

TECHNICAL  
PROGRAM

# SPIE. | PHOTONICS COS ASIA

12 - 14 October 2025 | Beijing International Convention Center | Beijing, China

CO-ORGANIZERS

SPIE.





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 an innovative R&D institution jointly founded by Peking University and the Nantong Municipal Government. It was inaugurated in November 2019, situated in the Zilang Science and Technology Park in Nantong, Jiangsu Province, China.

With a strategic focus on optics and optoelectronics, PKU-YDIOE aims to become a globally leading institutions in translational research and development. The institute is dedicated to pioneering innovative research, developing disruptive technologies, promoting technological transformation, incubating high-tech enterprises, and cultivating top talented engineers in the field. Over the past six years, PKU-YDIOE has systematically developed comprehensive core facilities and advanced instrumental infrastructures to support cutting-edge optical and photonic research, striving to provide a world-class scientific and technological platform for leading research teams.



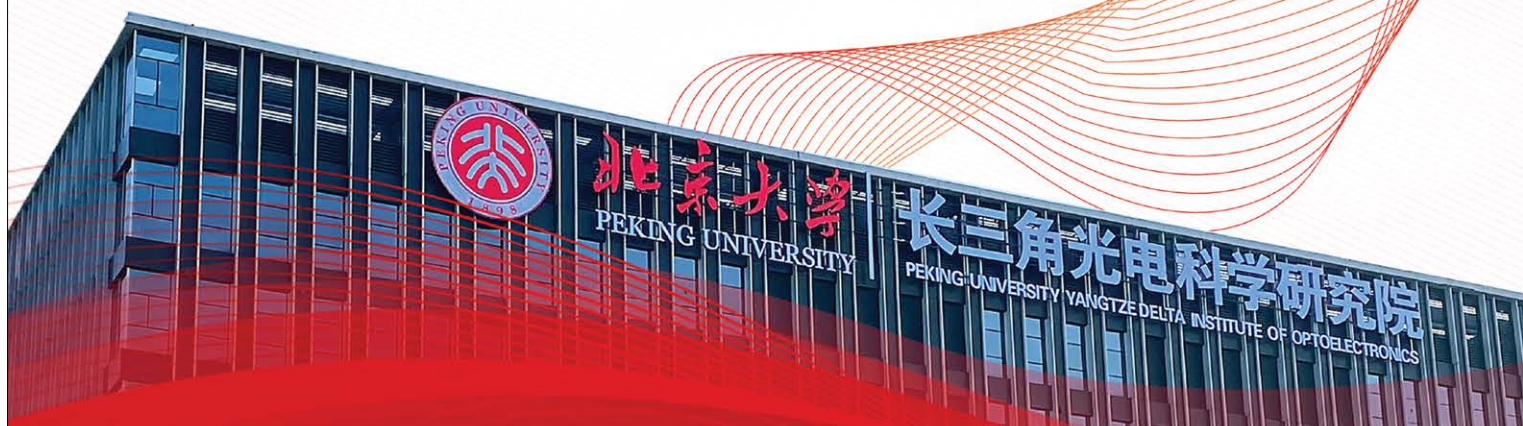
The R&D layout of PKU-YDIOE consists of two key components: a Frontier Innovation Center located at Peking University and a Translational R&D Center at its main site in Nantong. The Frontier Innovation Center houses 11 laboratories that drive innovation and technical breakthroughs. The Translational R&D Center, in turn, leverages these research outcomes to pursue promising industrial applications. Plans are underway to establish 10–15 laboratories within this center, with eight already operational. Representative products include:



- Ultra-high Quality WGM Microcavity Device
- Laser Phase Noise Analyzer
- Shack-Hartmann Wavefront Sensor
- Live Cell Panoramic Super-resolution Microscopy
- Micron-metal-mesh-embedded Flexible Transparent Electrodes
- Perovskite-silicon Tandem Solar Cells
- Desktop Multi-functional and High-precision Coating Equipment
- Semi-conductor Optical Amplifier(SOA)
- Distributed Feedback(DFB) Laser
- High-resolution SHG Imaging System for 3D Visualization

In addition, PKU-YDIOE welcomes partnerships with technology-driven enterprises and teams to establish joint laboratories aimed at overcoming technical challenges and advancing industrial growth.

The institute also features two strategic platforms to deepen integration and collaboration among industry, academia, and research entities: a public service platform currently under construction, which will specialize in micro-nano fabrication and characterization, and an incubation platform focused on supporting entrepreneurial projects and startup companies.



With its rapid development and remarkable achievements, PKU-YDIOE cordially invites outstanding talents from around the world to join in building an innovation platform with global influence in optoelectronics research and industrial development.

E-mail: [hr@ydioe.pku.edu.cn](mailto:hr@ydioe.pku.edu.cn)

Web: <https://www.ydioe.pku.edu.cn>





# SPIE. | PHOTONICS COS | ASIA

12 - 14 October 2025  
Beijing International Convention Center  
Beijing, China

## Experience the energy of SPIE/COS Photonics Asia

Get ready to enjoy real conversations, discuss the latest breakthroughs, and make important connections in person. Hear thought-provoking technical sessions and plenary talks from world experts, researchers, and innovators discussing advancements and the latest research in advanced optics and photonics technologies.



