscopy and wavelet neural networks, Zhong Ren, Jiangxi Science and Technology Normal Univ. (China). . . . . [11900-58]

Uniformity evaluation of renal tubular distribution in the ischemia-reperfusion process based on fractal theory, Yuhong Fang, Wei Gong, Zheng Huang, Shusen Xie, Fujian Normal Univ. (China). . . . . [11900-59]

Study on calibration of protective effect detector of mask based on precise photometer, Haiyang Qi, Sunqiang Pan, Sumei Liu, Pengbing Hu, Chonghui Chen, Zhejiang Institute of Metrology (China) . . . . . [11900-60]

Development of handheld optical coherent elastic imaging system, Yunfeng Mo, Ziye Chen, Jiewen Chen, Jianhua Mo, Soochow Univ. (China) . . . . . [11900-61]

Corneal nerve fiber segmentation and center line extraction, Ziye Chen, Jianhua Mo, Yunfeng Mo, Jiewen Chen, Soochow Univ. (China). . . . [11900-62]

In vitro study of YLG-1 mediated photodynamic therapy on human cancer cells, Na Meng, Xin Wang, Jie Jiang, Fujian Normal Univ. (China); Rui Ding, Zhen Han, Guilin Huiang Biopharmaceutical Co., Ltd. (China); Zheng Huang, Fujian Normal Univ. (China) . . . . . [11900-63]

In vivo monitoring the disfunction of blood brain barrier and microglia in diabetic mice, Shaojun Liu, Dongyu Li, Tingting Yu, Dan Zhu, Wuhan National Laboratory for Optoelectronics (China). . . . . [11900-64]

Advances in research of low-level laser therapy (LLLT) for non-alcoholic fatty liver disease, Yunqi Li, Chinese PLA General Hospital (China)[11900-65]

Label-free imaging of spinal cords injured tissues with multiphoton microscopy, Xiwen Chen, Key Lab. of Optoelectronic Science and Technology for Medicine, Ministry of Education (China) and Fujian Provincial Key Lab. of Photonics Technology, Fujian Normal Univ. (China); Shuang Wang, Northwest Univ. (China); Jianxin Chen, Fujian Normal Univ. (China) . [11900-66]

Detection of liver cancer and prostate cancer by serum surface-enhanced Raman spectroscopy, Jiamin Gao, Yamin Lin, Mengmeng Zheng, Shuzhen Tang, Fujian Normal Univ. (China); Xiang Wu, Qingjiang Xu, Tao Li, Fujian Provincial Hospital (China); Yun Yu, Fujian Univ. of Traditional Chinese Medicine (China); Juqiang Lin, Fujian Normal Univ. (China). . . . . [11900-67]

Tumor vascular feature based on speckle variance optical coherence tomography, Weijie Wu, Qian Liu, Shulian Wu, Fujian Normal Univ. (China) . . . . . [11900-68]

Difference analyses for prostate cancer and benign prostate hyperplasia subjects by SERS-based test of urine, Juqiang Lin, Xin Zhao, Tingting Lin, Jiamin Gao, Yamin Lin, Fujian Normal Univ. (China); Xiang Wu, Tao Li, Qingjiang Xu, Fujian Provincial Hospital (China) . . . . . [11900-69]

FDISCO+: a clearing method for robust fluorescence preservation of cleared samples, Peng Wan, Tingting Yu, Dan Zhu, Wuhan National Laboratory for Optoelectronics (China). . . . . [11900-70]

Single mast cell degranulation detection based on FRET probe, Juqiang Lin, Jianshu Xu, Yating Lin, Jiamin Gao, Shuzhen Tang, Mengmeng Zheng, Yimei Huang, Fujian Normal Univ. (China). . . . . [11900-71]

Field guide for building a broadband CARS system for biomedical applications, Ryan Muddiman, Kevin O'Dwyer, Zhengyuan Tang, Bryan M. Hennelly, National Univ. of Ireland, Maynooth (Ireland) . . . . . [11900-72]

Configurations on polarized imaging optimization, Hua Liu, Luoyang Electro-optical Equipment Research Institute (China) . . . . . [11900-73]

Axial resolution and contrast enhancement in oblique light-sheet microscopy by natural illumination modulation, Zhi Wang, Wei Qiao, Rui Jin, Jing Yuan, Hui Gong, Huazhong Univ. of Science and Technology (China) . . . . . [11900-74]

High-throughput automated Raman cytology, Kevin O'Dwyer, Zhengyuan Tang, Adam Dignam, Katarina Domijan, Marion Butler, Bryan M. Hennelly, National Univ. of Ireland, Maynooth (Ireland) . . . . . [11900-75]

Propagation of acousto-optic signal in multilayer biological tissue by using COMSOL multiphysics, Huihuang Deng, Haiyang Song, Huanchang Liu, Yuxin Lu, Lili Zhu, Fujian Normal Univ. (China). . . . . [11900-76]

interferometric diffusing speckle contrast imaging (iDSCI) system for monitoring regional cerebral blood flow, Guang Han, Tiangong Univ. (China) and Tianjin Univ. (China); Siqi Chen, Xinzheng Yu, Qianbei Guo, Hao Feng, Huiquan Wang, Tiangong Univ. (China). . . . . [11900-77]

A rapid nucleic acid detection platform for the diagnosis of COVID-19 based on quantification of precipitation, Wenli Du, Xiangyu Jin, Rongxin Fu, Xue Lin, Ya Su, Han Yang, Xiaohui Shan, Wenqi Lv, Ruliang Wang, Guoliang Huang, Tsinghua Univ. (China) . . . . . [11900-78]

Real-time detection of aldehyde-induced interaction between A1R and A2AR in living HEK293T cells, Yating Lin, Jianshu Xu, Jiamin Gao, Yimei Huang, Shusen Xie, Juqiang Lin, Fujian Normal Univ. (China) . . . . . [11900-79]

A convolutional neural network for screening and staging of diabetic retinopathy based on wide-field optical coherence tomography angiography, Bowen Dong, Shanghai Institute of Technology (China); Xiangning Wang, The Sixth People's Hospital, Shanghai Jiao Tong Univ. (China); Guogang Cao, Lei Gao, Fengxian Du, Cuixia Dai, Shanghai Institute of Technology (China). . . . . [11900-80]

Miniature endoscopic OCT imaging probe with long working distance, Xiaochen Li, Yong Huang, Qun Hao, Xiaoxu Wang, Beijing Institute of Technology (China). . . . . [11900-81]

Investigation of wavelength and Raman wavenumber calibration by modelling the spectrometer, Dongyue Liu, Zhengyuan Tang, Bryan M. Hennelly, National Univ. of Ireland, Maynooth (Ireland) . . . . . [11900-82]

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High-throughput 3D imaging of multiple macro-scale organs at cellular resolution by compressed-sensing light-sheet microscopy, Fang Zhao, Wenyang Feng, Chunyu Fang, Yao Zhou, Peng Fei, Huazhong Univ. of Science and Technology (China) . . . . . [11900-83]

Resolution improvement of parallel confocal microscopy based on microlens arrays using pixel reassignment, Tianpeng Luo, Jing Yuan, Hui Gong, Huazhong Univ. of Science and Technology (China); Qingming Luo, Hainan Univ. (China); XiaoQuan Yang, Huazhong Univ. of Science and Technology (China). . . . . [11900-84]

Noninvasive detection of the kidney cancer urine using surface-enhanced Raman spectroscopy, Xin Bai, Dan Liu, Yamin Lin, Fujian Normal Univ. (China); Xiang Wu, Qingjiang Xu, Tao Li, Fujian Provincial Hospital (China); Yun Yu, Fujian Univ. of Traditional Chinese Medicine (China); Juqiang Lin, Fujian Normal Univ. (China). . . . . [11900-85]

Isotropic dual-stage convolutional neural network enhanced dual-ring modulated SPIM microscopy (IDDR-SPIM): achieving 5D super-resolution imaging in live cell, Yuxuan Zhao, Qing Liu, Peng Wang, Peng Fei, Huazhong Univ. of Science and Technology (China) . . . . . [11900-86]

Predicting the effect of changing an optical element in a given Raman micro-spectrometer, Sinead J. Barton, Zhengyuan Tang, Bryan M. Hennelly, National Univ. of Ireland, Maynooth (Ireland) . . . . . [11900-87]

Sequentially responsive peptide assembling liposomes integrating photosensitizer and immune drug for enhanced photodynamic/immunotherapy in skin melanoma, Huifang Liu, Sijia Wang, Jing Wang, Cuiping Yao, Zhenxi Zhang, Xi'an Jiaotong Univ. (China). . . . . [11900-88]

A quantitative technique to evaluate skin sebum content based on Mueller matrix polarimetry, Haoyu Zhai, Zhipeng Fan, Honghui He, Hui Ma, Tsinghua Univ. (China) . . . . . [11900-89]

One-for-all phototheranostics: frequency upconversion luminescence/photoacoustic imaging-guided photothermal therapy, Yi Liu, China Pharmaceutical Univ. (China). . . . . [11900-90]

Single-cell sorting of marine plankton based on micro-optical tweezers, Caiyun Miao, Jia Yu, Ocean Univ. of China (China); Lingyan Kan, Qingdao Institute of Bioenergy and Bioprocess Technology (China); Huiping Liu, Ocean Univ. of China (China). . . . . [11900-91]

A feature extraction and classification algorithm for motor imagery EEG signals based on decision tree and CSP-SVM, Yuan Luo, Xiaoyi He, Ke Ren, Chongqing Univ. of Posts and Telecommunications (China) [11900-92]

Single-pixel photoacoustic microscopy for high-speed large-scale imaging, Kaicheng Yu, Xianlin Song, Nanchang Univ. (China) . . . . . [11900-93]

Virtual synthetic-aperture photoacoustic imaging simulation platform using k-space pseudospectral method, Yongchao Li, Xianlin Song, Nanchang Univ. (China) . . . . . [11900-94]

Compressed sensing photoacoustic tomography for high-speed volumetric imaging based on ROMP algorithm, Zihao Li, Yuli Li, Xianlin Song, Nanchang Univ. (China). . . . . [11900-95]

The photoacoustic effect between Bessel beam and human brain using finite element analysis, Ao Teng, Xianlin Song, Nanchang Univ. (China). . . . . [11900-96]

Three-dimensional large volumetric high-resolution information fusion for optical-resolution photoacoustic microscopy, Zhihui Li, Xianlin Song, Nanchang Univ. (China) . . . . . [11900-97]

Visualization of the transmission of photons in the mouse brain with intact skull based on Monte Carlo method, Rui Wang, Xianlin Song, Nanchang Univ. (China) . . . . . [11900-98]

Super-resolution photoacoustic microscopy for breaking optical diffraction limits using convolutional neural network, Zhuangzhuang Wang, Xianlin Song, Nanchang Univ. (China) . . . . . [11900-99]

Real-time evaluation of microwave ablation based on the combination of near-infrared spectroscopy technology and shear wave elastography technology, Xiaofei Jin, Yiran Li, Yu Feng, Roujun Zhu, Lu Qian, Zhiyu Qian, Nanjing Univ. of Aeronautics and Astronautics (China) . . . . . [11900-100]

An isothermal and label-free method for fast detection of SARS-CoV-2 using HiDA sensor system, Xiangyu Jin, Rongxin Fu, Wenli Du, Xiaohui Shan, Anni Deng, Zeyin Mao, Ya Su, Xue Lin, Han Yang, Wenqi Lv, Guoliang Huang, Tsinghua Univ. (China) . . . . . [11900-101]

Quantification of blood flow and oxygen saturation based on multiwavelength and multidistance diffuse correlation spectroscopy, Zhe Li, Minnan Jiang, Jinchao Feng, Kebin Jia, Beijing Univ. of Technology (China). . . . . [11900-102]

Gold nanorods enhanced multimodal near-infrared photoacoustic microscopy and optical coherence tomography imaging of rat choroid, Fengxian Du, Wei Qin, Lei Gao, Bowen Dong, Shanghai Institute of Technology (China); Sisi Chen, Meixiao Shen, Wenzhou Medical Univ. (China); Cuixia Dai, Shanghai Institute of Technology (China) . . . . . [11900-103]

Time serial development of optical performance of the myopic model mouse eyes, Xueqing Ding, Rui Qiu, Fengxian Du, Tianyang Zhao, Shanghai Institute of Technology (China); Yilei Shao, Meixiao Shen, Wenzhou Medical Univ. (China); Qiang Wu, Shanghai Jiao Tong Univ. (China); Cuixia Dai, Shanghai Institute of Technology (China) . . . . . [11900-104]

Dual-color confocal fluorescence lifetime measurement system and experiment, Zhaoqing Wu, Meijie Qi, Xidian Univ. (China); Runze Li, State Key Lab. of Transient Optics and Photonics (China); Peng Gao, Lixin Liu, Xidian Univ. (China) . . . . . [11900-105]

Frequency effects of near-infrared light radiation on forehead as quantified by EEG measurements, Liuye Yao, Zhiyu Qian, Lu Zhou, Yu Zhang, Weiyao Li, Lidong Xing, Nanjing Univ. of Aeronautics and Astronautics (China). . . . . [11900-106]

Using multiphoton microscopy to image the skin of mouse psoriasis model, Zhen Li, Yulan Liu, Yu Yi, Xiahui Han, Jianxin Chen, Lianhuang Li, Fujian Normal Univ. (China); Yelin Wu, Tongji Univ. Cancer Ctr., Shanghai Tenth People's Hospital (China); Liqin Zheng, Fujian Normal Univ. (China) [11900-107]

Study on the variation of reduced scattering coefficient in microwave ablation, Zhihan Zou, Zhiyu Qian, Roujun Zhu, Nanjing Univ. of Aeronautics and Astronautics (China) . . . . . [11900-108]

Comparison of the effect of photoacoustic imaging and microangiography on blood-flow imaging, Hanqing Duan, Handi Deng, Jianpan Gao, Tsinghua Univ. (China); Tengfei Yu, Beijing Tiantan Hospital, Capital Medical Univ. (China); Yizhou Bai, Bin Luo, Beijing Tsinghua Changgung Hospital (China); Cheng Ma, Tsinghua Univ. (China) . . [11900-109]

Detection of electrolyte elements in human blood based on laser-induced breakdown spectroscopy, Yuanhang Wang, Yang Bu, Chenwei Sun, Shanghai Institute of Optics and Fine Mechanics (China) and Univ. of Chinese Academy of Sciences (China); Yachao Cai, Shanghai Univ. (China); Xiangzhao Wang, Shanghai Institute of Optics and Fine Mechanics (China) and Univ. of Chinese Academy of Sciences (China) . . . . . [11900-110]

Photothermal response of skin by photoacoustic sensor and thermocouple, Jiatian Li, Shulian Wu, Fujian Normal Univ. (China) .[11900-111]

Feasibility study of using reduced scattering coefficient as a monitoring and evaluation factor for tumor microwave ablation therapy, Lu Qian, Jinzhe Zhao, Xiaofei Jin, Zhiyu Qian, Weitao Li, Nanjing Univ. of Aeronautics and Astronautics (China) . . . . . [11900-112]

Label-free multiphoton imaging to rapidly classify the early and late-stage tumor necrosis in invasive breast cancer, Jianhua Chen, Yu Yi, Zhen Li, Yulan Liu, Zhijun Li, Fujian Normal Univ. (China); Zhonghua Han, Deyong Kang, Fujian Medical Univ. Union Hospital (China); Gangqin Xi, Jiajia He, Lianhuang Li, Liqin Zheng, Jianxin Chen, Fujian Normal Univ. (China). . . . . [11900-113]

A spectral-domain model-based method for simultaneous oxygen saturation quantification and contrast agent identification, Hongzhi Zuo, Manxiu Cui, Tsinghua Univ. (China); Bangyan Wang, Univ. of California, Santa Barbara (United States); Cheng Ma, Tsinghua Univ. (China) . . . . . [11900-114]

Visualization of collagen morphological changes in transition from tumor to normal tissue in breast cancer by multiphoton microscopy, Xiahui Han, Yulan Liu, Yu Yi, Zhen Li, Zhenlin Zhan, Lianhuang Li, Jianxin Chen, Fujian Normal Univ. (China); Deyong Kang, Fujian Medical Univ. Union Hospital (China) . . . . . [11900-115]

Hydronephrosis 3D autofluorescence imaging using cryo-micro-optical sectioning tomography, Guoqing Fan, Chenyu Jiang, Hui Gong, Jing Yuan, Huazhong Univ. of Science and Technology (China) . . . . . [11900-116]

Measurement of retinal pulse wave based on variable spacing dual-beam optical coherence tomography, Huijun Wang, Shanghai Jiao Tong Univ. (China); Cuixia Dai, Fengxian Du, Bowen Dong, Shanghai Institute of Technology (China); Xinyu Chai, Shanghai Jiao Tong Univ. (China); Chuanqing Zhou, Shanghai Jiao Tong Univ. (China) and Shenzhen Bay Lab. (China). . . . . [11900-117]

Photoacoustic blood pressure recognition based on deep learning, Xiaoman Zhang, Huaqin Wu, Biying Yu, Shulian Wu, Hui Li, Jianyong Cai, Fujian Normal Univ. (China) . . . . . [11900-118]

Vascular-targeted photodynamic therapy-recalcitrant port-wine stains: therapeutic outcome in relation to morphological parameters, Yidi Liu, Medical School of Chinese PLA (China) . . . . . [11900-119]