Symposium Program Committee—PAGES 2-3

Facility Map—PAGES 4-5

Plenary Sessions—PAGE 6-7

Presentations by world-class speakers on research challenges and breakthroughs

Special Events—PAGE 8

Technical Conferences—PAGES 11-86

Conferences focused on latest advances in optics and photonics applications and technologies

Onsite Services—PAGE 86

CO-ORGANIZERS

**SPIE.**



[www.spie.org/pa](http://www.spie.org/pa)



## Symposium Program Committee

### 2025 SPIE/COS PHOTONICS ASIA GENERAL CHAIRS



**Peter J. de Groot**  
SPIE 2025 President,  
Zygo Corporation  
(United States)



**Qihuang Gong**  
COS Former President,  
Peking University (China)

### CO-ORGANIZERS

**SPIE.**



### TECHNICAL PROGRAM CHAIRS

**Zejin Liu**, COS Vice President, National University of Defense Technology (China)

**Xiangang Luo**, Institute of Optics and Electronics, Chinese Academy of Sciences (China)

**Xingde Li**, Johns Hopkins University (USA)

### TECHNICAL PROGRAM CO-CHAIRS

**Wei Huang**, Northwestern Polytechnical University (China)

**Guobin Fan**, China Academy of Engineering Physics (China)

**Qingming Luo**, Hainan University (China)

**Ninghua Zhu**, Nankai University (China)

**Fengyi Jiang**, Nanjing University (China)

### ORGANIZING COMMITTEE

**Suotang Jia**, COS Vice President, Shanxi University (China)

**Xiaomin Ren**, COS Vice President, Beijing University of Posts and Telecommunications (China)

**Wenjie Wang**, COS Vice President, Sunny Optical Technology (Group) Co., Ltd. (China)

**Jianda Shao**, COS Vice President, Shanghai Institute of Optics and Fine Mechanics, CAS (China)

**Hong Jin**, COS Vice President, Changchun Institute of Optics, Fine Mechanics and Physics, CAS (China)

**Yunquan Liu**, COS Vice President, Peking University (China)

**Xinliang Zhang**, Xidian University (China)

**Yanqing Lu**, Nanjing University (China)

**Chuanfeng Li**, University of Science and Technology of China (China)

**Wei Hao**, Xi'an Institute of Optics and Precision Mechanics, CAS (China)

**Qun Hao**, Changchun University of Science and Technology (China)

**Yidong Huang**, Tsinghua University (China)

**Yongtian Wang**, Beijing Institute of Technology (China)

**Xiacong Yuan**, Shenzhen University (China)

**Limin Tong**, Zhejiang University (China)

**Xiaoying Li**, Tianjin University (China)

**Yan Li**, Peking University (China)

**Jianxin Chen**, Fujian Normal University (China)

**Weiwei Liu**, Nankai University (China)

**Jian Wang**, Huazhong University of Science and Technology (China)

### SECRETARIES-GENERAL

**Xu Liu**, COS Secretary General, Zhejiang University (China)

**Bo Gu**, COS Deputy Secretary General, The Chinese Optical Society (China)

**Hong Yang**, COS Deputy Secretary General, Peking University (China)

**Tianrui Zhai**, COS Deputy Secretary General, Beijing University of Technology (China)

### LOCAL ORGANIZING COMMITTEE CHAIR

**Xu Liu**, COS Secretary General, Zhejiang University (China)

# Symposium Program Committee

---

## LOCAL ORGANIZING COMMITTEE CO-CHAIR

**Hong Yang**, COS Deputy Secretary General, Peking University (China)  
**Yuhong Wan**, Beijing University of Technology (China)  
**Liquan Dong**, Beijing Institute of Technology (China)

---

## LOCAL ORGANIZING COMMITTEE

**Wei Xiong**, The Chinese Optical Society (China)  
**Feng Zhang**, Beijing University Of Technology (China)  
**Hongqiang Zhou**, Beijing University Of Technology (China)  
**Tianlong Man**, Beijing University Of Technology (China)  
**Nan Zhang**, Beijing Institute of Technology (China)  
**Guocui Wang**, Beijing Institute of Technology (China)  
**Ruiqing Jia**, The Chinese Optical Society (China)  
**Jianxin Sun**, The Chinese Optical Society (China)  
**Zizhen Liu**, The Chinese Optical Society (China)

---

## TECHNICAL ORGANIZING COMMITTEE

**Liangcai Cao**, Tsinghua Univ. (China)  
**P. Scott Carney**, The Institute of Optics, Univ. of Rochester (United States)  
**Benyong Chen**, Zhejiang Sci-Tech Univ. (China)  
**Chunhua Dong**, Univ. of Science and Technology of China (China)  
**Gerd Ehret**, Physikalisch-Technische Bundesanstalt (Germany)  
**Xinyu Fan**, Shanghai Jiao Tong Univ. (China)  
**Ying Gu**, Chinese PLA General Hospital (China)  
**Sen Han**, Univ. of Shanghai for Science and Technology (China) and Suzhou H&L Instruments LLC (China)  
**Ingmar Hartl**, Deutsches Elektronen-Synchrotron (Germany)  
**Qiongyi He**, Peking Univ. (China)  
**Werner Hofmann**, Deutsches Patent- und Markenamt (Germany)  
**Minghui Hong**, Xiamen Univ. (China)  
**Ting Huang**, Beijing Univ. of Technology (China)  
**Shibin Jiang**, AdValue Photonics, Inc. (United States)  
**Tina Kidger**, Kidger Optics Associates (United Kingdom)  
**Chang-Seok Kim**, Pusan National Univ. (Republic of Korea)

**Dai-Sik Kim**, Ulsan National Institute of Science and Technology (Republic of Korea)

**Baojun Li**, Jinan Univ. (China)  
**Wei Li**, Institute of Semiconductors, Chinese Academy of Sciences (China)  
**Xingde Li**, Johns Hopkins Univ. (United States)  
**Zhaoyang Li**, Zhangjiang Lab. (China) and Shanghai Institute of Optics and Fine Mechanics (China)  
**Qingming Luo**, Hainan Univ. (China)  
**Ting-Chung Poon**, Virginia Polytechnic Institute and State Univ. (United States)  
**Yuji Sano**, Institute for Molecular Science, National Institutes of Natural Sciences (Japan) and SANKEN, Osaka Univ. (Japan)

**Kebin Shi**, Peking Univ. (China)  
**Samuel Stranks**, Univ. of Cambridge (United Kingdom)  
**Jinli Suo**, Tsinghua Univ. (China)  
**Takuo Tanaka**, RIKEN (Japan)  
**Masahiko Tani**, Univ. of Fukui (Japan)  
**Kazumi Wada**, Massachusetts Institute of Technology (United States)  
**Jianpu Wang**, Nanjing Univ. of Technology (China)

**Ting Wang**, Institute of Physics, Chinese Academy of Sciences (China)

**Yongtian Wang**, Beijing Institute of Technology (China)  
**Hong Wei**, Institute of Physics, Chinese Academy of Sciences (China)

**Rengmao Wu**, Zhejiang Univ. (China)

**Minghong Yang**, Wuhan Univ. of Technology (China)

**Jianhua Yao**, Zhejiang Univ. of Technology (China)

**Hiroshi Yoshikawa**, Nihon Univ. (Japan)

**Changyuan Yu**, The Hong Kong Polytechnic Univ. (Hong Kong, China)

**Shaoliang Yu**, Zhejiang Lab. (China)

**Xiaocong Yuan**, Shenzhen Univ. (China)

**Cunlin Zhang**, Capital Normal Univ. (China)

**Jianzhong Zhang**, Harbin Engineering Univ. (China)

**Xi-Cheng Zhang**, The Institute of Optics, Univ. of Rochester (United States)

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

**Xuping Zhang**, Nanjing Univ. (China)

**Min Zheng**, Beijing Univ. of Technology (China)

**Zhenrong Zheng**, Zhejiang Univ. (China)

**Haizheng Zhong**, Beijing Institute of Technology (China)

**Changhe Zhou**, Jinan Univ. (China)

**Zhiping Zhou**, Aijie Optoelectronic Technology (China)

**Dan Zhu**, Huazhong Univ. of Science and Technology (China)

**Rui Zhu**, Peking Univ. (China)

**Sha Zhu**, Nankai Univ. (China)

---

## COOPERATING ORGANIZATIONS

Tsinghua University  
Peking University  
University of Science and Technology of China  
Zhejiang University  
Tianjin University  
Beijing Institute of Technology  
Beijing University of Posts and Telecommunications  
Nankai University  
Changchun University of Science and Technology  
University of Shanghai for Science and Technology  
Capital Normal University  
Huazhong University of Science and Technology  
Beijing Jiaotong University  
China Jiliang University  
Shanghai Institute of Optics and Fine Mechanics, CAS  
Changchun Institute of Optics, Fine Mechanics and Physics, CAS  
Institute of Semiconductors, CAS  
Institute of Optics and Electronics, CAS  
Institute of Physics, CAS  
Shanghai Institute of Technical Physics, CAS  
China Instrument and Control Society  
Optical Society of Japan  
Optical Society of Korea  
Australian and New Zealand Optical Society  
Optics and Photonics Society of Singapore  
European Optical Society