Coronary artery segmentation of CTA image based on u-net network, Bo Chen, Xuecong Feng, North China Univ. of Science and Technology (China). . . . . [11900-120]

ON DEMAND: **SMF tapered fiber/AuNPs/ZnO based sensor for detection of acetylcholine**, Zhi Wang, Ragini Singh, Bingyuan Zhang, Santosh Kumar, Liaocheng Univ. (China) . . . . . [11900-50]

ON DEMAND: **Simplified gluten biosensor in the presence of a black hole quencher (BHQ)**, Samaria Nevarez Diaz, Orly Yadid-Pecht, Varun Vij, Raymond Turner, Univ. of Calgary (Canada). . . . . [11900-121]

ON DEMAND: **Digital staining of volumetric OCT using deep learning for virtual histology**, Xuan Liu, Roberto Adamson, New Jersey Institute of Technology (United States) . . . . . [11900-122]

ON DEMAND: **Influence of microenvironmental on fluorescence decay times and weighting coefficients in free and protein-bound NADH**, Ioanna A. Gorbunova, Maxim E. Sasin, Dmitry P. Golyshev, Marina K. Krasnopevtceva, Andrey G. Smolin, Oleg S. Vasyutinskii, Ioffe Institute (Russian Federation). . . . . [11900-123]

ON DEMAND: **Fluorescence parameters of FAD in water-methanol solutions under excitation at 355 and 450 nm**, Marina K. Krasnopevtceva, Maxim E. Sasin, Ioanna A. Gorbunova, Dmitry P. Golyshev, Andrey G. Smolin, Viktor Belik, Oleg S. Vasyutinskii, Ioffe Institute (Russian Federation) . . . . . [11900-124]

ON DEMAND: **Photoluminescence of human platelets doped with platinum nanoparticles**, Andrey Y. Zyubin, Karina Matveeva, Elizaveta Demishkevich, Vladimir Rafalskiy, Ekaterina Moiseeva, Igor Kon, Anna Kundalevich, Victoria Butova, Ilia Samusev, Immanuel Kant Baltic Federal Univ. (Russian Federation) . . . . . [11900-125]

ON DEMAND: **Raman spectroscopy for glutathione measurements in Mycobacterium tuberculosis strains with different antibiotic sustainability**, Andrey Y. Zyubin, Immanuel Kant Baltic Federal Univ. (Russian Federation); Anastasia Lavrova, Olga Manicheva, Marine Dogonadze, Saint-Petersburg State Research Institute of Phthisiopulmonology (Russian Federation); Vitaly Belik, Freie Univ. Berlin (Germany); Ilia Samusev, Immanuel Kant Baltic Federal Univ. (Russian Federation) . . . . . [11900-126]

SESSION 5

LOCATION: ROOM 105A . . . . . MON 14:30 TO 15:00

OCT and Applications

Session Chair: **Zhihua Ding,** Zhejiang Univ. (China)

14:30: **Gabor optical coherence tomographic angiography for real-time microvascular imaging**, Chaoliang Chen, Southeast Univ. (China). [11900-21]

14:45: **Towards the distal fiber-optics design of the fiber probe for the optical coherence tomography**, Jianrong Qiu, Zhihua Ding, Zhejiang Univ. (China); Chen Yang, Chen Zhang, Zhejiang University (China); Jia Meng, Huanghe Qian, Tao Han, Zhejiang Univ. (China) . . . . . [11900-23]

Tea/Coffee Break . . . . . Mon 15:00 to 15:30

SESSION 6

LOCATION: ROOM 105A . . . . . MON 15:30 TO 17:15

Biomedical Spectroscopy

Session Chair: **Haixia Qiu,** Chinese PLA General Hospital (China)

15:30: **A serum analysis method combining membrane protein purification with surface-enhanced Raman spectroscopy for noninvasive prostate cancer detection**, Yamin Lin, Mengmeng Zheng, Jiamin Gao, Xin Zhao, Fujian Normal Univ. (China); Yun Yu, Fujian Univ. of Traditional Chinese Medicine (China); Juqiang Lin, Fujian Normal Univ. (China) . . . . . [11900-24]

15:45: **Quantitative and long-term cell imaging with computational hyperspectral interferometry**, Rongxin Fu, Ya Su, Ruliang Wang, Xue Lin, Xiangyu Jin, Han Yang, Wenli Du, Xiaohui Shan, Wenqi Lv, Guoliang Huang, Tsinghua Univ. (China) . . . . . [11900-25]

16:00: **Label-free and stable detection of body fluid using HAp/Ag nanocomposite SERS substrate**, Yamin Lin, Jiamin Gao, Mengmeng Zheng, Dan Liu, Xin Bai, Fujian Normal Univ. (China); Yun Yu, Fujian Univ. of Traditional Chinese Medicine (China); Juqiang Lin, Fujian Normal Univ. (China). [11900-26]

16:15: **Engineering SERS for liquid biopsy analyses: a step towards precision medicine**, Jing Wang, Key Lab. of OptoElectronic Science and Technology for Medicine, Ministry of Education (China) and Fujian Provincial Key Lab. of Photonics Technology (China) . . . . . [11900-27]

16:30: **Multimodal stimulated Raman scattering (SRS) imaging for unveiling cellular machineries of metabolism**, Yongqing Zhang, Yihui Zhou, Hyeon Jeong Lee, Delong Zhang, Zhejiang Univ. (China) . . . . . [11900-28]

16:45: **Preliminary study of surface-enhanced Raman spectroscopy (SERS) of serum samples of liver cancer patients**, Qiwen Wang, Mengmeng Zheng, Yuhong Fang, Fujian Normal Univ. (China); Kecan Lin, The First Affiliated Hospital of Fujian Medical Univ. (China); Shusen Xie, Zheng Huang, Fujian Normal Univ. (China) . . . . . [11900-29]

17:00: **Machine-learning-mediated single-cell classification by hyperspectral stimulated Raman scattering imaging**, Hyeon Jeong Lee, Qingyue Cheng, Tianrun Chen, Delong Zhang, Zhejiang Univ. (China) . . . . . [11900-30]

TUESDAY 12 OCTOBER

SESSION 7

LOCATION: ROOM 105A . . . . . TUE 8:30 TO 10:00

Translational Optical Techniques for Clinical Medicine I

Session Chair: **Dan Zhu,** Huazhong Univ. of Science and Technology (China)

8:30: **Spatiotemporal detection of singlet oxygen luminescence: an update** *(Invited Paper)*, Buhong Li, Fujian Normal Univ. (China) . . . . [11900-31]

9:00: **Simulation analysis of mechanical performance of laser catheter in ELCA operation**, Lei Su, Bowen Liao, Yichun Wang, Hongzhang He, Han Wu, Xiuquan Ma, Huazhong Univ. of Science and Technology (China) . . [11900-32]

9:15: **Structural and functional imaging of human eye with multi-modal anterior eye imaging platform**, Peng Xiao, Zhengyu Duan, Jin Yuan, ZhongShan Ophthalmic Ctr. (China) . . . . . [11900-33]

9:30: **Comparison of different light sources for hemoporfin mediated photodynamic therapy**, Na Meng, Sen Wang, ShuLing Zou, Fujian Normal Univ. (China); Min Li, Zhejiang Institute of Medical Device Testing (China); Min Wang, Zheng Huang, Fujian Normal Univ. (China). . . . . [11900-34]

9:45: **Multiscale deep-learning network based reconstruction of PET images from sinogram domain**, Zhiyuan Liu, Huafeng Liu, Zhejiang Univ. (China). . . . . [11900-35]

Tea/Coffee Break . . . . . Tue 10:00 to 10:30

SESSION 8

LOCATION: ROOM 105A . . . . . TUE 10:30 TO 12:00

Translational Optical Techniques for Clinical Medicine II

Session Chair: **Changfeng Wu,** Southern Univ. of Science and Technology of China (China)

10:30: **Photodynamic therapy for intraluminal tumor: current applications and perspectives** *(Invited Paper)*, Haixia Qiu, Chinese PLA General Hospital (China). . . . . [11900-36]

11:00: **Neural network-based quantitative reconstructions of PET without attenuation correction** *(Invited Paper)*, Huafeng Liu, Linin Zhao, Zhejiang Univ. (China) . . . . . [11900-37]

11:30: **A non-invasive diabetes diagnosis method based on a novel optical instrument and AI**, Wenqi Lv, Rongxin Fu, Xue Lin, Ya Su, Xiangyu Jin, Han Yang, Xiaohui Shan, Wenli Du, Kai Jiang, Guoliang Huang, Tsinghua Univ. (China) . . . . . [11900-38]

11:45: **Optical and thermal interactions of different-wavelength ultrashort laser pulses with breast cancer**, Yuli Li, Xianlin Song, Nanchang Univ. (China). . . . . [11900-39]

Lunch Break . . . . . Tue 12:00 to 13:30

SESSION 9

LOCATION: ROOM 105A . . . . . TUE 13:30 TO 15:15

Nanobiophotonics

Session Chair: **Qiuqiang Zhan,** South China Normal Univ. (China)

13:30: **Application of molecular imaging probe in tumor diagnosis and treatment** *(Invited Paper)*, Yueqing Gu, China Pharmaceutical Univ. (China). . . . . [11900-40]

14:00: **Multifunctional semiconducting polymer dots for super-resolution imaging and in vivo sensing** *(Invited Paper)*, Changfeng Wu, Southern Univ. of Science and Technology of China (China) . . . . . [11900-41]

14:30: **Molecule delivery by photoporation mediated by gold nanoparticles** *(Invited Paper)*, Cuiping Yao, Xi'an Jiaotong Univ. (China). . . . . [11900-42]

15:00: **Screening and sequencing monoclonal antibody at single-cell level**, Weikai Zhang, Qin Li, Beijing Institute of Technology (China) . [11900-43]

Tea/Coffee Break . . . . . Tue 15:15 to 15:45

SESSION 10

LOCATION: ROOM 105A . . . . . TUE 15:45 TO 16:45

Photoacoustic Imaging

Session Chair: **Puxiang Lai,**
The Hong Kong Polytechnic Univ. (Hong Kong, China)

15:45: **Scalable photoacoustic imaging-guided adipose photodynamic and browning therapy for overcoming obesity** *(Invited Paper)*, Liming Nie, Guangdong General Hospital (China) . . . . . [11900-44]

16:15: **Multispectral photoacoustic elasticity tomography**, Yubin Liu, Fujian Normal Univ. (China) . . . . . [11900-47]

16:30: **Handheld photoacoustic imaging with an articulated arm for light delivery**, Jianpan Gao, Handi Deng, Hanqing Duan, Haoming Huo, Tsinghua Univ. (China); Yizhou Bai, Bin Luo, Beijing Tsinghua Changgung Hospital (China); Cheng Ma, Tsinghua Univ. (China) . . . . . [11900-48]

ON DEMAND: **Ultrasound and photoacoustic imaging for image-guided gastric tube placement,** Samuel John, Nasrin Nesha, Yoseph Adie, Wayne State Univ. (United States); Loay S. Kabbani, Henry Ford Health System (United States); Mohammad Mehrmohammadi, Wayne State Univ. (United States). . . . . [11900-45]

ON DEMAND: **A longitudinal study of cervical tissue composition changes during normal pregnancy in mice using spectroscopic photoacoustics,** Yan Yan, Jose Galaz, Maryam Basij, Nardhy Gomez-Lopez, Mohammad Mehrmohammadi, Wayne State Univ. (United States) . . [11900-46]

CONFERENCE 11901 • LOCATION: ROOM 103B

Sunday–Monday 10–11 October 2021 • Proceedings of SPIE Vol. 11901

Advanced Sensor Systems and Applications XI

Conference Chairs: **Zuyuan He,** Shanghai Jiao Tong Univ. (China); **Gang-Ding Peng,** The Univ. of New South Wales (Australia)

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); **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); **Tiegen Liu,** Tianjin Univ. (China); **Niels Neumann,** TU Dresden (Germany); **Li Pei,** Beijing Jiaotong Univ. (China); **Xueguang Qiao,** Northwest Univ. (China); **Yunjiang Rao,** Univ. of Electronic Science and Technology of China (China); **Tobias Schuster,** Evonik Industries AG (Germany); **Anbo Wang,** Virginia Polytechnic Institute and State Univ. (United States); **Tingyun Wang,** Shanghai Univ. (China); **Hai Xiao,** Clemson Univ. (United States); **X. Steve Yao,** General Photonics Corp. (United States); **Shizhuo Yin,** The Pennsylvania State Univ. (United States); **Paul Kit-Lai Yu,** Univ. of California, San Diego (United States); **Libo Yuan,** Harbin Engineering Univ. (China)

SUNDAY 10 OCTOBER

OPENING CEREMONY AND PLENARY SESSION I

ROOM: INTERNATIONAL HALL A . . . . . 9:00 TO 12:00

9:00: Opening Ceremony

9:20: Awards and Recognition

9:30: **Low-cost optical technologies to improve global health equity: examples from newborn health, women's health, and COVID-19** *(Plenary)*, Rebecca R. Richards-Kortum, Director, Rice 360 Institute for Global Health Technologies (United States) and Rice Univ. (United States). . . . . [11900-501]

Tea/Coffee Break . . . . . .Sun 10:10 to 10:40

10:40: **High-quality electron beams and free-electron lasing based on laser-wakefield accelerator** *(Plenary)*, Wentao Wang, State Key Lab. of High Field Laser Physics (China) and CAS Ctr. for Excellence in Ultra-intense Laser Science (China) and Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China) . . . . . [11890-502]

11:20: **Advances of perovskite solar cell technology** *(Plenary)*, Rui Zhu, Peking Univ. (China) . . . . . [11893-503]

Lunch Break . . . . . Sun 12:00 to 13:30

SESSION 1

LOCATION: ROOM 103B . . . . . SUN 13:30 TO 14:30

Biological and Chemical Sensors I

Session Chair: **Junfeng Jiang,** Tianjin Univ. (China)

13:30: **Cryogenic temperature sensor based on an optical fiber Fabry-Perot interferometer with high sensitivity** *(Invited Paper)*, Jiahua Yang, Xiaopeng Dong, Biao Yin, Xiamen Univ. (China). . . . . .[11901-1]

14:00: **Fiber-laser-enhanced WGM microtubule cavity for myocardial infarction biomarker detection**, Panpan Niu, Junfeng Jiang, Shuang Wang, Tong Wang, Yize Liu, Tiegen Liu, Tianjin Univ. (China) . . . . . [11901-2]

14:15: **Feasibility assessment of an anti-electromagnetic wearable monitor based on optical sensors for long-term electrocardiogram monitoring**, Jing Zhao, Mingwei Li, Qi Wang, Hongxia Zhang, Tiegen Liu, Dagong Jia, Tianjin Univ. (China) . . . . . [11901-5]

Tea/Coffee Break . . . . . .Sun 14:30 to 15:30

PLENARY SESSION II

LOCATION: INTERNATIONAL HALL A . . . . . SUN 15:30 TO 16:20

15:30: Welcome and Introduction

Q&A period will follow after the talk

15:35: **The UK National Quantum Technology Programme** *(Plenary)*, Peter L. Knight, Blackett Lab., Imperial College London (United Kingdom) and UK National Quantum Technology Strategic Advisory Board for UKRI (United Kingdom). . . . . [11905-504]

Tea/Coffee Break . . . . . Sun 16:20 to 16:30

SESSION 2

LOCATION: ROOM 103B . . . . . SUN 16:30 TO 17:45

Mechanical and Electrical Sensors

Session Chair: **Huilian Ma,** Zhejiang Univ. (China)

16:30: **Analysis of fabrication error and optimization technique of λ/4 waveplate for fiber optical current transformer** *(Invited Paper)*, Yongguang Wang, Guochen Wang, Harbin Institute of Technology (China); Boya Zhang, Military Office of Rocket Armaments Dept. (China); Wei Gao, Zhuo Wang, Harbin Institute of Technology (China). . . . . [11901-6]

17:00: **Design and simulation analysis of fiber optic current sensor using orbital angular momentum beam**, Yuxin Zhao, Guochen Wang, Harbin Institute of Technology (China); Boya Zhang, Military Office of Rocket Armaments Dept. (China); Fei Yu, Zhuo Wang, Harbin Institute of Technology (China). . . . . [11901-7]

17:15: **Research on the influence of the asymmetry of the dual 90-degree rotation splices in the resonant cavity of the resonant fiber optic gyroscope on the Shupe effect**, Weiqi Miao, Fei Yu, Guochen Wang, Zhuo Wang, Harbin Institute of Technology (China) . . . . . [11901-8]

17:30: **A sensitivity-enhanced all-fiber Fabry-Perot high-pressure sensor with a hard-core diaphragm**, Xiu He, Zengling Ran, Nan Wang, Zhaoyang Ding, Lupeng Gan, Mengke Yu, Zhengxi He, Dong Sun, Univ. of Electronic Science and Technology of China (China); Yachao Zhang, Shaanxi Binchang Dafosi Mining Co., Ltd. (China); Dongsheng Ye, Shanxi Coal Chenghe Mining Co., Ltd. (China) . . . . . [11901-9]

ON DEMAND: **Methods for measuring angular velocity based on the use of optical parity-time-symmetry systems,** Vladimir Y. Venediktov, Egor V. Shalymov, Saint Petersburg Electrotechnical Univ. (Russian Federation) . . . . . [11901-10]

MONDAY 11 OCTOBER

SESSION 3

LOCATION: ROOM 103B . . . . . .MON 9:00 TO 10:00

Microstructure Sensors and Specialty Fibers

Session Chair: **Liang Zhang,** Shanghai Univ. (China)