---

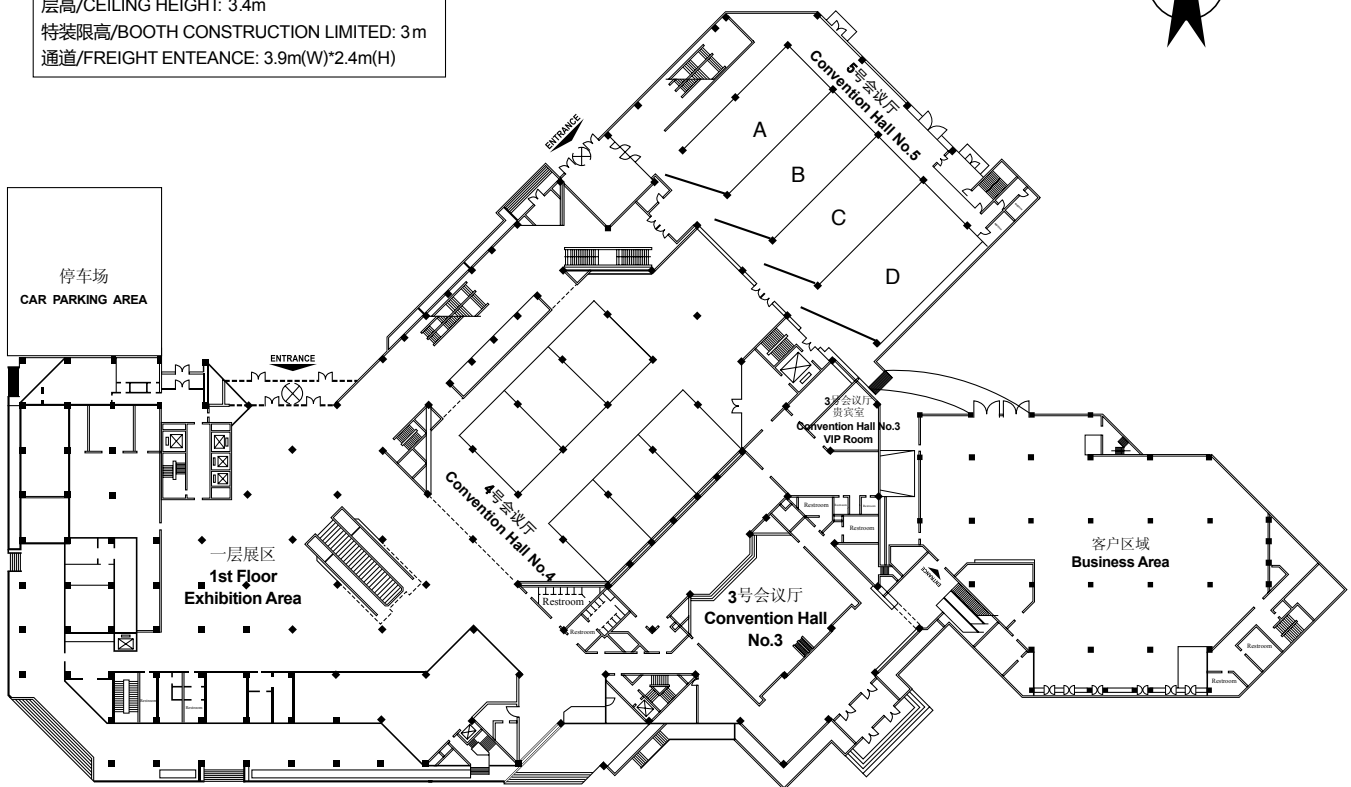
## SUPPORTED BY

China Association for Science and Technology (CAST)  
Department of Information of National Nature Science Foundation, China (NSFC)

# Beijing International Convention Center

## BICC 一层平面图 PLAN OF BICC LEVEL 1

技术说明/TECHNICAL SPECIFICATIONS  
 地面承重/FLOOR LOADING:  
 层高/CEILING HEIGHT: 3.4m  
 特装限高/BOOTH CONSTRUCTION LIMITED: 3m  
 通道/FREIGHT ENTEANCE: 3.9m(W)\*2.4m(H)