9:00: **Fabrication and application of graphene-microstructure fiber** *(Invited Paper)*, Wa Jin, Weihong Bi, Xiaoyu Wang, Guangwei Fu, Xinghu Fu, Baojun Zhang, Yanshan Univ. (China) . . . . . .[11901-11]

9:30: **Fiber-optic airflow sensor for air quantity estimation in air conduit**, Peng Zhang, Shuang Wang, Junfeng Jiang, Xuezhi Zhang, Zhiyang Wu, Zhiyuan Li, Haokun Yang, Tiegen Liu, Tianjin Univ. (China) . . . . . .[11901-14]

9:45: **High sensitivity distributed static strain sensing based on all grating optical fiber in optical frequency domain reflectometry**, Chenhuan Wang, Kun Liu, Zhenyang Ding, Tianjin Univ. (China) and Tianjin Optical Fiber Sensing Engineering Ctr. (China); Dongfang Zhu, Shanghai Aerospace Control Technology Institute (China); Ming Pan, Zeen Chen, Haohan Guo, Yin Yu, Junfeng Jiang, Tiegen Liu, Tianjin Univ. (China) and Tianjin Optical Fiber Sensing Engineering Ctr. (China) . . . . . .[11901-15]

Tea/Coffee Break . . . . . Mon 10:00 to 10:30

SESSION 4

LOCATION: ROOM 103B . . . . . MON 10:30 TO 11:45

Biological and Chemical Sensors II

Session Chair: **Xiaopeng Dong,** Xiamen Univ. (China)

10:30: **Highly sensitive temperature sensor with optomechanofluidic resonators** *(Invited Paper)*, Yize Liu, Junfeng Jiang, Kun Liu, Shuang Wang, Panpan Niu, Tong Wang, Tiegen Liu, Tianjin Univ. (China) . . . . . .[11901-16]

11:00: **Enhancing detection limit of whispering gallery mode microcavity for intracellular sensing applications**, Jinsong Lu, Yaping Wang, Marion C. Lang, Mingqian Suo, Shijia Wang, Xiuhong Wang, Pu Wang, Beijing Univ. of Technology (China) . . . . . .[11901-17]

11:15: **CARS spectroscopic fiber probe**, Tong Wang, Junfeng Jiang, Kun Liu, Shuang Wang, Panpan Niu, Yize Liu, Tiegen Liu, Tianjin Univ. (China)[11901-18]

11:30: **A bent core-offset in-line fiber Mach-Zehnder interferometer for simultaneous measurement of refractive index and temperature**, Bingcheng Wu, Haiyang Bao, Yanfei Zhou, Yuan Liu, Jie Zheng, Jilin Univ. (China) . . . . . .[11901-19]

Lunch Break . . . . . Mon 11:45 to 13:30

ON DEMAND: **Broad-range self-sweeping Ho-doped fiber laser for N_2O spectroscopy tasks,** Anastasia Vladimirskaya, Ivan A. Lobach, Sergey I. Kablukov, Institute of Automation and Electrometry (Russian Federation) . . . . . [11901-20]

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

Analytical solutions for polarization mode dispersion and decorrelation in optical fibers with weak random varying birefringence, Junzhen Jiang, Fujian Normal Univ. (China) . . . . . .[11901-13]

A fiber-optic sensing system based on broadband light source carried microwave interferometry, Yibing Hou, Bin Wu, Tianjin Univ. (China) . . . . . [11901-31]

Study of a liquid level sensor based on a tilted long period grating imprinted on a plastic optical fiber, Haiyang Bao, Bingcheng Wu, Yuan Liu, Yanfei Zhou, Jie Zheng, Jilin Univ. (China) . . . . . [11901-32]

Based on self-standing nickle-mesh decorated with Au nanoparticles for flexible transparent H_2O_2 sensor, Meijia Liu, Yanhua Liu, Ya Weng, Soochow Univ. (China) . . . . . [11901-35]

Solutions on multiple configuration sensing systems, Hua Liu, Luoyang Electro-optical Equipment Research Institute (China) . . . . . [11901-36]

Extrinsic calibration of 3D LiDAR and camera using only three 3D-2D correspondences, Fei Liu, Beijing Institute of Technology (China) . [11901-37]

Detection of SO_2F_2 concentration of SF_6 decomposition product in GIS gas chamber based on ICL-TDLAS, Xiao-zhe Zeng, Henan Relations Co., Ltd. (China) . . . . . [11901-38]

Multifocal acoustic lens for large volumetric photoacoustic microscopy, Xianlin Song, Nanchang Univ. (China) . . . . . [11901-39]

Optical photoacoustic sensor for large-bandwidth detection of photoacoustic signal using micro-ring resonator, Ao Teng, Xianlin Song, Nanchang Univ. (China) . . . . . [11901-40]

Sensitivity analysis of fault detection for few-mode fiber links based on Rayleigh backscattering, Zhenxing He, Feng Liu, Wenping Zhang, Wenzhou Univ. (China); Guijun Hu, Jilin Univ. (China) . . . . . [11901-41]

An absolute temperature compensation method on FBG sensor based on the analysis of strain and temperature coupling effect, Huanyu Yang, Dalian Univ. of Technology (China); Zhi Zhou, Dalian Univ. of Technology (China) and Hainan Univ. (China) . . . . . [11901-42]

Measurement of damping vibration using self-mixing interferometry under strong feedback regime, Bo Wang, Lei An, Bin Liu, Xiangtan Univ. (China) . . . . . [11901-43]

An array optical fiber gas holdup system applied to oil wells, Pengfei Liu, Fenghuan Hao, Hangzhou Applied Acoustics Research Institute (China); Bo Zhu, Weidong Luo, Pingzhi Dai, Hangzhou Ruili Acoustics & Electrical Technology Co., Ltd. (China) . . . . . [11901-44]

A distributed optical fiber temperature measuring system for oil wells, Zhigang Zhang, China Oilfield Services Ltd. (China); Bo Zhu, Hangzhou Ruili Acoustics & Electrical Technology Co., Ltd. (China); Pengfei Liu, Hangzhou Applied Acoustics Research Institute (China) . . . . . [11901-45]

Magnetic field sensor based on Terfenol-D coated optical fibers, Ruoqi Sun, Liang Zhang, Heming Wei, Yana Shang, Lina Xiang, Fufei Pang, Shanghai Univ. (China) . . . . . [11901-46]

Analysis of aerosol backscattering echo characteristics for truncated partially coherent light, Xiao Dong, Yihua Hu, Nanxiang Zhao, Shilong Xu, National Univ. of Defense Technology (China) . . . . . [11901-48]

Suppressing interference fading in ϕ-OTDR with intensity-coded pulse based on spectrum-extraction and rotated-vector-sum method, Kexin Cui, Beijing Univ. of Posts and Telecommunications (China); Fei Liu, Univ. of Science and Technology Beijing (China); Kui-Ru Wang, Beijing Univ. of Posts and Telecommunications (China); Xiaojun Liu, Univ. of Science and Technology Beijing (China); Jin-Hui Yuan, Bin-Bin Yan, Beijing Univ. of Posts and Telecommunications (China); Xian Zhou, Univ. of Science and Technology Beijing (China) . . . . . [11901-49]

ON DEMAND: **Simulations of pressure-driven gas flow in a nodeless antiresonant hollow-core fiber for laser absorption spectroscopy applications**, Piotr Bojes, Piotr Jaworski, Karol Krzempek, Ziemowit Malecha, Pawel Koziol, Grzegorz Dudzik, Wroclaw Univ. of Science and Technology (Poland); Fei Yu, Shanghai Institute of Optics and Fine Mechanics (China) and Univ. of Chinese Academy of Sciences (China); Meisong Liao, Shanghai Institute of Optics and Fine Mechanics (China); Dakun Wu, Shanghai Institute of Optics and Fine Mechanics (China) and Ctr. of Materials Science and Optoelectronics Engineering (China); Krzysztof Abramski, Wroclaw Univ. of Science and Technology (Poland) . . . . . [11901-47]

SESSION 5

LOCATION: ROOM 103B . . . . . MON 14:30 TO 15:15

New Sensor Devices and Systems

Session Chair: **Zuyuan He,** Shanghai Jiao Tong Univ. (China)

14:30: **Semiconductor optical amplifier fiber-ring laser for FBG dynamic strain sensing with an adaptive two-wave mixing demodulator**, Yan Zhao, Chuanyi Tao, Hao Wang, Jianjun Xiao, Xuhai Jiang, Chongqing Univ. of Technology (China); Jingke Li, Chongqing Medical and Pharmaceutical College (China) . . . . . [11901-21]

14:45: **A neural-network-based method for improving the detection accuracy of four-quadrant detectors**, Zhaobing Qiu, Liyu Lin, Liqiong Chen, Wuhan Univ. (China) . . . . . [11901-22]

15:00: **Bandwidth evalution of multimode waveguides based on optical sampling technique**, Ying Shi, Bingxin Xu, Lin Ma, Junjie Xiong, Xinyu Fan, Yudi Zhuang, Zuyuan He, Shanghai Jiao Tong Univ. (China) . . . . . [11901-23]

Tea/Coffee Break . . . . . Mon 15:15 to 15:45

ON DEMAND: **Changes in speckle patterns in an output light spot from an optical fiber to be caused by load application of lightweight level** *(Invited Paper),* Makoto Hasegawa, Takato Chiba, Yu Miyakoshi, Chitose Institute of Science and Technology (Japan) . . . . . [11901-24]

ON DEMAND: **Automatic control of the tuning parameters of a self-sweeping Tm-doped fiber laser,** Artem Budarnykh, Nikolay Smolyaninov, Ivan A. Lobach, Institute of Automation and Electrometry (Russian Federation) . . . . . [11901-25]

SESSION 6

LOCATION: ROOM 103B . . . . . MON 15:45 TO 17:00

New Sensor Techniques and Applications

Session Chair: **Zhuo Wang,** Harbin Institute of Technology (China)

15:45: **Ultrasonic optical fiber sensing for composite structural health monitoring** *(Invited Paper)*, Qi Wu, Nanjing Univ. of Aeronautics and Astronautics (China) . . . . . [11901-26]

16:15: **Measurement of linewidth enhancement factor based on self-mixing interferometry and back propagation neural network**, Lei An, Bo Wang, Bin Liu, Xiangtan Univ. (China) . . . . . [11901-27]

16:30: **Sensing interrogation system with Michelson interferometer incorporating an optoelectronic oscillator**, Ling Liu, Tigang Ning, Beijing Jiaotong Univ. (China); Xueyin Sun, Beijing Institute of Spacecraft Environment Engineering (China); Jian Xu, Beijing Jiaotong Univ. (China); Haidong You, Qingdao Agricultural Univ. (China) . . . . . [11901-28]

16:45: **Orthogonal phase demodulation system with wide frequency band response based on birefringent crystals and polarization technology**, Zhiyuan Li, Shuang Wang, Junfeng Jiang, Yin Yu, Wenyan Liu, Peng Zhang, Tiegen Liu, Tianjin Univ. (China) . . . . . [11901-29]

ON DEMAND: **Lens-free motion analysis using the event camera**, Zhou Ge, Yanmin Zhu, Yunping Zhang, Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China) . . . . . [11901-30]

CONFERENCE 11902 • LOCATION: ROOM 102A

Sunday–Tuesday 10–12 October 2021 • Proceedings of SPIE Vol. 11902

Real-time Photonic Measurements, Data Management, and Processing VI

Conference Chairs: **Ming Li,** Institute of Semiconductors, Chinese Academy of Sciences (China); **Bahram Jalali,** UCLA Samueli School of Engineering (United States); **Mohammad Hossein Asghari,** Loyola Marymount Univ. (United States), Tachyonics Inc. (United States)

Program Committee: **Hongwei Chen,** Tsinghua Univ. (China); **Xiangfei Chen,** Nanjing Univ. (China); **Jianji Dong,** Huazhong Univ. of Science and Technology (China); **Ruifang Dong,** National Time Service Ctr., Chinese Academy of Sciences (China); **Yongkang Dong,** Harbin Institute of Technology (China); **Xinyu Fan,** Shanghai Jiao Tong Univ. (China); **Mable P. Fok,** The Univ. of Georgia (United States); **Shiming Gao,** Zhejiang Univ. (China); **Minglie Hu,** Tianjin Univ. (China); **Jungwon Kim,** KAIST (Korea, Republic of); **Hongpu Li,** Shizuoka Univ. (Japan); **Xueming Liu,** Zhejiang Univ. (China); **Yong Liu,** Univ. of Electronic Science and Technology of China (China); **Chengbo Mou,** Shanghai Univ. (China); **Fufei Pang,** Shanghai Univ. (China); **Liyang Shao,** Southern Univ. of Science and Technology of China (China); **Kebin Shi,** Peking Univ. (China); **Yikai Su,** Shanghai Jiao Tong Univ. (China); **Kevin K. Tsia,** The Univ. of Hong Kong (Hong Kong, China); **Chao Wang,** Univ. of Kent (United Kingdom); **Jian Wang,** Huazhong Univ. of Science and Technology (China); **Xu Wang,** Heriot-Watt Univ. (United Kingdom); **Fei Xu,** Nanjing Univ. (China); **Kun Xu,** Beijing Univ. of Posts and Telecommunications (China); **Haitao Yan,** Henan Univ. of Science and Technology (China); **Lilin Yi,** Shanghai Jiao Tong Univ. (China); **Lixing You,** Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences (China); **Shangjian Zhang Sr.,** Univ. of Electronic Science and Technology of China (China); **Xinliang Zhang,** Wuhan National Research Ctr. for Optoelectronics (China); **Hua Zhao,** Nanjing Normal Univ. (China); **Xiaoping Zheng,** Tsinghua Univ. (China); **Zheng Zheng,** Beihang Univ. (China); **Tao Zhu,** Chongqing Univ. (China); **Xihua Zou,** Southwest Jiaotong Univ. (China)

SUNDAY 10 OCTOBER

OPENING CEREMONY AND PLENARY SESSION I

ROOM: INTERNATIONAL HALL A . . . . . 9:00 TO 12:00

9:00: Opening Ceremony

9:20: Awards and Recognition

9:30: **Low-cost optical technologies to improve global health equity: examples from newborn health, women's health, and COVID-19** *(Plenary)*, Rebecca R. Richards-Kortum, Director, Rice 360 Institute for Global Health Technologies (United States) and Rice Univ. (United States). . . . . [11900-501]

Tea/Coffee Break . . . . . .Sun 10:10 to 10:40

10:40: **High-quality electron beams and free-electron lasing based on laser-wakefield accelerator** *(Plenary)*, Wentao Wang, State Key Lab. of High Field Laser Physics (China) and CAS Ctr. for Excellence in Ultra-intense Laser Science (China) and Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China) . . . . . [11890-502]

11:20: **Advances of perovskite solar cell technology** *(Plenary)*, Rui Zhu, Peking Univ. (China) . . . . . [11893-503]

Lunch Break . . . . . Sun 12:00 to 13:30

SESSION 1

LOCATION: ROOM 102A . . . . . SUN 13:30 TO 15:10

Imaging and Sensing I

Session Chair: **Tuan Guo,** Jinan Univ. (China)

13:30: **Temporal focusing based ultrafast high-resolution spectroscopy** *(Invited Paper)*, Chi Zhang, Xinliang Zhang, Huazhong Univ. of Science and Technology (China). . . . . [11902-1]

13:55: **Proposal of real-time Brillouin fiber sensing based on compressing sensing and pattern recognition algorithms** *(Invited Paper)*, Benzhang Wang, Yupeng Zhang, Fan Zhou, Xianlei Ye, Dongliang Quan, China Aerospace Science & Industry Corp., Ltd. (China) . . . . . [11902-7]

14:20: **Brillouin optical fiber sensing via optical chirp chain for ultrafast distributed measurement** *(Invited Paper)*, Henan Wang, Zongda Zhu, Dengwang Zhou, Dexin Ba, Yongkang Dong, Harbin Institute of Technology (China). . . . . [11902-3]

14:45: **Photonic integrated chaotic semiconductor laser and its application in distributed fiber sensing** *(Invited Paper)*, Mingjiang Zhang, Taiyuan Univ. of Technology (China) . . . . . [11902-4]

Tea/Coffee Break . . . . . .Sun 15:10 to 15:30

PLENARY SESSION II

LOCATION: INTERNATIONAL HALL A . . . . . SUN 15:30 TO 16:20

15:30: Welcome and Introduction

Q&A period will follow after the talk

15:35: **The UK National Quantum Technology Programme** *(Plenary)*, Peter L. Knight, Blackett Lab., Imperial College London (United Kingdom) and UK National Quantum Technology Strategic Advisory Board for UKRI (United Kingdom). . . . . [11905-504]

Tea/Coffee Break . . . . . Sun 16:20 to 16:30

SESSION 2

LOCATION: ROOM 102A . . . . . SUN 16:30 TO 17:45

Imaging and Sensing II

Session Chair: **Mingjiang Zhang,** Taiyuan Univ. of Technology (China)

16:30: **Increase measurement range, distance, and speed of optical fiber distribution acoustic sensing** *(Invited Paper)*, Junfeng Jiang, Shuang Wang, Zhe Ma, Guanghua Liang, Tiegen Liu, Kun Liu, Tianjin Univ. (China). . [11902-5]

16:55: **High-resolution 3D range-gated laser imaging for unmanned underwater vehicles** *(Invited Paper)*, Xinwei Wang, Liang Sun, Jianan Chen, Pingshun Lei, Jun He, Yan Zhou, Institute of Semiconductors (China) [11902-6]

17:20: **Plasmonic fiber-optic sensors for biomedical and renewable energy applications** *(Invited Paper)*, Tuan Guo, Jinan Univ. (China). [11902-8]

ON DEMAND: **Compressive Coded Rotation Mirror (CCRM) high-speed camera** *(Invited Paper)*, Xu Wang, Heriot-Watt Univ. (United Kingdom). . . . . [11902-2]

MONDAY 11 OCTOBER

SESSION 3

LOCATION: ROOM 102A . . . . . MON 9:00 TO 11:50

Biomedical Imaging and Sensing

Session Chair: **Bo Li,** Fudan Univ. (China)

9:00: **The pursuits in optical imaging of neural network activity in vivo** *(Invited Paper)*, Lingjie Kong, Tsinghua Univ. (China) . . . . . [11902-9]

9:25: **The development of nanophotonic resonators for ultra-broadband ultrasound detection and photoacoustic microscopy** *(Invited Paper)*, Biqin Dong, Fudan Univ. (China) . . . . . [11902-10]

9:50: **Pulsed laser modulation for adaptive excitation of multiphoton neuronal imaging in vivo** *(Invited Paper)*, Bo Li, Fudan Univ. (China)[11902-11]

Tea/Coffee Break . . . . . Mon 10:15 to 10:45

10:45: **Ultrafast snapshot Mueller matix polarimeter based on spectrally encoded optical time-stretch technique** *(Invited Paper)*, Yuanhua Feng, Xiumei Jiang, Jianwen Huang, Shujun Li, Jinan Univ. (China) . . . . . [11902-12]

11:10: **High-speed swept-source optical coherence tomography empowered by compressed sensing for time-lapse phase-sensitive imaging** *(Invited Paper)*, Yuye Ling, Yikai Su, Shanghai Jiao Tong Univ. (China). . . . . [11902-13]

11:35: **All-fiber nano-devices for health-monitoring**, Ye Chen, Dan-ran Li, Fei Xu, Nanjing Univ. (China) . . . . . [11902-14]

Lunch Break . . . . . Mon 11:50 to 13:30

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

The identification of microplastics using infrared spectrum, Xue Wu, Harbin Institute of Technology (China); Weiwei Feng, Yantai Institute of Coastal Zone Research (China). . . . . [11902-25]

Reconfigurable photonic integrated computing chip based on quadrilateral MZI topology network, Yuhan Yao, Yuhe Zhao, Jianji Dong, Huazhong Univ. of Science and Technology (China) . . . . . [11902-40]

Demonstration of a 50 km fiber-optic two-way quantum time transfer with long-term stability below 100 fs, Huibo Hong, Runai Quan, Xiao Xiang, National Time Service Ctr. (China) and Univ. of Chinese Academy of Sciences (China); Yuting Liu, National Time Service Ctr. (China); Junjie Xing, Peng Liu, Ruifang Dong, National Time Service Ctr. (China) and Univ. of Chinese Academy of Sciences (China) . . . . . [11902-41]

Adisplacement measurement system based on a modified Mach-Zehnder interferometer, Chenji Guo, Hua Zhao, Yuanyuan Hao, Nanjing Normal Univ. (China). . . . . [11902-42]

LFM-Costas waveform generation based on a Fourier domain mode locking optoelectronic oscillator, Xiangrui Tian, Lingjie Zhang, Huan Tian, Zhiyao Zhang, Heping Li, Yong Liu, Univ. of Electronic Science and Technology of China (China) . . . . . [11902-43]

Fast light propagation via Brillouin random lasing oscillation in optical fibers, Liang Zhang, Haoran Xie, Zhelan Xiao, Zenghuan Qiu, Jilin Zhang, Yikun Jiang, Fufei Pang, Shanghai Univ. (China) . . . . . [11902-44]

Real-time construction and control on dynamic systems, Hua Liu, Luoyang Electro-optical Equipment Research Institute (China) . . . . [11902-45]

Real-time identification of frequency-hopping millimeter-wave signals using photonic time stretch and reservoir computing, Yuanli Yue, Univ. of Kent (United Kingdom); Shuo Li, Ailing Zhang, Tianjin Univ. of Technology (China); Chao Wang, Univ. of Kent (United Kingdom). . . . . [11902-46]

Anti-resonant reflecting guidance mechanism in ring-core fibers for the first-order orbital angular momentum modes generation, Jianheng Qiu, Liang Zhang, Heming Wei, Yana Shang, Jianxiang Wen, Fufei Pang, Shanghai Univ. (China) . . . . . [11902-47]

Analysis of atomization process based on multi-angle polarization scattering measurements, Zhidi Liu, Nan Zeng, Wei Guo, Hui Ma, Tsinghua Univ. Shenzhen International Graduate School (China) . . . . . [11902-48]

Post-calibrated carrier envelope offset frequency for ultrafast dual-comb spectroscopy, Liang Xu, Lei Zhang, Chen Liu, Lun Li, Chi Zhang, Xinliang Zhang, Huazhong Univ. of Science and Technology (China) [11902-49]

Ultrafast tunable 16 channels DFB laser array based on the REC technology, Qimin Wang, Zhewen Liu, Nanjing Univ. (China); Xing-bang Zhu, The 41st Research Institute of China Electronics Technology Group Corp. (China); Tao Fang, Nanjing Univ. (China) . . . . . [11902-50]

An improved signal filtering strategy based on EMD algorithm for ultrahigh precision grating intermarry, Junhao Zhu, Kangning Yu, Gaopeng Xue, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China). . . . . [11902-51]

Multi-channel wavelength-swept DFB laser array based on REC technique, Ji Dai, Zhen Li, Tao Fang, Nanjing Univ. (China) . . . . . [11902-52]

Superconducting nanowire single-photon detector with self-differential readout, Luyao Ma, Xingyu Zhang, Hao Li, Chaolin Lv, Wenying Zhang, Shanghai Institute of Microsystem and Information Technology (China). . . . . [11902-53]

Ultrafast autocorrelator based on radio spectrum analysis system, Ruolan Wang, Liao Chen, Xinliang Zhang, Chi Zhang, Huazhong Univ. of Science and Technology (China) . . . . . [11902-54]

SESSION 4

LOCATION: ROOM 102A . . . . . MON 14:30 TO 16:50

Advanced Lasers and Applications

Session Chair: **Muguang Wang,** Beijing Jiaotong Univ. (China)

14:30: **Integrated optical frequency combs using ultra-high-Q optical microresonators** *(Invited Paper)*, Qifan Yang, Peking Univ. (China). [11902-15]

14:55: **Characteristics of cascading Brillouin random fiber lasers** *(Invited Paper)*, Yikun Jiang, Liang Zhang, Fufei Pang, Zenghuan Qiu, Zhelan Xiao, Haoran Xie, Jilin Zhang, Shanghai Univ. (China). . . . . [11902-16]

Tea/Coffee Break . . . . . Mon 15:20 to 15:35

15:35: **Ultra-narrow linewidth SOA fiber laser assisted by distributed self-injection feedbacks** *(Invited Paper)*, Laiyang Dang, Tao Zhu, Chongqing Univ. (China). . . . . [11902-17]

16:00: **Research on the dynamics and applications of self-assembled pulses in ultrafast lasers** *(Invited Paper)*, Yiyang Luo, Chongqing Univ. (China). . . . . [11902-18]

16:25: **126 GHz erbium-doped fiber-laser based on dissipative four-wave mixing at 1.6 μm** *(Invited Paper)*, Kai Li, Qianqian Huang, Junjie Jiang, Zinan Huang, Lilong Dai, Chengbo Mou, Shanghai Univ. (China) . . . . . [11902-19]

TUESDAY 12 OCTOBER

SESSION 5

LOCATION: ROOM 102A . . . . . TUE 8:00 TO 10:05

Signal Processing

Session Chair: **Chengbo Mou,** Shanghai Univ. (China)

8:00: **Time-domain mode-locking optoelectronic oscillator** *(Invited Paper)*, Zhiyao Zhang, Zhen Zeng, Lingjie Zhang, Shangjian Zhang, Yong Liu, Univ. of Electronic Science and Technology of China (China). . . . . [11902-20]

8:25: **A reconfigurable optical filter based on SOI** *(Invited Paper)*, Yuan Yu, Weijun Jiang, Xiaolong Liu, Yu Yu, Xinliang Zhang, Wuhan National Research Ctr. for Optoelectronics (China). . . . . [11902-21]

8:50: **Widely tunable microwave photonic phase shifter with a small RF power variation based on a single micro-ring resonator** *(Invited Paper)*, Weifeng Zhang, Lang Zhou, Bin Wang, Beijing Institute of Technology (China). . . . . [11902-22]

9:15: **All-fiber flat-top orbital angular momentum mode converter realized by a SMF-based helical grating with phase modulation** *(Invited Paper)*, Chengliang Zhu, Lei Wang, Yong Zhao, Northeastern Univ. (China); Hongpu Li, Shizuoka Univ. (Japan). . . . . [11902-23]

9:40: **Performance enhancement of microwave photonic-filter-based interrogation system using machine-learning algorithm** *(Invited Paper)*, Di Zheng, Xihua Zou, Chengming Luo, Xiuwen Zhang, Jing Li, Southwest Jiaotong Univ. (China) . . . . . [11902-24]

Tea/Coffee Break . . . . . Tue 10:05 to 10:30

SESSION 6

LOCATION: ROOM 102A . . . . . TUE 10:30 TO 11:50

Photonic Measurement I

Session Chair: **Zhiyao Zhang,** Univ. of Electronic Science and Technology of China (China)

10:30: **Dual-comb based precise spectral analysis and line-scan spectrum-encoded imaging** *(Invited Paper)*, Wenxue Li, East China Normal Univ. (China) . . . . . [11902-30]

10:55: **Real-time mini distributed acoustic system for seismic wave detection** *(Invited Paper)*, Tuanwei Xu, Fang Li, Institute of Semiconductors (China). . . . . [11902-26]

11:20: **Low-speed photonic sampling for self-referenced frequency response characterization of high-speed photodetectors**, Mengke Wang, Yutong He, Zhao Liu, Yali Zhang, Zhiyao Zhang, Shangjian Zhang, Yong Liu, Univ. of Electronic Science and Technology of China (China) . . . . . [11902-27]

11:35: **Experimental measurement of differential mode group delay in polarization-maintaining few-mode fiber using improved S2 system**, Jinsheng Xu, Jian Zhao, Tianhua Xu, Tianjin Univ. (China); Kenneth Wong, The Univ. of Hong Kong (Hong Kong, China) . . . . . [11902-28]

Lunch Break . . . . . Tue 11:50 to 13:20

SESSION 7

LOCATION: ROOM 102A . . . . . .TUE 13:20 TO 15:00

Photonic Measurement II

Session Chair: **Tuanwei Xu,** Institute of Semiconductors, Chinese Academy of Sciences (China)

13:20: **Refractive index modulation distribution of FBG measurement method based on optical low-coherence technology** *(Invited Paper)*, Jianzhong Zhang, Quan Chai, Jun Yang, Harbin Engineering Univ. (China) . . . . . [11902-29]

13:45: **High-accuracy magnetic field and electric current measurement based on optoelectronic oscillator** *(Invited Paper)*, Muguang Wang, Beilei Wu, Beijing Jiaotong Univ. (China). . . . . [11902-31]

14:10: **A transceiver of microwave Doppler frequency shift measurement using photonic approach** *(Invited Paper)*, Wenjun Zhao, Nanjing Univ. of Aeronautics and Astronautics (China) and Hebei Semiconductor Research Institute (China); Xiaoxiao Yao, Nanjing Univ. of Aeronautics and Astronautics (China); Cui Yu, Hebei Semiconductor Research Institute (China); Simin Li, Shilong Pan, Nanjing Univ. of Aeronautics and Astronautics (China) [11902-32]

14:35: **Simultaneous laser measurement of three-dimensional velocity and temperature fields in swirling flame** *(Invited Paper)*, Bin Zhang, Yifeng Chen, Yi Su, Chunjie Sui, Qingdao Univ. of Science and Technology (China) . . . . . [11902-33]

Tea/Coffee Break . . . . . .Tue 15:00 to 15:30

SESSION 8

LOCATION: ROOM 102A . . . . . .TUE 15:30 TO 17:20

Photonic Measurement III

Session Chair: **Bin Zhang,** Qingdao Univ. of Science and Technology (China)

15:30: **Ultrawideband frequency response measurement of high-speed optoelectronic and microwave devices enabled by dual-comb lasers** *(Invited Paper)*, Xin Zhao, Beihang Univ. (China). . . . . [11902-34]

15:55: **Broadband molecular spectroscopy with optical frequency combs** *(Invited Paper)*, Cheng Lin Gu, East China Normal Univ. (China) . . . . [11902-35]

16:20: **A high-accuracy phase measurement system of optical frequency comb multi-wavelength interference based on FPGA**, Yi Yang, Junhao Zhu, Guochao Wang, Xinqiong Lu, Kai Ni, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China) . . . . . [11902-36]

16:35: **Frequency response measurement of Mach-Zehnder modulators utilizing double carrier based on low frequency detection**, Zhiyao Zhang, Yaowen Zhang, Lingjie Zhang, Zhengkai Li, Shangjian Zhang, Yong Liu, Yujia Zhang, Univ. of Electronic Science and Technology of China (China). . . . . [11902-37]

16:50: **A real-time full-field optical characterization analyzer based on wavelength-to-time mapping**, Ye Xiao, Ming Li, Institute of Semiconductors (China). . . . . [11902-38]

17:05: **Visualization of internal phase motions in femtosecond soliton molecules using orbital angular momentum (OAM)-resolved method**, Yuwei Zhao, Jintao Fan, Youjian Song, Minglie Hu, Tianjin Univ. (China). . . . . [11902-39]

Nanophotonics and Micro/Nano Optics VII

Conference Chairs: **Zhiping Zhou,** Peking Univ. (China); **Kazumi Wada,** Massachusetts Institute of Technology (United States); **Limin Tong,** Zhejiang Univ. (China)

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, China); **Gong-Ru Lin,** National Taiwan Univ. (Taiwan, China); **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)

MONDAY 11 OCTOBER

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

Programmable random lasing pluses, Yaoxing Bian, Beijing Normal Univ. (China) . . . . . [11903-27]

Surface plasmon resonance fiber sensor based on graphene-coated gold nanotubes, Mengyin Liu, Hongyan Yang, Yupeng Chen, Guilin Univ. of Electronic Technology (China) . . . . . [11903-28]

Vortex generation induced by the spin-orbit interactions in optics: a comparison, Xiao Weilai, Zhang Zan, Ling Xiaohui, Hengyang Normal Univ. (China) . . . . . [11903-29]

Broadband high-efficiency reflective LTC polarization converter with temperature control in the visible range, Wanli Xie, Qingpeng Luo, Weijin Kong, Maojin Yun, Qingdao Univ. (China) . . . . . [11903-30]

Tunable multi-function polarization-insensitive absorber based on graphene metamaterials, Maojin Yun, Qingpeng Luo, Wanli Xie, Weijin Kong, Qingdao Univ. (China). . . . . [11903-31]

Relaxation and transfer of photoexcited electrons at a coplanar few-layer 1 T′/2H-$MoTe_2$ heterojunction, Aiqin Hu, Zhaohang Xue, Guowei Lu, Peking Univ. (China) . . . . . [11903-32]

Towards single particle trapping and dynamic manipulation with optical surface waves, Xi Xie, Changjun Min, Haixiang Ma, Yuquan Zhang, Xiaocong Yuan, Shenzhen Univ. (China) . . . . . [11903-33]

Kuer, Hao Lv, Hubei Engineering Univ. (China). . . . . [11903-34]

SiN-Si dual-layer grating coupler to increase the input optical power of Si-based photonic-integrated circuit, Pengfei Ma, Guangzhen Luo, Pengfei Wang, Jianbin Ma, Ruiting Wang, Zhengxia Yang, Xuliang Zhou, Jiaoqing Pan, Yejin Zhang, Institute of Semiconductors (China). . . . . [11903-35]

Research on nonlocal optical metasurfaces design based on the genetic algorithm method, Lingling Zhang, Huifan He, Haoyuan Zhong, Fengtao Lu, Jinling Institute of Technology (China). . . . . [11903-36]

A versatile metasurface for simultaneous metalens and meta-nanoprinting, Qiangbo Zhang, Zhejiang Univ. (China) . . . . . [11903-37]

Biomimetic nanoparticles for simultaneous dual-modal imaging and homologous-targeting photothermal therapy of cancer, Han Yang, Ruliang Wang, Rongxin Fu, Ya Su, Xue Lin, Xiangyu Jin, Wenli Du, Xiaohui Shan, Wenqi Lv, Guoliang Huang, Tsinghua Univ. (China) . . . . . [11903-38]

Computationally efficient algorithms to enhance multiple configuration systems, Hua Liu, Science and Technology on Electro-Optic Control Lab. (China) . . . . . [11903-39]

High Q-factor fano resonances driven by quasi bound state in the continuum based on all-dielectric metasurface, Ziang Gao, Shilin Yu, Yusen Wang, Tonggang Zhao, Beijing Univ. of Posts and Telecommunications (China) . . . . . [11903-40]