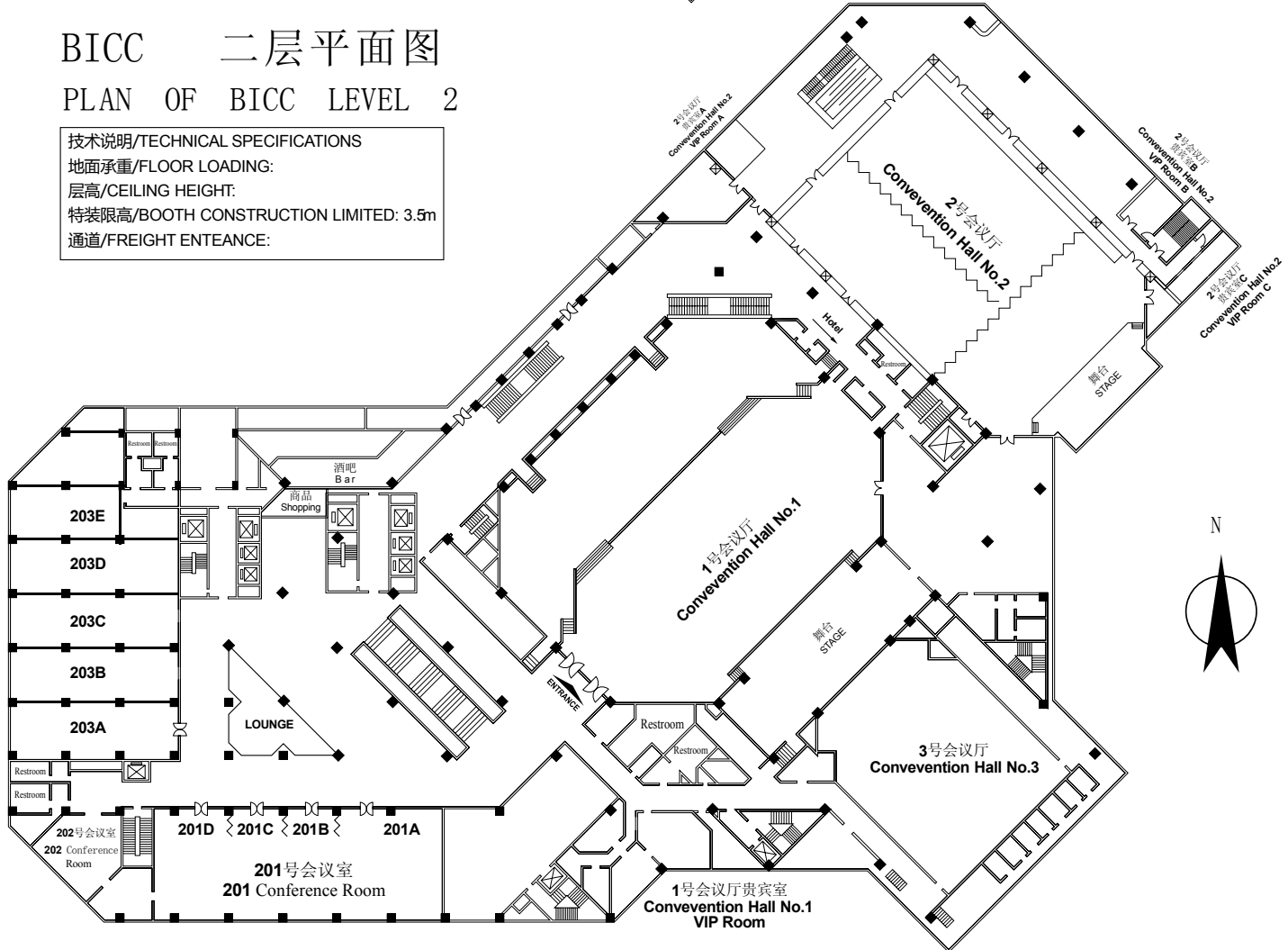


## BICC 二层平面图 PLAN OF BICC LEVEL 2

技术说明/TECHNICAL SPECIFICATIONS  
 地面承重/FLOOR LOADING:  
 层高/CEILING HEIGHT:  
 特装限高/BOOTH CONSTRUCTION LIMITED: 3.5m  
 通道/FREIGHT ENTEANCE:



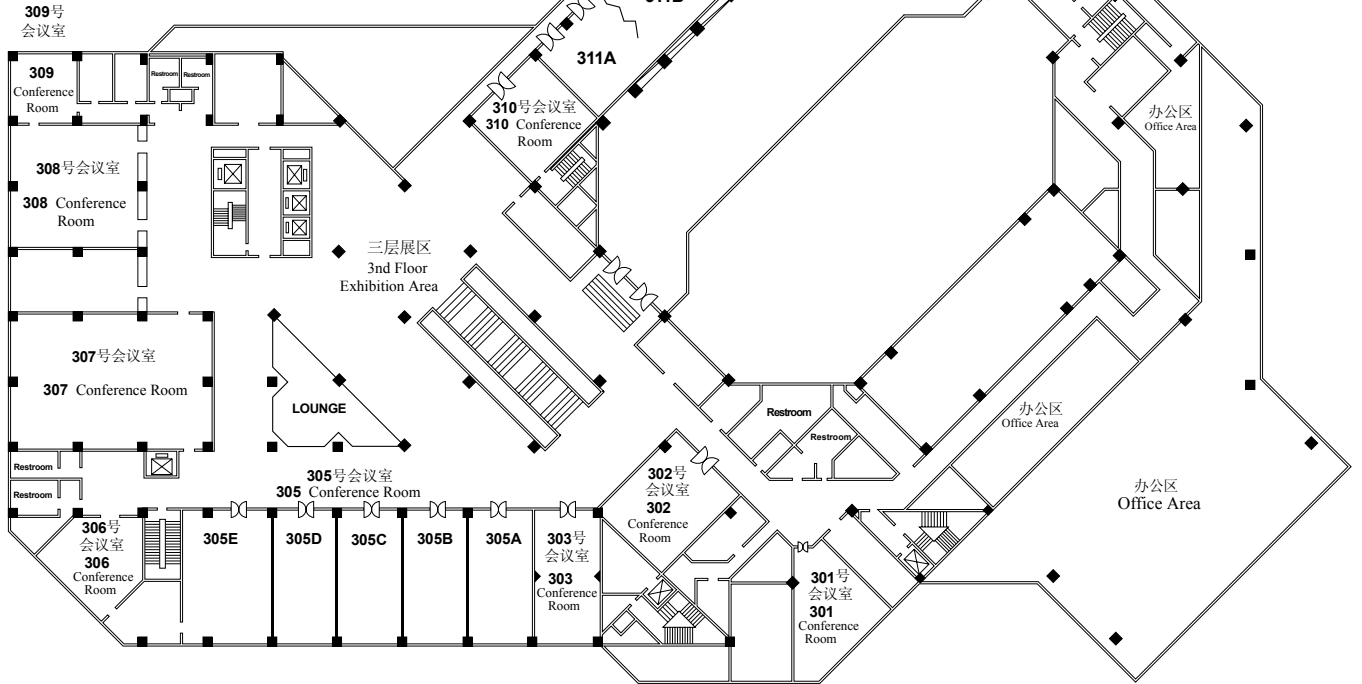
203号会议室  
203 Conference Room



# BICC 三层平面图

## PLAN OF BICC LEVEL 3

技术说明/TECHNICAL SPECIFICATIONS  
 地面承重/FLOOR LOADING:  
 层高/CEILING HEIGHT:  
 特装限高/BOOTH CONSTRUCTION LIMITED: 2.5m  
 通道/FREIGHT ENTEANCE:



# Opening Ceremony and Plenary Session

12 October 2025 • 08:30 - 12:00 | Convention Hall 2, Level 2

Hear from the leading speakers highlighting their areas of research.