Multiple plasmon-induced transparency effects derived by periodically arranged rectangular resonators in a plasmonic system, Shilin Yu, Ziang Gao, Tonggang Zhao, Jianguo Yu, Beijing Univ. of Posts and Telecommunications (China) . . . . . [11903-41]

Influence of roughness on scattering characteristics of periodic micro-nano optical structures, Lei Gong, Haibin Wang, Jie Yu, Zhiqiang Yang, Lihong Yang, Liguo Wang, Xi'an Technological Univ. (China) . . . . . [11903-42]

Study on silicon nitride photonic devices fabricated within a CMOS pilot line, Bin Li, Institute of Microelectronics (China) . . . . . [11903-43]

Observation of a manifold in the chaotic phase space of an asymmetric optical microcavity, Yan-Jun Qian, Yun-Feng Xiao, Peking Univ. (China) . . . . . [11903-44]

Microstructure characterization of GaN/InGaN micro-light-emitting diodes after dry etching, Fan Yang, Lu Li, Xin Cai, Jianjie Li, Jiahao Tao, Soochow Univ. (China); Yu Xu, Suzhou Institute of Nano-Tech and Nano-Bionics (China); Bing Cao, Soochow Univ. (China); Ke Xu, Suzhou Institute of Nano-Tech and Nano-Bionics (China) . . . . . [11903-45]

Topology-optimized on-chip integrated multi-photon detector with position information, Guanglong He, Rui Ge, Hang Han, Jiayu Lv, Haochen Li, Qi Chen, Feiyan Li, Biao Zhang, Yue Fei, Xiaohan Wang, Hao Wang, LaBao Zhang, Xiaoqing Jia, Lin Kang, Peiheng Wu, Research Institute of Superconductor Electronics, Nanjing Univ. (China) . . . . . [11903-46]

Micron particles manipulated by a linear trap of optical tweezers, Lingyao Yu, Yuan Jia, Jun Yin, Xujin Hu, Shaofei Wang, Hongyu Chen, Guilin Univ. of Electronic Technology (China) . . . . . [11903-47]

Direct-growth and nonlinear properties of micron DAST hydrate waveguides, Xiaomeng Cheng, Yangyang Jing, Mingang Zhang, Xiangdong Xu, Univ. of Electronic Science and Technology of China (China) . . . [11903-48]

When quantum sensors meet with nanophotonics, Zhen Chai, Beihang Univ. (China) . . . . . [11903-49]

Broadband and high extinction ratio TE-pass/TM-stop polarizer at 850 nm using chirped sub-wavelength gratings, Yue Dong, Yu Liu, Yin Xu, Bo Zhang, Yi Ni, Jiangnan Univ. (China) . . . . . [11903-50]

Design and analysis of bilayer metallic grating polarizer with tapered slits in deep ultraviolet band, Fang Wu, Yang Bu, Fanchun Tang, Xiangzhao Wang, Shanghai Institute of Optics and Fine Mechanics (China) . . . [11903-51]

Excitation of high quality-factor Fano resonances in permittivity-asymmetric metasurfaces, Yusen Wang, Zonghai Hu, Shilin Yu, Tonggang Zhao, Ziang Gao, Beijing Univ. of Posts and Telecommunications (China) . . . . . [11903-52]

High Q-factor multiple fano resonances based on triple dielectric strips metasurface, Shaozhe Song, Shilin Yu, Hao Li, Tonggang Zhao, Beijing Univ. of Posts and Telecommunications (China) . . . . . [11903-53]

ON DEMAND: **Theoretical research of gallium-nitride-based photonic devices**, Shenwei Yin, Univ. of Wisconsin-Madison (United States). [11903-54]

ON DEMAND: **Calculation of optical integration between LED light sources and micron-scaled SiN waveguide**, Pawaphat Jaturaphagorn, Papichaya Chaisakul, Kasetsart Univ. (Thailand) . . . . . [11903-55]

SESSION 1

LOCATION: ROOM 107B . . . . . MON 14:30 TO 14:50

1D-Fiber/0D-Nanocrystals

Session Chairs: **Zhiping Zhou,** Peking Univ. (China); **Limin Tong,** Zhejiang Univ. (China)

14:30: **Nanostructure-enhanced optical fibers for large-angle and wide-bandwidth light collection**, Ning Wang, Westlake Univ. (China); Matthias Zeisberger, Uwe Hübner, Markus Schmidt, Leibniz-Institut für Photonische Technologien e.V. (Germany) . . . . . [11903-1]

ON DEMAND: **Tapered MMF fiber/AuNPs/MoS_2 based sensor for p-cresol detection**, Yu Wang, Ragini Singh, Bingyuan Zhang, Santosh Kumar, Liaocheng Univ. (China) . . . . . [11903-2]

ON DEMAND: **Synthesis of copper halide nanocrystals and their optical properties,** Worakit Naewthong, Waridsaraporn Jantapo, Atcha Kopwitthaya, National Electronics and Computer Technology Ctr. (Thailand) . . . . . [11903-3]

SESSION 2

LOCATION: ROOM 107B . . . . . MON 14:50 TO 15:30

Resonator/Cavity

Session Chairs: **Zhiping Zhou,** Peking Univ. (China); **Limin Tong,** Zhejiang Univ. (China)

14:50: **Deep-learning-based modeling of photonic crystal nanocavities**, Renjie Li, Xiaozhe Gu, The Chinese Univ. of Hong Kong, Shenzhen (China); Ke Li, The Chinese Univ. of Hong Kong (China); Zhaoyu Zhang, The Chinese Univ. of Hong Kong, Shenzhen (China) . . . . . [11903-4]

15:10: **Batch fabrication of high-quality infrared chalcogenide microsphere resonators**, Yu Xie, Pan Wang, Xin Guo, Limin Tong, Zhejiang Univ. (China) . . . . . [11903-5]

ON DEMAND: **Slotted nanoresonator geometry: a route for Purcell enhancement and nearfield intensity amplification in all-dielectric nanophotonics**, Pankaj Rajesh Kumar, Hardik Vyas, Ravi S. Hegde, Indian Institute of Technology Gandhinagar (India) . . . . . [11903-6]

Tea/Coffee Break . . . . . Mon 15:30 to 16:00

SESSION 3

LOCATION: ROOM 107B . . . . . MON 16:00 TO 17:00

Meta/2D Materials

Session Chairs: **Limin Tong,** Zhejiang Univ. (China); **Zhiping Zhou,** Peking Univ. (China)

16:00: **Tuning resonant reflection in monolayer graphene nanosquare arrays at mid-infrared frequencies**, Songzhi Wang, Leiming Zhou, Ruiyu Luo, Yuxi Xiao, Wei Zhang, Zhili Wang, Jigang Hu, Hefei Univ. of Technology (China); Qiwen Zhan, Univ. of Shanghai for Science and Technology (China). . . . . [11903-7]

16:20: **Tunable plasmon-induced transparency on a monolayer patterned graphene metamaterial**, Qun Xie, Linhui Guo, Zexuan Zhang, Weijin Kong, Maojin Yun, Qingdao Univ. (China) . . . . . [11903-8]

16:40: **All-dielectric metamaterials based on surface plasmon resonance for refractive index sensing**, Linhui Guo, Qun Xie, Zexuan Zhang, Weijin Kong, Maojin Yun, Qingdao Univ. (China) . . . . . [11903-9]

ON DEMAND: **A numerical study of optical reconfiguration dynamics of phase-change-material metasurfaces,** Ravi S. Hegde, IIT Gandhinagar (India). . . . . [11903-10]

ON DEMAND: **Optical vortex generation via polarization-insensitive all-dielectric metasurface for communication,** Farhan Ali, Serap Aksu, Koç Univ. (Turkey). . . . . .[11903-11]

TUESDAY 12 OCTOBER

SESSION 4

LOCATION: ROOM 107B . . . . . TUE 9:00 TO 10:20

Silicon Photonics I

Session Chairs: **Limin Tong,** Zhejiang Univ. (China); **Zhiping Zhou,** Peking Univ. (China)

9:00: **High-performance integrated photonic circuit based on inverse design method**, Qi Huixin, Xiaoyong Hu, Peking Univ. (China). . . . . [11903-12]

9:20: **Slot waveguides design for optical enhancement at 1550 nm**, Zhe Xu, Inspur Beijing Electronic Information Industry Co., Ltd. (China) . [11903-13]

9:40: **A beam scanner based on an on-chip optical switch array with high emission efficiency**, Guangzhen Luo, Institute of Semiconductors (China) and Ctr. of Materials Science and Optoelectronics Engineering, Univ. of Chinese Academy of Sciences (China); Pengfei Wang, Pengfei Ma, Jianbin Ma, Ruiting Wang, Hongyan Yu, Xuliang Zhou, Yejin Zhang, Jiaoqing Pan, Institute of Semiconductors (China). . . . . [11903-14]

10:00: **Research on intelligent photonic computing chips,** Kun Liao, Peking Univ. (China) . . . . . [11903-15]

Tea/Coffee Break . . . . . .Tue 10:20 to 10:50

ON DEMAND: **Dimensionality reduction in designing advanced silicon photonic components** *(Invited Paper),* Yuri Grinberg, Muhammad Al-Digeil, Mohsen Kamandar Dezfouli, National Research Council Canada (Canada); Daniele Melati, Ctr. de Nanosciences et de Nanotechnologies (France); Jens H. Schmid, Pavel Cheben, Siegfried Janz, Dan-Xia Xu, National Research Council Canada (Canada) . . . . . [11903-16]

SESSION 5

LOCATION: ROOM 107B . . . . . TUE 10:50 TO 11:50

Silicon Photonics II

Session Chairs: **Zhiping Zhou,** Peking Univ. (China); **Limin Tong,** Zhejiang Univ. (China)

10:50: **All-optical control and independently tunable ultrawide-band and dual-band terahertz coherent perfect absorber**, Zexuan Zhang, Qun Xie, Linhui Guo, Weijin Kong, Maojin Yun, Qingdao Univ. (China). . . . . [11903-18]

11:10: **Simultaneous detection of refractive index and temperature using high-order air and dielectric modes in a single photonic crystal nanobeam**, Ding Zuoqin, Zhejiang Univ. (China) . . . . . [11903-19]

11:30: **A planar diffractive metasurface optical chip for MOT application**, Liyu Lin, Gaopeng Xue, Junhao Zhu, Qihang Zhai, Qian Zhou, Kai Ni, Xiaohao Wang, Xinghui Li, Tsinghua Univ. (China) . . . . . [11903-20]

Lunch Break . . . . . Tue 11:50 to 13:30

ON DEMAND: **All-silicon high-speed detector and modulator** *(Invited Paper),* Haisheng Rong, Intel Corp. (United States). . . . . [11903-17]

ON DEMAND: **A variety of Dirac cones materialized by effective degeneracy of three eigenmodes in photonic crystals,** Yuanzhao Yao, Siti Chalimah, Takashi Kuroda, Naoki Ikeda, Takaaki Mano, Yoshimasa Sugimoto, Kazuaki Sakoda, National Institute for Materials Science (Japan) . . . . . [11903-21]

SESSION 6

LOCATION: ROOM 107B . . . . . TUE 13:30 TO 14:50

Silicon Photonics III

Session Chairs: **Limin Tong,** Zhejiang Univ. (China); **Zhiping Zhou,** Peking Univ. (China)

13:30: **Recent progress on the random laser**, Li-hua Ye, Qing Zhao, Shaoqiang Hong, Southeast Univ. (China) . . . . . [11903-22]

13:50: **Undirectional laser based on a perovskite-asymmetric grating hybrid system**, Minghua Zhuge, Qinghai Song, Harbin Institute of Technology (China). . . . . [11903-23]

14:10: **Color display technology based on micro nano structure**, Yutai Chen, Junbo Yang, Xin Li, National Univ. of Defense Technology (China). . . . . [11903-24]

14:30: **Nonlinear optical enhancement and origin of G/Ag nanohybrids**, Baohua Zhu, Henan Univ. (China); Fangfang Wang, The Shanghai Institute of Technical Physics (China); Xingping Ma, Yuzong Gu, Henan Univ. (China). . . . . [11903-25]

ON DEMAND: **Modulation of cathodoluminescence emission by interference with external light,** Valerio Di Giulio, ICFO - Institut de Ciències Fotòniques (Spain); Ofer Kfir Sr., Tel Aviv Univ. (Israel) and Max-Planck-Institut für Biophysikalische Chemie (Germany); Claus Ropers Sr., Georg-August-Univ. Göttingen (Germany) and Max-Planck-Institut für Biophysikalische Chemie (Germany); Javier García de Abajo Sr., ICFO - Institut de Ciències Fotòniques (Spain) and Institució Catalana de Recerca i Estudis Avançats (Spain). . . . . [11903-26]

CONFERENCE 11904 • LOCATION: ROOM 102B

Sunday–Monday 10–11 October 2021 • Proceedings of SPIE Vol. 11904

Plasmonics VI

Conference Chairs: **Zheyu Fang,** Peking Univ. (China), Rice Univ. (United States); **Takuo Tanaka,** RIKEN (Japan)

Program Committee: **David J. Bergman,** Tel Aviv Univ. (Israel); **Che Ting Chan,** Hong Kong Univ. of Science and Technology (Hong Kong, China); **Hongsheng Chen,** Zhejiang Univ. (China); **F. Javier García de Abajo,** ICFO - Institut de Ciències Fotòniques (Spain); **Min Gu,** Univ. of Shanghai for Science and Technology (China); **Xin Guo,** Zhejiang Univ. (China); **Minghui Hong,** National Univ. of Singapore (Singapore); **Satoshi Kawata,** Osaka Univ. (Japan); **Zhi-Yuan Li,** Institute of Physics, Chinese Academy of Sciences (China); **Ai Qun Liu,** Nanyang Technological Univ. (Singapore); **Peter Nordlander,** Rice Univ. (United States); **Ruwen Peng,** Nanjing Univ. (China); **Min Qiu,** Westlake Univ. (China); **Atsushi Taguchi,** Hokkaido Univ. (Japan); **Din Ping Tsai,** The Hong Kong Polytechnic Univ. (Hong Kong, China); **Jianfang Wang,** The Chinese Univ. of Hong Kong (Hong Kong, China); **Hong Wei,** Institute of Physics, Chinese Academy of Sciences (China); **Hongxing Xu,** Wuhan Univ. (China); **Jianbin Xu,** The Chinese Univ. of Hong Kong (Hong Kong, China); **Lei Zhou,** Fudan Univ. (China); **Shining Zhu,** Nanjing Univ. (China); **Xing Zhu,** Peking Univ. (China)

SUNDAY 10 OCTOBER

OPENING CEREMONY AND PLENARY SESSION I

ROOM: INTERNATIONAL HALL A . . . . . 9:00 TO 12:00

9:00: Opening Ceremony

9:20: Awards and Recognition

9:30: **Low-cost optical technologies to improve global health equity: examples from newborn health, women's health, and COVID-19** *(Plenary)*, Rebecca R. Richards-Kortum, Director, Rice 360 Institute for Global Health Technologies (United States) and Rice Univ. (United States). . . . . [11900-501]

Tea/Coffee Break . . . . . .Sun 10:10 to 10:40

10:40: **High-quality electron beams and free-electron lasing based on laser-wakefield accelerator** *(Plenary)*, Wentao Wang, State Key Lab. of High Field Laser Physics (China) and CAS Ctr. for Excellence in Ultra-intense Laser Science (China) and Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China) . . . . . [11890-502]

11:20: **Advances of perovskite solar cell technology** *(Plenary)*, Rui Zhu, Peking Univ. (China) . . . . . [11893-503]

Lunch Break . . . . . Sun 12:00 to 13:30

SESSION 1

LOCATION: ROOM 102B . . . . . SUN 13:30 TO 15:00

Light-Matter Interaction

Session Chair: **Zheyu Fang,** Peking Univ. (China) and Rice Univ. (United States)

13:30: **Photoluminescence enhancement of monolayer $MoSe_2$ in a plasmonic nanocavity with Fano resonance and mode matching** *(Invited Paper)*, Fajun Xiao, Northwestern Polytechnical Univ. (China) [11904-1]

13:55: **Damping the localized surface plasmon resonance to improve the optical transmittance of dielectric-silver-dielectric multiply thin films** *(Invited Paper)*, Yingcui Fang, Hefei Univ. of Technology (China). . . . . [11904-2]

14:20: **Generation of multi-ring perfect vortex beams with tunable intensity distribution** *(Invited Paper)*, Fajing Li, Fengyan Gu, Liqi Ding, Hao Ding, Shaotong Feng, Shouping Nie, Caojin Yuan, Nanjing Normal Univ. (China). . . . . [11904-3]

14:45: **Giant excitonic upconverted emission of two-dimensional semiconductor in doubly resonant plasmonic nanocavity**, Yuchen Dai, Pengfei Qi, Yang Luo, Peking Univ. (China); Guangyi Tao, Nankai Univ. (China); Liheng Zheng, Bo Shen, Feng Lin, Zheyu Fang, Peking Univ. (China). [11904-4]

Tea/Coffee Break . . . . . Sun 15:00 to 15:30

ON DEMAND: **Two-dimensional materials for the control of light at the atomic scale** *(Keynote Presentation)*, F. Javier García de Abajo Sr., ICFO - Institut de Ciències Fotòniques (Spain). . . . . [11904-5]

PLENARY SESSION II

LOCATION: INTERNATIONAL HALL A . . . . . SUN 15:30 TO 16:20

15:30: Welcome and Introduction

Q&A period will follow after the talk

15:35: **The UK National Quantum Technology Programme** *(Plenary)*, Peter L. Knight, Blackett Lab., Imperial College London (United Kingdom) and UK National Quantum Technology Strategic Advisory Board for UKRI (United Kingdom). . . . . [11905-504]

Tea/Coffee Break . . . . . Sun 16:20 to 16:30

SESSION 2

LOCATION: ROOM 102B . . . . . SUN 16:30 TO 18:05

Metallic Nanostructures and Applications

Session Chair: **Zheyu Fang,** Peking Univ. (China) and Rice Univ. (United States)

16:30: **Coherent collective effect of Au nanoparticles via two-pules two-photon excitation and its potential applications** *(Invited Paper)*, Chengbing Qin, Shanxi Univ. (China). . . . . [11904-6]

16:55: **Manipulating cavity modes of bottle microresonators via single metallic nanoparticles** *(Invited Paper)*, Huakang Yu, South China Univ. of Technology (China). . . . . [11904-7]

17:20: **Deep subwavelength control of circularly polarized light by using cathodoluminescence nanoscopy**, Zhibo Dang, Zheyu Fang, Peking Univ. (China). . . . . [11904-8]

17:35: **High-quality nanorod-on-mirror plasmonic nanocavities**, Lufang Liu, Xin Guo, Limin Tong, Pan Wang, Zhejiang Univ. (China) . . . . . [11904-9]

17:50: **Harnessing optical forces in optical nanofibers by single metallic nanospheres**, Wanling Wu, Huakang Yu, South China Univ. of Technology (China). . . . . [11904-10]

MONDAY 11 OCTOBER

SESSION 3

LOCATION: ROOM 102B . . . . . .MON 8:30 TO 9:55

Metastructures and Device Applications

Session Chair: **Zheyu Fang,** Peking Univ. (China) and Rice Univ. (United States)

8:30: **Phase change materials for dynamically-tuned active metasurfaces and plasmonic devices** *(Keynote Presentation)*, Ru-Wen Peng, Jia-Nan Wang, Fang-Zhou Shu, Bo Xiong, Ben-Qi Hou, Ren-Hao Fan, Dong-Xiang Qi, Mu Wang, Nanjing Univ. (China) . . . . . .[11904-11]

9:00: **Vectorial metagrating for multidimensional optical field manipulation** *(Invited Paper)*, Zi-Lan Deng, Jinan Univ. (China). . . . [11904-13]

9:25: **Wideband polarization conversion control via deep learning**, Liu Zhengchang, Zheyu Fang, Peking Univ. (China). . . . . [11904-14]

9:40: **Unidirectional launching and elongating propagation of Airy surface plasmon polaritons by a metasurface coupling grating**, Xiangrong Wu, Peking Univ. (China) . . . . . [11904-15]

Tea/Coffee Break . . . . . Mon 9:55 to 10:30

ON DEMAND: **Phase measurement system for metadevices** *(Invited Paper)*, Mu-Ku Chen, The Hong Kong Polytechnic Univ. (Hong Kong, China); Maoxiong Zhao, Fudan Univ. (China); Ze-Peng Zhuang, Sun Yat-Sen Univ. (China); Xiaoyuan Liu, Jingcheng Zhang, Jiaqi Yuan, The Hong Kong Polytechnic Univ. (Hong Kong, China); Xiaohan Liu, Fudan Univ. (China); Haiwei Yin, Shanghai Engineering Research Ctr. of Optical Metrology for Nano-fabrication (China); Shumin Xiao, Harbin Institute of Technology (China); Lei Shi, Fudan Univ. (China); Jian-Wen Dong, Sun Yat-Sen Univ. (China); Jian Zi, Fudan Univ. (China); Din Ping Tsai, The Hong Kong Polytechnic Univ. (Hong Kong, China) . . . . . [11904-12]

SESSION 4

LOCATION: ROOM 102B . . . . . .MON 10:30 TO 11:50

Plasmonic Nonlinear Optics

Session Chair: **Zheyu Fang,** Peking Univ. (China) and Rice Univ. (United States)

10:30: **Near-field imaging of photonic spin-orbit interactions and optical nonlinear effects in nanostructures** *(Keynote Presentation)*, Benfeng Bai, Tong Cui, Tsinghua Univ. (China) . . . . . [11904-16]

11:00: **Enhanced second harmonic generation of ZnO nanocrystal film on vertically standing gold nanorod arrays** *(Invited Paper)*, Botao Wu, East China Normal Univ. (China) . . . . . [11904-17]

11:25: **Thermo-responsive gap plasmons in solid-state thin films** *(Invited Paper)*, Fangqi Chen, Yong Liu, Wuhan Univ. (China); Xuezhi Zheng, KU Leuven (Belgium); Tao Ding, Wuhan Univ. (China) . . . . . [11904-18]

Lunch Break . . . . . Mon 11:50 to 13:30

ON DEMAND: **Relativistic and highly nonlinear plasmonics driven by quasi-solid particle beams** *(Invited Paper),* Aakash Sahai, Univ. of Colorado Denver (United States) . . . . . [11904-19]

POSTER SESSION

ROOM: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

Polarization-insensitive Fano resonance for highly-sensitive terahertz sensors, Ming Zhang, Qian Cheng, Xiaoran Zhang, Baozhu Wang, Ze Ma, Cong Li, Hebei Univ. of Science and Technology (China) . . . . . [11904-30]

Exotic coupling between plasmonic nanoparticles through geometric configurations, Weidong Zhang, Guowei Lu, Peking Univ. (China) . [11904-31]

In situ scattering of single gold nanorod coupling with monolayer transition metal dichalcogenides, Lulu Ye, Aiqin Hu, Guowei Lu, Peking Univ. (China) . . . . . [11904-32]

AAS, Airong Zhao, Liaocheng Univ. (China) . . . . . [11904-33]

Effect of baseline correction on spectral characteristics and qualitative analysis of laser-induced breakdown, Sun Peng, Xiaojian Hao, Yanwei Yang, Yekun Liu, Ran Sun, North Univ. of China (China) . . . . [11904-34]

Effect of baseline correction on polished induced breakdown spectrum, Sun Peng, North Univ. of China (China). . . . . [11904-35]

Tunable double Rabi splitting in hybrid plasmonic-J-aggregates-WS_2 nanocavity, Junyu Li, Yuwei Lu, Xuehua Wang, Sun Yat-Sen Univ. (China). . . . . [11904-36]

Distinct spatiotemporal imaging of femtosecond surface polarization polaritons assisted with the opening of two-color multiphoton photoemission pathway, Zhenlong Zhao, Peng Lang, Yulu Qin, Boyu Ji, Xiaowei Song, Jingquan Lin, Changchun Univ. of Science and Technology (China). . . . . [11904-37]

Wavelength controllable device for simultaneous generation of surface plasmon polariton Bessel-like beams and bottle beams, Hanmin Hu, Jingquan Lin, Boyu Ji, Changchun Univ. of Science and Technology (China). . . . . [11904-38]

Dynamics of localized plasmonic excitation excited by pure propagating surface plasmon source at different positions, Baixun Sun, Boyu Ji, Yulu Qin, Jingquan Lin, Changchun Univ. of Science and Technology (China). . . . . [11904-39]

Strong circular dichroism generation in an Au SRR/graphene nanoribbon arrays plasmonic hybrid system, Yuxi Xiao, Leiming Zhou, Wu Fei, Wei Qiu, Wei Zhang, Fei Wang, Zhili Wang, Jigang Hu, Hefei Univ. of Technology (China). . . . . [11904-40]

Steering valley-polarized emission of monolayer MoS_2 sandwiched in a chiral plasmonic antennas, Guowei Lu, Te Wen, Hai Lin, Weidong Zhang, Qihuang Gong, Peking Univ. (China) . . . . . [11904-41]

Stabilization three-dimensional refractive-index reconstruction system of single suspension cell, Fei Liang, Wenhui Wang, Tsinghua Univ. (China). . . . . [11904-42]

Enhanced photoluminescence and second-harmonic generation in monolayer MoS2 on suspended metallic nanostructures by plasmonic resonances, Shan Wu, Fuyang Normal Univ. (China) . . . . . [11904-43]

A hydrogen sensor based on a plasmonic structure, Fenghuan Hao, Pengfei Liu, Xincan Lou, Yue Wang, Hangzhou Applied Acoustics Research Institute (China). . . . . [11904-44]

Absorption reduction of large Purcell enhancement enabled by topological state-led mode coupling, Zhiyuan Qian, Peking Univ. (China). . . . . [11904-45]

Space-time adaptive precision imaging and near-field engineering, Hua Liu, Science and Technology on Electro-optic Control Lab. (China). . . . . [11904-46]

Spatial characteristics of spectral intensity based on LIBS, Chenwei Sun, Yang Bu, Yuanhang Wang, Fang Wu, Yachao Cai, Shanghai Institute of Optics and Fine Mechanics (China). . . . . [11904-47]

Multi-plasmons-pumped excited-state absorption and energy transfer upconversion of rare-earth-doped luminescence beyond the diffraction limit, Huan Chen, Shaanxi Normal Univ. (China) . . . . . [11904-48]

Binary-surfactant-mediated tunable nanotip growth on gold nanoparticles and applications in photothermal catalysis, Xiaohu Mi, Shaanxi Normal Univ. (China) . . . . . [11904-49]

Ultra-wideband near-perfect terahertz absorber composed of metal and graphene, Guang Feng, Zhihui Chen, Taiyuan Univ. of Technology (China). . . . . [11904-50]

ON DEMAND: **Nonlinear optical properties of silver nanoparticles: separating thermo-optical and Kerr effects**, Arturs Bundulis, Jelena Mikelsone, Institute of Solid State Physics, Univ. of Latvia (Latvia). . [11904-51]

ON DEMAND: **The plasmon splitting in reflectance spectra of anodized titanium surfaces**, Anna V. Tcibulnikova, Valery V. Bryukhanov, Artemiy A. Khankaev, Ilia G. Samusev, Maxim V. Demin, Ivan I. Lyatun, Immanuel Kant Baltic Federal Univ. (Russian Federation) . . . . . [11904-52]

ON DEMAND: **FTDT simulations of local plasmonic fields for core/shell gold and silver nanorods**, Andrey Y. Zyubin, Igor Kon, Alexander Ognediuk, Alexander Zozulya, Ilia G. Samusev, Immanuel Kant Baltic Federal Univ. (Russian Federation). . . . . [11904-53]

ON DEMAND: **Optical properties of copper surface structures induced by fs laser exposure with circular polarization**, Artemiy A. Khankaev, Anna V. Tcibulnikova, Ilia G. Samusev, Valery V. Bryukhanov, Maxim V. Demin, Ivan I. Lyatun, Immanuel Kant Baltic Federal Univ. (Russian Federation); Vasiliy Slezhkin, Kaliningrad State Technical Univ. (Russian Federation) . . . [11904-54]

ON DEMAND: **Absorption at Yablonovitch limit with free-floating trumpet arrays**, Ashish Prajapati, Gil Shalev, Ben-Gurion Univ. of the Negev (Israel) . . . . . [11904-55]

SESSION 5

LOCATION: ROOM 102B . . . . . MON 14:30 TO 16:20

Nanophotonics and Applications

Session Chair: **Zheyu Fang,** Peking Univ. (China) and Rice Univ. (United States)

14:30: **Observation and ultrafast dynamics of inter-sub-band transition in InAs twinning superlattice nanowires** *(Keynote Presentation)*, MengFei Xue, Wenzhou Institute, Univ. of Chinese Academy of Sciences (China); Jianing Chen, Institute of Physics (China) . . . . . [11904-20]

15:00: **Reduced loss of plasmon propagation in a Ag nanowire on Si substrate** *(Invited Paper)*, Wenhui Wang, Xi'an Jiaotong Univ. (China). . . . . [11904-21]

15:25: **Planar dual-layer system for ultra-broadband absorption and hot-carrier photodetection** *(Invited Paper)*, Cheng Zhang, Tingting Liu, Liang Li, Shaolong Wu, Chinhua Wang, Xiaofeng Li, Soochow Univ. (China) . [11904-22]

15:50: **Self-assembled plasmonic coaxial nanocavities for high-definition broad-angle coloring and polarization-controlled optical switch devices**, Haibin Ni, Nanjing Univ. of Information Science & Technology (China). . . . . [11904-23]

16:05: **Six-dimensional light-matter interaction mediated by structured light and disorder gold nanorods**, Yi Xu, Guangdong Univ. of Technology (China). . . . . [11904-24]

Tea/Coffee Break . . . . . Mon 16:20 to 16:40

SESSION 6

LOCATION: ROOM 102B . . . . . MON 16:40 TO 18:00

Optoelectronics and Applications

Session Chair: **Zheyu Fang,** Peking Univ. (China) and Rice Univ. (United States)

16:40: **Silicon reconfigurable electro-optical logic circuit for optical FPGA** *(Invited Paper)*, Ciyuan Qiu, Shanghai Jiao Tong Univ. (China) [11904-25]

17:05: **Engineering shadow sphere lithography to fabricate plasmonic nanostructures** *(Invited Paper)*, Bin Ai, Chongqing Univ. (China). . . [11904-26]

17:30: **Enhanced plasmonic photothermal effect for crystal transformation by heat-trapping structure**, Ting Kong, Shaanxi Normal Univ. (China) . . . . . [11904-27]

17:45: **ß-Sn-based plasmonic materials and their near-field enhancement performance**, Ying-Wei Lu, Bin Li, Han-Han Wu, Liang Ren, Hefei Univ. of Technology (China). . . . . [11904-28]

ON DEMAND: **Optimization of metal nanoparticle dimensions for efficient energy harvesting device using localized surface plasmon resonance,** Kshetrimayum P. Devi, Pranab Goswami, Harsh Chaturvedi, Indian Institute of Technology Guwahati (India) . . . . . [11904-29]

Quantum and Nonlinear Optics VIII

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)

MONDAY 11 OCTOBER

POSTER SESSION

LOCATION: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

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POSTER SETUP: Monday • 10:00 to 13:00

Fourier transform analysis on random quasi-phase matching (RQPM) problems, Sijia Wang, Kai Zhong, Kefei Liu, Degang Xu, Jianquan Yao, Tianjin Univ. (China) . . . . . [11905-24]

High-peak-power sub-nanosecond optical parametric generator based on PPLN tunable from near- to mid-infrared, Hongzhan Qiao, Kai Zhong, Fangjie Li, Xianzhong Zhang, Degang Xu, Jianquan Yao, Tianjin Univ. (China) . . . . . [11905-25]

Noise limits of polar-interferogram estimation at low light levels, Xin Liu, Jiangsu Univ. of Science and Technology (China) . . . . . [11905-26]

Finite-key analysis for round-robin-differential-phase-shift quantum key distribution, Hang Liu, Zhen-Qiang Yin, Rong Wang, Feng-Yu Lu, Shuang Wang, Wei Chen, Univ. of Science and Technology of China (China); Wei Huang, Bingjie Xu, Science and Technology on Communication Security Lab. (China); Guang-Can Guo, Zheng-Fu Han, Univ. of Science and Technology of China (China) . . . . . [11905-27]

Coexistence of quantum key distribution and optical transport network based on standard single-mode fiber at high launch power, Jiaqi Geng, Guanjie Fanyuan, Shuang Wang, Key Lab. of Quantum Information, Univ. of Science and Technology of China (China); Qifa Zhang, Anhui Qasky Quantum Technology Co., Ltd. (China); Yingying Hu, Wei Chen, Zhen-Qiang Yin, Deyong He, Guang-Can Guo, Zhengfu Han, Key Lab. of Quantum Information, Univ. of Science and Technology of China (China). . . . . [11905-28]

Quantum random number generation based on spontaneous Raman scattering in standard single-mode fiber, Yingying Hu, Xing Lin, Shuang Wang, Jiaqi Geng, Zhen-Qiang Yin, Wei Chen, Deyong He, Univ. of Science and Technology of China (China); Wei Huang, Science and Technology on Communication Security Lab., Institute of Southwestern Communication (China); Bingjie Xu, Science and Technology on Communication Security Lab. (China); Guang-Can Guo, Zhengfu Han, Univ. of Science and Technology of China (China) . . . . . [11905-29]

Super-sensitive rotation measurement with an orbital angular momentum atom-light hybrid interferometer, Sheng Ming, Shanghai Jiao Tong Univ. (China). . . . . [11905-30]

Propagation and spectral properties of femtosecond chirped Gaussian pulses in three-level Λ-type atomic, Zhendong Wang, Taishan Univ. (China) . . . . . [11905-31]

Security analysis and improvement of source independent quantum random number generators with imperfect devices, Xing Lin, Shuang Wang, Zhen-Qiang Yin, Guanjie Fanyuan, Rong Wang, Wei Chen, Deyong He, Zheng Zhou, Guang-Can Guo, Zheng-Fu Han, Univ. of Science and Technology of China (China) . . . . . [11905-32]

Intensity modulator for secure, stable and high-performance decoy-state quantum key distribution, Feng-Yu Lu, Xing Lin, Shuang Wang, Guanjie Fanyuan, Peng Ye, Rong Wang, Zhen-Qiang Yin, Deyong He, Wei Chen, Zheng-Fu Han, Univ. of Science and Technology of China (China) . . . . . [11905-33]