08:30: Opening Ceremony

08:40: Awards and Recognition

08:50:

## Photonics and electronics convergence: oscillation, computing, and interconnection



**Ming Li**

Institute of Semiconductors, Chinese Academy of Sciences (China)

Addressing the demand for optoelectronic signal processing in artificial intelligence, radar, electronic warfare, optical communication, and interconnects, this presentation focuses on optoelectronic oscillators, photonic intelligent computing, and novel optoelectronic materials and integrated chips. Breakthroughs include the development of sweep-frequency, random, parity-time-symmetric, and integrated optoelectronic oscillators, enabling tunable, ultra-low-phase-noise microwave signal generation. High-performance optoelectronic linear matrix and optimization computing chips and systems that were developed to achieve high-throughput, large-scale, and programmable intelligent computing will be introduced. Additionally, optoelectronic materials and interconnect integrated chips will also be introduced, facilitating high-capacity, low-power, high-speed optical communication and interconnects.

09:30:

## When metasurfaces meet photodetectors



**Cheng-Wei Qiu**

College of Design and Engineering, National University of Singapore (Singapore)

Mid-infrared detectors are of critical importance for a variety of applications including thermal imaging, spectrometer, sensing and free space communication. High sensitivity, zero power consumption, fast response, simple CMOS-compatible fabrication processes, small footprint, wavelength and polarization selectivity are highly desired, while still being elusive so far especially at room temperature. In this talk, we will report a series of metasurface-mediated detectors. Non-centrosymmetric metallic nanoantennas are deployed to break the symmetry of local electromagnetic field and induce directional flow of hot carriers in graphene, leading to large unbalanced mid-IR photo response at room temperature without external bias. We further establish a scheme to realize configurable polarity transition by exploiting the vectorial and non-local photoresponse in hybrid metasurface of nanoantennas and graphene. We will also report on-chip filterless photodetectors in mid-infrared which solely responds to circular polarizations. We finally showcase how machine learning could enable full-Stokes photodetection and high-dimensional sensing of light's properties.

10:10: Tea/Coffee Break

10:40:

## Super-resolution in ultra-thin lumens



**Qing Yang**

College of Optical Science and Engineering, Zhejiang University (China), ZJU-Hangzhou Global Scientific and Technological Innovation Center (China), and Collaborative Innovation Center of Extreme Optics, Shanxi University (China)

In vivo Super-resolution imaging in a lumen is a multi-interdisciplinary challenge. The major blocker of optics application in a lumen is the dependency of: classical super-resolution on specific fluorescent markers, large-size objective lenses, and static environments for internal cavity in vivo super-resolution (object: high scattering tissue, environment: dynamic narrow space, imaging goal: fast super-resolution). Addressing the clinical need for early diagnosis and treatment of endoluminal tumors, through interdisciplinary collaboration among medicine, engineering, and information technology, key bottlenecks such as optical phase information retrieval, high-frequency signal recovery, and macro-micro spatiotemporal registration have been overcome. This has led to the development of a stable, clear, and accurate ultra-fine endoluminal super-resolution system, achieving millisecond-level response speed, sub-100-nanometer resolution, and a pose error sensitivity of 1.1% per centimeter. For the first time, super-resolution microscopic imaging has been achieved in multiple living animal endoluminal regions, including the esophagus, rectum, and small intestine. In tumor-implanted areas within these luminal structures, microscopic features at the boundaries were observed in vivo, with resolution comparable to that of gold-standard biopsy sections. The technology has been applied at institutions such as Cornell University and Changhai Hospital. Related patents have been successfully translated into products and approved for a Class II medical device registration certificate. Clinical validation has been completed in over 100 cases, providing a novel technological approach for the early diagnosis and treatment of endoluminal tumors.

11:20:

## **Much ado about nothing: Light fields with phase singularities for precision measurement**



**Kishan Dholakia**

School of Biological Sciences, The University of Adelaide (Australia) and Director, Centre of Light for Life, The University of Adelaide (Australia)

Phase singularities are common to all waves. Waves that possess a phase singularity and a rotational flow around such a singular point are termed vortices. Here we describe the use of the use of Laguerre-Gaussian fields possessing phase singularities and orbital angular momentum for both manipulation and precision measurement. In our studies we can use such fields for enhanced manipulation of microstructures and by mode conversion measure refractive index to better than 1 part in a million in miniscule (picolitre) volumes. Extending to light fields with multiple singularities, namely speckle, we can use this for precision metrology: I will describe the use of speckle. In these studies, we particularly emphasise the use of an integrating sphere which allows appropriate dynamic range of path lengths. These create speckle patterns that can achieve attometre resolution of wavelength changes and picometre resolution when measuring displacement. Finally, I will describe the use of speckle for high resolution spectroscopy of atomic species.

# Special Events

Connect with colleagues at the technical and networking events offered.



## Photonics Asia Exhibition

12 - 14 October 2025 • 10:00 - 16:00 | Level 3 Corridor

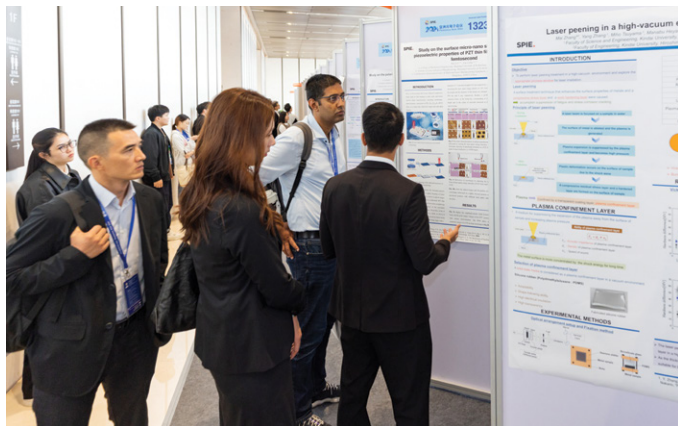
Visit the 3-day Photonics Asia Exhibition, share your latest solutions and make important connections as everyone gathers for collaboration and growth. Reconnect with customers, clients, and prospects in Beijing. Browse and engage with the exhibiting companies to view and discuss their most current exciting new designs and solutions. Exhibitions help connect researchers, scientists, engineers, and buyers with potential suppliers, while educating the community about new technical possibilities.

## Photonics Asia Banquet

12 October 2025 • 18:30 - 20:00 | Convention Hall 2, Level 2

**TICKETS ARE REQUIRED**

Join us for the SPIE/COS Photonics Asia Banquet! Banquet tickets may be purchased on site at the COS registration desk.



## Poster Session

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 and will not be published in the Proceedings of SPIE on the SPIE Digital Library.

Poster presentation guidelines and setup instructions can be viewed at:

<http://spie.org/PA/poster-presentation-guidelines>.

#SPIEPhotonicsAsia - Follow SPIE on WeChat



## 公司简介

科菱环境工程（北京）有限公司，是一家专业从事净化技术研发、净化工程设计与施工、洁净环境运维的高新技术企业，专门服务于各类科研实验室、医药卫生、半导体、微电子、核工业、航空航天、光学设备、生物工程、精细化工、精密仪器和食品工业领域并提供专业的净化技术和业务。

科菱环境工程（北京）有限公司是AAA级资信等级、重合同守信用单位、质量服务信誉单位和诚信经营示范单位，公司通过了ISO质量管理体系、职业健康安全管理体系和环境管理体系等的认证，被授予“中关村高新技术企业”和“国家高新技术企业”称号。

科菱环境工程（北京）有限公司，具有机电工程施工总承包贰级、建筑工程施工总承包贰级、建筑装修装饰工程专业承包贰级、建筑机电安装工程专业承包贰级、电子与智能化工程专业承包贰级、环保工程专业承包贰级、消防设施工程专业承包贰级、防水防腐保温工程专业承包贰级、建筑幕墙工程专业承包贰级、地基基础工程专业承包叁级、钢结构工程专业承包叁级、特种工程（结构补强）专业承包不分等级资质、古建筑工程专业承包叁级和安全生产许可证经营等资质。

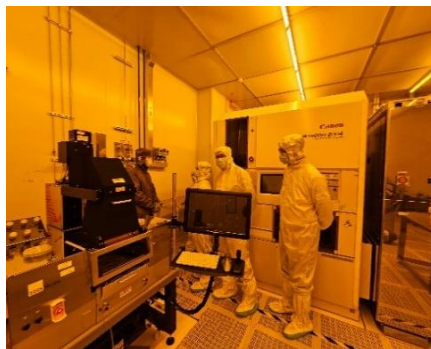
科菱环境工程（北京）有限公司本着以质量为先，信誉为重，管理为本，服务为诚的经营理念，以提供高标准，高品质，高效率的服务为宗旨，竭诚为您服务！

办公地址：北京市丰台区角门18号枫竹苑一区未来假日花园20-03号楼

电话：010-87888586/ 13910755226

网址：[www.bjclean.com.cn](http://www.bjclean.com.cn)

邮箱：[Huangxin@bjclean.com.cn](mailto:Huangxin@bjclean.com.cn)