Widely tunable eye-safe optical parametric oscillation in an x-cut KTP crystal with noncollinear confocal pumping, Fangjie Li, Kai Zhong, Hongzhan Qiao, Xianzhong Zhang, Degang Xu, Jianquan Yao, Tianjin Univ. (China) . . . . . [11905-34]

Phase compensation of continuous variable quantum key distribution based on mean denoising, Fu Lifeng, Institute of Southwestern Communication (China) . . . . . [11905-35]

Nonlinear dynamics of sole ground-state emitting quantum-dot laser subject to optical injection, Ding-Mei Zhang, Jingchu Univ. of Technology (China) . . . . . [11905-36]

Power stabilization module for levitated optomechanics sensor based on external modulation, Xia Wang, Xunmin Zhu, Nan Li, Mengzhu Hu, Xingfan Chen, Huizhu Hu, Zhejiang Univ. (China) . . . . . [11905-37]

RF-shifted-assisted continuous variable quantum key distribution with a local local oscillator based on Gaussian modulated coherent state, Heng Wang, Yaodi Pi, Yun Shao, Yan Pan, Wei Huang, Yang Li, Bingjie Xu, Institute of Southwestern Communication (China) . . . . . [11905-38]

Demonstration of high-rate Gaussian modulated continuous variable quantum key distribution with local local oscillator at different metropolitan distance, Yaodi Pi, Heng Wang, Wei Huang, Yun Shao, Yan Pan, Yang Li, Bingjie Xu, Institute of Southwestern Communication (China) . . . . . [11905-39]

Practical intensity attack on continuous-variable quantum key distribution with a true local oscillator, Yun Shao, Institute of Southwestern Communication (China) . . . . . [11905-41]

Nonlinear dynamics of a diode-pumped solid-state passively Q-switched laser, Xin-Di Wang, Zi-Ye Gao, Guang-Qiong Xia, Zheng-Mao Wu, Southwest Univ. (China) . . . . . [11905-42]

A scheme for quantum logic gate based on coherent-state qubits in cavity QED system, Shiqing Tang, Hengyang Normal Univ. (China) [11905-43]

Impact of nonlinearity in EDFAs on high-speed systems, Haixin Bi, Yan-Ling Xue, East China Normal Univ. (China) . . . . . [11905-44]

Femtosecond laser direct writing of photonic quantum logic gate chips for generating path-encoded entangled states, Meng Li, Qihuang Gong, Yan Li, Peking Univ. (China) . . . . . [11905-45]

Propagation of temporal mode multiplexed optical fields in fibers: influence of dispersion, Wen Zhao, Nan Huo, Liang Cui, Tianjin Univ. (China); Zheyu Ou, Tianjin Univ. (China) and Indiana Univ.-Purdue Univ. Indianapolis (United States); Xiaoying Li, Tianjin Univ. (China) . . . . . [11905-46]

Polarization demultiplexing for CV-QKD system based on Stokes space, Yan Pan, Heng Wang, Yaodi Pi, Yun Shao, Wei Huang, Yang Li, Bingjie Xu, Institute of Southwestern Communication (China) . . . . . [11905-47]

One- and two-photon-absorption properties of two organic molecules based on the Lorentz quantum impedance oscillator model, Qiqi Bai, Hebei Univ. of Technology (China). . . . . [11905-48]

A generalised multipath delayed-choice experiment on a large-scale quantum nanophotonic chip, Xiaojiong Chen, Yaohao Deng, Shuheng Liu, State Key Lab. of Artificial Microstructure and Mesoscopic Physics, Peking Univ. (China); Tanumoy Pramanik, State Key Lab. of Artificial Microstructure and Mesoscopic Physics, Peking Univ. (China) and Beijing Academy of Quantum Information Sciences (China); Jun Mao, Jueming Bao, Chonghao Zhai, Tianxiang Dai, Huihong Yuan, Jiajie Guo, State Key Lab. of Artificial Microstructure and Mesoscopic Physics, Peking Univ. (China); Shao-Ming Fei, Capital Normal Univ. (China); Marcus Huber, Institut für Quantenoptik und Quanteninformation ÖAW (Austria) and Vienna Ctr. for Quantum Science and Technology (Austria); Bo Tang, Yan Yang, Zhihua Li, Institute of Microelectronics (China); Qiongyi He, Qihuang Gong, Jianwei Wang, State Key Lab. of Artificial Microstructure and Mesoscopic Physics, Peking Univ. (China) and Beijing Academy of Quantum Information Sciences (China) and Frontiers Science Ctr. for Nano-optoelectronics (China). . . . . [11905-49]

Freeform configurations to improve system resolution, Hua Liu, Luoyang Electro-optical Equipment Research Institute (China) . . . . . [11905-50]

Realizing a multiqubit controlled-phase gate via resonant interaction in cavity QED, Shiqing Tang, Si Luo, Hengyang Normal Univ. (China) . [11905-51]

Passively mode-locked and Q-switched fiber laser utilizing a same tungsten oxide (WO_3) film as absorbers, Xin Tan, Ya Liu, Yongkang Zheng, Zewu Xie, Jie Yang, Yunnan Normal Univ. (China) . . . . . [11905-52]

ON DEMAND: **Numerical simulation of the Raman beam self-cleaning in a graded-index multimode optical fiber**, Oleg S. Sidelnikov, Novosibirsk State Univ. (Russian Federation); Evgeniy V. Podivilov, Novosibirsk State Univ. (Russian Federation) and Institute of Automation and Electrometry (Russian Federation); Sergey A. Babin, Novosibirsk State Univ. (Russian Federation) and Institute of Automation and Electrometry (Russian Federation); Stefan Wabnitz, Novosibirsk State Univ. (Russian Federation) and Sapienza Univ. di Roma (Italy); Mikhail P. Fedoruk, Novosibirsk State Univ. (Russian Federation) and Institute of Computational Technologies (Russian Federation) . [11905-53]

ON DEMAND: **High-efficiency in-fiber nonlinear conversion of nanosecond optical pulses into structured packets of high-peak-power ultrashort pulses**, Boris N. Nyushkov, Sergey M. Kobtsev, Novosibirsk State Univ. (Russian Federation); Igor Korel, Anastasia Kutishcheva, Novosibirsk State Technical Univ. (Russian Federation). . . . . [11905-55]

ON DEMAND: **Noise-like pulses: useful or harmful?**, Sergey M. Kobtsev, Novosibirsk State Univ. (Russian Federation). . . . . [11905-56]

ON DEMAND: **Numerical simulation of the picosecond fiber optical parametric oscillator based on PCF**, Vladislav Efremov, Institute of Automation and Electrometry (Russian Federation) and Novosibirsk State Univ. (Russian Federation); Aleksandr Antropov, Ekaterina Evmenova, Institute of Automation and Electrometry (Russian Federation); Denis Kharenko, Institute of Automation and Electrometry (Russian Federation) and Novosibirsk State Univ. (Russian Federation) . . . . . [11905-57]

ON DEMAND: **Effects of spectral phase on ionization-induced self-compression of 100-GW pulse in hollow-core waveguide**, Qiandong Ran, Nanyang Technological Univ. (Singapore); Hao Li, Singapore Institute of Manufacturing Technology (Singapore); Qi Jie Wang, Nanyang Technological Univ. (Singapore); Ying Zhang, Singapore Institute of Manufacturing Technology (Singapore) . . . . . [11905-58]

ON DEMAND: **Analysis of the coherent properties of ultrashort pulses inside embedded cavities of mode-locked fiber laser and Raman oscillator**, Alexey Y. Kokhanovskiy, Sergey Smirnov, Novosibirsk State Univ. (Russian Federation). . . . . [11905-59]

SESSION 1

LOCATION: ROOM 105B . . . . . MON 14:30 TO 18:00

Quantum Optics

Session Chair: **Qiongyi He,** Peking Univ. (China)

14:30: **Engineering quantum state by nonlinear quantum interference** *(Invited Paper)*, Xiaoying Li, Hongtao Cheng, Liang Cui, Jinjin Wang, Pengyu Gao, Tianjin Univ. (China); Zheyu Ou, Tianjin Univ. (China) and Indiana Univ.-Purdue Univ. Indianapolis (United States). . . . . [11905-1]

15:00: **Quantum-enhanced target detection and imaging** *(Invited Paper)*, Lijian Zhang, Nanjing Univ. (China) . . . . . [11905-2]

15:30: **High-dimensional entanglement-enabled holography for quantum encryption** *(Invited Paper)*, Xiangdong Zhang, Lingjun Kong, Yifan Sun, Beijing Institute of Technology (China) . . . . . [11905-3]

Tea/Coffee Break . . . . . Mon 16:00 to 16:30

16:30: **Long-distance reference-frame-independent measurement-device-independent quantum key distribution** *(Invited Paper)*, Qin Wang, Xingyu Zhou, Jingyang Liu, Nanjing Univ. of Posts and Telecommunications (China). . . . . [11905-4]

17:00: **Two-dimensional exciton polaritons** *(Invited Paper)*, Wenjing Liu, Peking Univ. (China) . . . . . [11905-5]

17:30: **Distribution and quantification of remotely generated Wigner negativity**, Yu Xiang, Peking Univ. (China) . . . . . [11905-6]

17:45: **Efficient reversible entanglement transfer between light and quantum memories**, Mingtao Cao, National Time Service Ctr. (China); Félix Hoffet, Lab. Kastler Brossel, Sorbonne Univ. (France) and Ecole Normale Supérieure, Univ. PSL (France) and CNRS (France); Julien Laurat, Alexandra S. Sheremet, Lab. Kastler Brossel (France). . . . . [11905-7]

TUESDAY 12 OCTOBER

SESSION 2

LOCATION: ROOM 105B . . . . . TUE 8:00 TO 10:00

Nonlinear Photonics I

Session Chair: **Chuanshan Tian,** Fudan Univ. (China)

8:00: **Second harmonic generation based on lithium niobate valley photonic crystal cavity**, Rui Ge, Yuping Chen, Xianfeng Chen, Shanghai Jiao Tong Univ. (China). . . . . [11905-8]

8:15: **On-chip non-classical light source in a strongly-coupled photonic-crystal-plasmonic system**, Lingxiao Shan, Juanjuan Ren, Qi Zhang, Yun Ma, Xueke Duan, Peking Univ. (China); Qihuang Gong, Peking Univ. (China) and Yangtze Delta Optoelectronics Research Institute (China) and Collaborative Innovation Ctr. of Extreme Optics, Shanxi Univ. (China); Gu Ying, Peking Univ. (China) and Beijing Academy of Quantum Information Sciences (China) and Collaborative Innovation Ctr. of Extreme Optics, Shanxi Univ. (China) [11905-9]

8:30: **Effect of molecular orbital angular momentum on spatial distribution of fluorescence during femtosecond laser filamentation in air**, Lu Sun, Nan Zhang, Weiwei Liu, Nankai Univ. (China) . . . . . [11905-10]

8:45: **Near-unity efficiency superconducting nanowire single-photon detector**, Hao Li, Lixing You, Chinese Academy of Sciences (China) [11905-11]

9:00: **Hybrid integration of superconducting nanowire single-photon detectors for large scale quantum photonic circuits** *(Invited Paper)*, Qingyuan Zhao, Nanjing Univ. (China). . . . . [11905-12]

9:30: **Solid-state sources for single photons with orbital angular momentum on a semiconductor chip** *(Invited Paper)*, Bo Chen, Jin Liu, Sun Yat-Sen Univ. (China) . . . . . [11905-13]

Tea/Coffee Break . . . . . Tue 10:00 to 10:30

SESSION 3

LOCATION: ROOM 105B . . . . . TUE 10:30 TO 12:00

Nonlinear Photonics II

Session Chair: **Jin Liu,** Sun Yat-Sen Univ. (China)

10:30: **Surface nonlinear optical spectroscopy for new-energy interfaces** *(Invited Paper)*, Chuanshan Tian, Fudan Univ. (China) . . . . . [11905-14]

11:00: **Light drag enhanced by slow and fast light in a moving microcavity** *(Invited Paper)*, Wenjie Wan, Shanghai Jiao Tong Univ. (China). . . . . [11905-15]

11:30: **Nonlinear topological phenomena in photonic lattices** *(Invited Paper)*, Daohong Song, Jingjun Xu, Zhigang Chen, Nankai Univ. (China). . . . . [11905-16]

Lunch Break . . . . . Tue 12:00 to 13:30

SESSION 4

LOCATION: ROOM 105B . . . . . TUE 13:30 TO 15:30

Quantum Technology With Atoms

Session Chair: **Fang-Wen Sun,** Univ. of Science and Technology of China (China)

13:30: **Unidirectional invisibility due to non-Hermitian symmetry breaking in photonic thermal atoms** *(Invited Paper)*, Junxiang Zhang, Zhejiang Univ. (China). . . . . [11905-17]

14:00: **Quantum manipulation based on atom-light hybrid system** *(Invited Paper)*, Liqing Chen, East China Normal Univ. (China) . . . . . [11905-18]

14:30: **Quantum light sources based on atomic ensemble and their applications** *(Invited Paper)*, Jietai Jing, East China Normal Univ. (China). . . . . [11905-19]

15:00: **Quantum photonics with flying atoms** *(Invited Paper)*, Heng Shen, Shanxi Univ. (China) . . . . . [11905-20]

Tea/Coffee Break . . . . . Tue 15:30 to 16:00

SESSION 5

LOCATION: ROOM 105B . . . . . TUE 16:00 TO 17:30

Sensing

Session Chair: **Jietai Jing,** East China Normal Univ. (China)

16:00: **Nanoscale resolution quantum sensing with NV center in diamond** *(Invited Paper)*, Fang-Wen Sun, Univ. of Science and Technology of China (China). . . . . [11905-21]

16:30: **Quantum-enhanced sensing via a single bosonic mode** *(Invited Paper)*, Changling Zou, Univ. of Science and Technology of China (China). . . . . [11905-22]

17:00: **Coherence of dissipative Kerr solitons in optical microresonators** *(Invited Paper)*, Qifan Yang, Peking Univ. (China) . . . . . [11905-23]

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CONFERENCE 11906 • LOCATION: ROOM 105B

Sunday–Monday 10–11 October 2021 • Proceedings of SPIE Vol. 11906

Infrared, Millimeter-Wave, and Terahertz Technologies VIII

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, China); **Biaobing Jin,** Nanjing Univ. (China); **Weiqi Jin,** Beijing Institute of Technology (China); **Fengqi Liu,** Institute of Semiconductors, Chinese Academy of Sciences (China); **Weiwei Liu,** Nankai Univ. (China); **Chih Wei Luo,** National Chiao Tung Univ. (Taiwan, China); **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); **Joo-Hiuk Son,** The Univ. of Seoul (Korea, Republic of); **Xianghong Tang,** Hangzhou Dianzi Univ. (China); **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)

SUNDAY 10 OCTOBER

OPENING CEREMONY AND PLENARY SESSION I

ROOM: INTERNATIONAL HALL A . . . . . 9:00 TO 12:00

9:00: Opening Ceremony

9:20: Awards and Recognition

9:30: **Low-cost optical technologies to improve global health equity: examples from newborn health, women's health, and COVID-19** *(Plenary)*, Rebecca R. Richards-Kortum, Director, Rice 360 Institute for Global Health Technologies (United States) and Rice Univ. (United States). . . . . [11900-501]

Tea/Coffee Break . . . . . .Sun 10:10 to 10:40

10:40: **High-quality electron beams and free-electron lasing based on laser-wakefield accelerator** *(Plenary)*, Wentao Wang, State Key Lab. of High Field Laser Physics (China) and CAS Ctr. for Excellence in Ultra-intense Laser Science (China) and Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China) . . . . . [11890-502]

11:20: **Advances of perovskite solar cell technology** *(Plenary)*, Rui Zhu, Peking Univ. (China) . . . . . [11893-503]

Lunch Break . . . . . Sun 12:00 to 13:30

SESSION 1

LOCATION: ROOM 105B . . . . . SUN 13:30 TO 15:00

Novel THz Generation and Detection

Session Chair: **Dayong Wang,** Beijing Univ. of Technology (China)

13:30: **3.5‰ THz pulse conversion efficiency achieved by Ti:sapphire femtosecond laser filamentation in argon at 1 kHz repetition rate** *(Invited Paper)*, Weiwei Liu, Nankai U(niv. (China) . . . . . [11906-1]

14:00: **Enhanced high-harmonic and terahertz generation from $LiNaO_3$ metasurfaces** *(Invited Paper)*, Dongwen Zhang, National Univ. of Defense Technology (China). . . . . [11906-2]

14:30: **Terahertz generation in bulk quartz**, Qifang Peng, National Univ. of Defense Technology (China) . . . . . [11906-3]

14:45: **Photo-induced ultrafast spin pumping with an antiferromagnet**, Hongsong Qiu, Biaobing Jin, Nanjing Univ. (China) . . . . . [11906-4]

Tea/Coffee Break . . . . . Sun 15:00 to 15:30

ON DEMAND: **Ultrafast visualization of an electric field around relativistic electron beams** *(Invited Paper),* Masato Ota, Koichi Kan, Osaka Univ. (Japan); Soichiro Komada, Mie Univ. (Japan); Yasunobu Arikawa, Verdad C. Agulto, Valynn K. Mag-Usara, Yoichi Sakawa, Osaka Univ. (Japan); Tatsunosuke Matsui, Mie Univ. (Japan); Makoto Nakajima, Osaka Univ. (Japan) . . . [11906-5]

ON DEMAND: **Improved terahertz emission characteristics from photoconductive antennas integrated with micron-size 1D and 2D metal line arrays,** Hannah Bardolaza, Alexander De Los Reyes, Neil Irvin Cabello, National Institute of Physics, Univ. of the Philippines Diliman (Philippines); John Paul Ferrolino, Univ. of the Philippines Diliman (Philippines); Ivan Cedrick Verona, Armando Somintac, Arnel Salvador, Elmer S. Estacio, National Institute of Physics, Univ. of the Philippines Diliman (Philippines). . . . [11906-6]

PLENARY SESSION II

LOCATION: INTERNATIONAL HALL A . . . . . SUN 15:30 TO 16:20

15:30: Welcome and Introduction

Q&A period will follow after the talk

15:35: **The UK National Quantum Technology Programme** *(Plenary)*, Peter L. Knight, Blackett Lab., Imperial College London (United Kingdom) and UK National Quantum Technology Strategic Advisory Board for UKRI (United Kingdom). . . . . [11905-504]

Tea/Coffee Break . . . . . Sun 16:20 to 16:30

SESSION 2

LOCATION: ROOM 105B . . . . . SUN 16:30 TO 17:45

Devices

Session Chair: **Dongwen Zhang,**
Hebei Univ. of Science and Technology (China)

16:30: **Manipulation on terahertz slow light at spoof surface plasmon-induced transparency windows** *(Invited Paper)*, Zhenyu Zhao, Shanghai Normal Univ. (China). . . . . [11906-12]

17:00: **Development of spectral filter element for terahertz nondestructive testing system**, Ye Wang, Xiuhua Fu, Changchun Univ. of Science and Technology (China); Lijun Wang, Li Qin, YongYi Chen, Jinlong Zhang, Changchun Institute of Optics, Fine Mechanics and Physics (China); Zhongyao Zhu, BRIMET (China) . . . . . [11906-13]

17:15: **A terahertz coupled resonator biosensor for microorganism detection**, Chishen Huang, Chao Li, Yaohua Du, Academy of Military Science (China). . . . . [11906-14]

17:30: **Parity-time-symmetric optoelectronic oscillator based on normal and reversed traveling-wave modulation**, Jinying Fan, Jianming Zhou, Xudong Wang, Jiejun Zhang, Jinan Univ. (China) . . . . . [11906-15]

ON DEMAND: **Broadband terahertz vortex beams shaping with achromatic waveplates** *(Invited Paper),* Nikolay V. Petrov, Maksim S. Kulya, Yaroslav V. Grachev, ITMO Univ. (Russian Federation); Andrei Gorodetsky, Univ. of Birmingham (United Kingdom) and ITMO Univ. (Russian Federation); Bogdan V. Sokolenko, Aleksey V. Chernykh, ITMO Univ. (Russian Federation) . . . . . [11906-16]

MONDAY 11 OCTOBER

SESSION 3

LOCATION: ROOM 105B . . . . . MON 8:20 TO 10:05

Spectroscopy and Imaging

Session Chair: **Yiwen Sun,** Shenzhen Univ. (China)

8:20: **Continuous-wave terahertz lensless full-field phase imaging** *(Invited Paper)*, Dayong Wang, Lu Rong, Jie Zhao, Beijing Univ. of Technology (China) and Beijing Engineering Research Ctr. of Precision Measurement Technology and Instruments (China); Yunxin Wang, School of Physics and Optoelectronics (China) and Beijing Engineering Research Ctr. of Precision Measurement Technology and Instruments (China); Cun-Lin Zhang, Capital Normal Univ. (China) . . . . . [11906-7]

8:50: **Portable terahertz nondestructive testing system and its application** *(Invited Paper)*, Zhenwei Zhang, Capital Normal Univ. (China) and Beijing Institute of Technology (China) and Beijing Engineering Research Ctr. of Terahertz and Infared Wave (China); Yuejin Zhao, Beijing Institute of Technology (China); Cunlin Zhang, Capital Normal Univ. (China) . . . . [11906-8]

9:20: **Waveguide-based reflective super-resolution THz imaging**, Zhengxin Wang, Lanjun Guo, Cheng Gong, Weiwei Liu, Institute of Modern Optics, Nankai Univ. (China) . . . . . [11906-9]

9:35: **Design of a 0.35-THz planar array antenna**, Zhaohang Peng, Bowen Fan, Kangmin Zhou, Shengcai Shi, Purple Mountain Observatory (China) . . . . . [11906-10]

9:50: **Difference frequency generation of widely tunable terahertz waves in 4H-SiC**, Tana Gegen, Kai Zhong, Fangjie Li, Hongzhan Qiao, Degang Xu, Jianquan Yao, Tianjin Univ. (China) . . . . . [11906-11]

Tea/Coffee Break . . . . . Mon 10:05 to 10:30

SESSION 4

LOCATION: ROOM 105B . . . . . MON 10:30 TO 12:00

Applications

Session Chair: **Cunlin Zhang,** Capital Normal Univ. (China)

10:30: **Graphene-based electrophoresis scheme for HER2 proteins THz-sensing** *(Invited Paper)*, Yiwen Sun, Shenzhen Univ. (China) . . . . . [11906-17]

11:00: **Characteristic fingerprint spectrum of anticoagulant rivaroxaban with terahertz time-domain spectroscopy and Fourier transform infrared spectroscopy**, Xu Wu, Can Sun, Yan Peng, Yiming Zhu, Songlin Zhuang, Univ. of Shanghai for Science and Technology (China) . . . . . [11906-18]

11:15: **Measurement of dielectric constant and loss tangent of several common dielectrics by terahertz time domain spectroscopy**, Bowen Fan, ZhaoHang Peng, Wei Miao, Shengcai Shi, Purple Mountain Observatory (China) . . . . . [11906-19]

11:30: **Machine-learning-enabled terahertz spectral analysis for cancer detection and diagnosis**, Pingjie Huang, Yuqi Cao, Zhejiang Univ. (China); Xusheng Kang, Zhejiang Univ. City College (China); Dibo Hou, Guangxin Zhang, Zhejiang Univ. (China) . . . . . [11906-20]

11:45: **Infrared and visible image fusion through local contrast maximization and local information optimization**, Jufeng Zhao, Junjie Zhu, Guangmang Cui, Hangzhou Dianzi Univ. (China) . . . . . [11906-21]

Lunch Break . . . . . Mon 12:00 to 13:30

ON DEMAND: **Polarization-sensit**ive terahertz spectroscopy of multilayer graphene-based films, Anatoly Kvitsinskiy, ITMO Univ. (Russian Federation); Maxim Rybin, A. M. Prokhorov General Physics Institute (Russian Federation); Anton Zaitsev, Kirill Bogdanov, Dmitry Zykov, ITMO Univ. (Russian Federation); Elena Obraztsova, A. M. Prokhorov General Physics Institute (Russian Federation) and Moscow Institute of Physics and Technology (Russian Federation) . . . . . [11906-22]

ON DEMAND: **Field performance evaluation of aged thermal imaging systems,** Mohamed Ellithey, Hany El-sheikh, Alaaeldin Mahmoud, Ayman M. Mokhtar, Military Technical College (Egypt) . . . . . [11906-23]

POSTER SESSION

ROOM: INTERNATIONAL HALL B . . . . . MON 13:00 TO 14:30

Conference attendees are invited to attend the poster session on Monday afternoon. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster session.

POSTER SETUP: Monday • 10:00 to 13:00

The study about temperature drifting characteristics of infrared focal plane detector and calibration process at external field, Fengzhou Dai, Xidian Univ. (China); Hui Zhao, Xiaofei Lu, Jiuquan Satellite Launch Ctr. (China) . . . . . [11906-24]

Theoretical investigation of tunable and broadband microwave frequency comb generation based on a current modulated semiconductor laser under optical injection, Li Fan, Chen-Hao Gou, Zheng-Mao Wu, Guang-Qiong Xia, Zhu-Yu Ding, Southwest Univ. (China) . . . . . [11906-25]

Global optimization on precision multiple configurations, Hua Liu, Luoyang Electro-optical Equipment Research Institute (China) . . . . [11906-26]

Adaptive sampling methods for millimeter-wave radiometric imaging based on visual saliency and block information weight, Taiyang Hu, Nanjing Univ. of Science and Technology (China) . . . . . [11906-27]

Multifocus photoacoustic microscopy with extended depth-of-field for large-scale sensing based on a tunable acoustic gradient lens and fiber delay network, Jiahao Zeng, Xianlin Song, Nanchang Univ. (China) [11906-28]

Characterization of the kinetic inductance Fraction of NbTiN MKIDs, Wei-Tao Lv, Qing Shi, Jing Li, Zheng Wang, Shengcai Shi, Purple Mountain Observatory (China) . . . . . [11906-29]

Highly sensitive detection of 4-mercaptohydrocinnamic acid proportion using terahertz metamaterial, Wanlin Liang, Mengyuan Wang, Suqi Zhang, Qingli Zhou, Jian Zuo, Cunlin Zhang, Capital Normal Univ. (China). . [11906-30]

Fabrication of 128×128 superconducting nanowire array, Jiayu Lyu, Labao Zhang, Yanqiu Guan, Research Institute of Superconductor Electronics, Nanjing Univ. (China); Xiao Zhang, Research Institute of Superconductor Electronics (China) . . . . . [11906-31]

Simulation research on indoor terahertz communication channel characteristics of 220-330GHz based on ray tracing, Jiuzhou Han, Pandeng Wang, Zhongxin Zhao, Xiaolei Wu, Jingsuo He, Bo Su, Cunlin Zhang, Capital Normal Univ. (China) . . . . . [11906-32]

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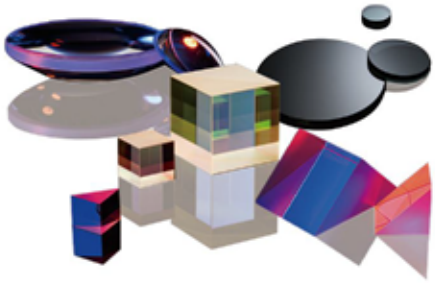

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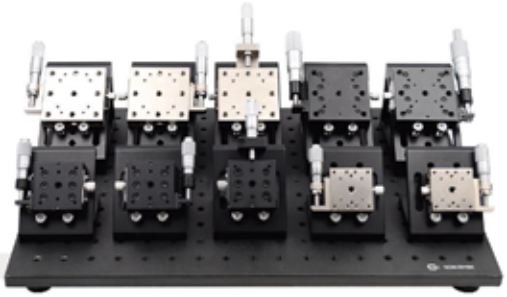

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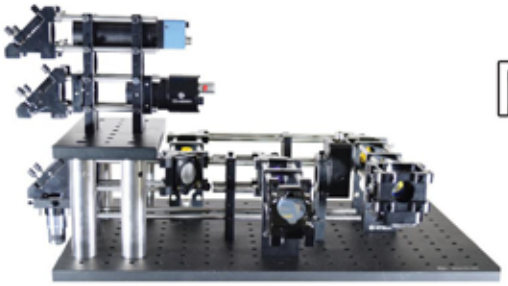

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Rongsen 融森净化

净化工程 一站式方案解决专家

选择我们

Why Us

苏州融森净化工程有限公司由吴江林森、苏州振药、江苏宝林、苏州辰晖2020年融合优化后组建成立。2003年开展洁净事业，历经多年发展，现有管理、技术、施工人员近1500名。

融森工程现拥有机电工程施工总承包贰级、电子与智能化工程专业承包一级、建筑装修装饰工程专业承包一级、建筑机电安装工程专业承包一级、压力管道施工许可证GC II 等齐全的行业资质并在2020年获得IOS9001、ISO14001和ISO45001三位一体体系认证。并在2018年华师大闵行校区国家重点实验室净化项目获得"白玉兰"奖。

服务内容

- 01 工程设计服务
- 02 EPC总承包
- 03 机电总承包
- 04 洁净室系统
- 05 专业系统施工
- 06 工程项目管理
- 07 设备运维服务

技术优势

融森工程可为电子行业配备ISO1级至ISO8级的净化车间，保障各类电子产品的生产要求。

在项目施工管理过程中，始终坚持一次性成果理念，项目在设计（二次优化）、施工、调试等过程中，遵循公司高标准严要求，再结合BIM等计算机辅助工具，使工程技术、施工等均在控制的范围内实施，并得到审查、监督、调整。

服务规模

融森工程设有苏州、武汉两大运营中心。并在上海、广州、杭州、南京、合肥、太原、南昌、青岛、成都、沈阳、海口等重要城市设立市场销售部，以便更快、更好、更优质的服务于全国的客户。

配套能力

融森工程拥有强大的生产能力在苏州、武汉、天津、成都建有四大彩钢板生产基地。工程使用彩钢板、净化门窗、高效过滤器、层流罩、传递窗等重要部件均为自行生产，可满足各类工程项目工期要求，以及产品非标定制需求，并且在保证质量的前提下，可以快速供货。

融森工程致力于成为净化工程领域著名的中国品牌

地址：苏州市吴江区太湖新城水秀街500号B座8楼
邮箱：market@linsen.group
电话：(0086)-512-6310 6908　400-860-2003
网址：www.szrongsen.cn

微信公众号

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公司简介

深圳市皓辰电子科技有限公司是一家集销售、维修、租赁服务为一体的国家高新技术企业，创始团队从事仪器设备研发、生产、维修、销售均有十年以上从业经验。公司商务中心办公面积1000平方，维修、测试、仓储面积近2000平方，仪器设备及模块常备库存3000余台。2017年10月被评为国家级高新技术企业，2018年被授予“成都双流区5G产业联盟”第一批会员单位，2021年加入“中国光学工程学会”，成为会员单位。

公司经过近十年的发展，目前已和全球知名国际品牌厂家、代理商、系统集成商建立合作关系，直营代理多个品牌。公司服务领域覆盖教育、科研、检测、通信、电力等多个行业，已与众多企业、高校、国家科研院所开展项目合作，并获得高度认可与好评。

我们的经营理念是：诚信 专业 优质 服务

我们的奋斗目标是：打造一站式测试服务平台

产品系列

Keysight 86100D
宽带示波器

YOKOGAWA AQ6370X系列
光谱分析仪

Desky 10G/100G/400G
高速误码测试仪

Keysight 8164B+81636B+81940A
+81570A+81949A+81600B
光波测量系统+可调谐激光源

业务范围

销售

代理分销进口品牌SYCATUS、Santec、keysight、Newport等;独家代理国产仪器德天DESKY光功率计，光衰减器，误码仪，光开关等;提供系统集成和自动化测试解决方案。

租赁

公司有大量新、旧二手仪器库存资源，与行业上百家仪器租赁商和二手同行保持良好的合作关系。覆盖大部分进口和国产知名品牌仪器，如Keysight、Agilent、R&S、Tektronix、Anritsu、Yokogawa等，仪器含盖整个5G通信行业。

维修

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南智先进光电集成技术研究院，2018年4月在国家级新区—南京江北新区注册成立。研究院主要开展铌酸锂晶体生长、片上集成光电功能器件/芯片、微机电器件/芯片等方向的技术研发、产业孵化、赋能投资和人才培育工作。研究院拥有高水平研发人员40余人，其中院士1人、“四青”3人，省“333”工程1人、省“双创”专家1人，高职以上15人。拥有办公及实验场地13000余平米，建有5000平米超净实验室，配置各类光电微纳加工设备，可满足从微米到纳米尺度的光电器件/芯片制备需求。

南智光电公共技术平台，汇聚微纳加工、制造、测试、封装等光电集成领域先进设备，加工能力覆盖了从纳米到微米尺度的微纳加工范围，能够满足多种新型光电集成器件的加工制备需求。平台立足南京、辐射华东，面向高校、科研院所和光电集成产业领域，提供高水平技术服务。

平台着眼构建5G、物联网产业生态的需求，面向广大科技企业、科研机构和高校，提供光电集成领域核心工艺研发和技术服务。主要包括铌酸锂光电芯片工艺、化合物半导体工艺、微纳光子器件工艺、MEMS器件工艺等；同时具备开展高速光通信、全息显示等颠覆性技术应用中关键器件研发和技术服务的能力。平台可提供包括Si、GaN、InP、SiC等材料的产品的研发服务；平台拥有完整成熟的工艺研发设备，可以提供从光刻、刻蚀、镀膜到产品封测的全套加工工艺。

设备名称	功能描述
双束电镜	微观表面及纵深结构的高精密表征、元素成分测量、芯片失效分析、TEM样品制备、超构材料器件制备
电子束光刻系统	支持2/4/6/8英寸晶元及散片，最小线宽8nm
接触式光刻机	对光刻胶进行紫外曝光、标记对刻套刻、支持双面套刻
PEVCD	介质膜的沉积（SiO_X、SiN_X）
RIE	介质膜的刻蚀（SiO_X、SiN_X）
ICP	Si、III-V族材料、铌酸锂等的刻蚀
磁控溅射镀膜仪	致密金属膜沉积
电子束蒸发台	金属膜沉积、电极制作

设备名称	功能描述
光学镀膜机台	沉积激光器端面增透、增反镀膜/光学元件的光学膜
快速退火炉	高温退火处理
等离子清洗机	样品表面有机物清洗、去胶
减薄抛光机	晶圆厚度的减薄及表面平滑抛光
解理机	III-V材料晶圆的划片与裂片
高倍数码显微镜	光学显微、表面表征
台阶仪	表征台阶结构垂直高度
膜厚仪	表征薄膜厚度
三维轮廓仪	检测晶圆表面平滑度
半自动贴片机	高精度芯片对准贴装

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