# LBTEK

## 和 20,000+ 光学人一起 享受麓邦臻挚服务

🗨️ 专属服务

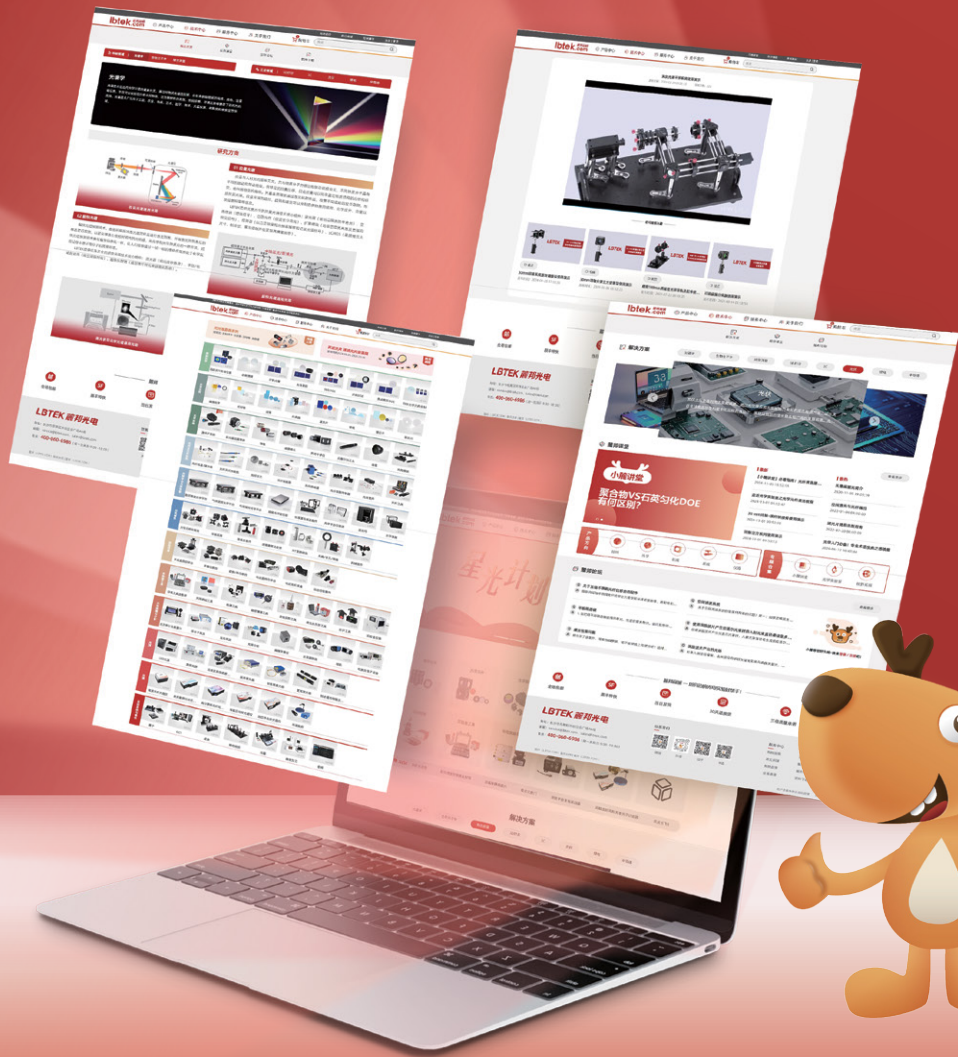
📄 价期透明

📦 顺丰特快

🎁 新人礼包

📅 当日发货

📮 全场包邮



[www.lbtek.com](http://www.lbtek.com) | 🔍

麓邦商城 — 您身边的光电实验好帮手!



# Technical Conferences

## Contents

CONFERENCE 13711 ..... 13-16 <b>Advanced Lasers, High-Power Lasers, and Applications XVI</b> Chairs: Shibin Jiang; Zhaoyang Li; Ingmar Hartl 12 - 14 October 2025   Room 302	CONFERENCE 13720 ..... 50-55 <b>Optical Metrology and Inspection for Industrial Applications XII</b> Chairs: Sen Han; Gerd Ehret; Benyong Chen 13 - 14 October 2025   Room 305E
CONFERENCE 13712 ..... 17-19 <b>Semiconductor Lasers and Applications XV</b> Chairs: Wei Li; Sha Zhu; Werner H. Hofmann; Ting Wang 13 - 14 October 2025   Room 305D	CONFERENCE 13721 ..... 55-63 <b>Optics in Health Care and Biomedical Optics XV</b> Chairs: Qingming Luo; Xingde Li; Ying Gu; Dan Zhu 12 - 14 October 2025   Room 307
CONFERENCE 13713 ..... 20-22 <b>Advanced Laser Processing and Manufacturing IX</b> Chairs: Minghui Hong; Ting Huang; Yuji Sano; Jianhua Yao; Min Zheng 12 - 13 October 2025   Room 305B	CONFERENCE 13722 ..... 64-66 <b>Advanced Sensor Systems and Applications XV</b> Chairs: Xinyu Fan; Chang-Seok Kim; Jianzhong Zhang; Minghong Yang 12 - 13 October 2025   Room 311B
CONFERENCE 13714 ..... 23-24 <b>Photonics for Energy V</b> Chairs: Haizheng Zhong; Rui Zhu; Samuel D. Stranks; Jianpu Wang 13 - 14 October 2025   Room 311B	CONFERENCE 13723 ..... 67-70 <b>Nano-optoelectronics and Micro/Nano-photonics XI</b> Chairs: Zhiping Zhou; Kazumi Wada; Shaoliang Yu 13 - 14 October 2025   Room 311C
CONFERENCE 13715 ..... 25-28 <b>Optoelectronic Devices and Integration XIV</b> Chairs: Xuping Zhang; Baojun Li; Changyuan Yu; Xinliang Zhang 13 - 14 October 2025   Room 303	CONFERENCE 13724 ..... 71-74 <b>Plasmonics IX</b> Chairs: Hong Wei; Takuo Tanaka 12 - 14 October 2025   Room 310
CONFERENCE 13716 ..... 29-33 <b>Optical Design and Testing XV</b> Chairs: Yongtian Wang; Tina E. Kidger; Rengmao Wu 12 - 13 October 2025   Room 305A	CONFERENCE 13725 ..... 75-78 <b>Quantum and Nonlinear Optics XII</b> Chairs: Qiongyi He; Dai-Sik Kim; Chunhua Dong 12 - 14 October 2025   Room 305C
CONFERENCE 13717 ..... 34-37 <b>Advanced Optical Imaging Technologies VIII</b> Chairs: Xiao-Cong Yuan; P. Scott Carney; Kebin Shi 12 - 14 October 2025   Room 311A	CONFERENCE 13726 ..... 79-82 <b>Infrared, Millimeter-Wave, and Terahertz Technologies XII</b> Chairs: Cunlin Zhang; Xi-Cheng Zhang; Masahiko Tani 13 - 14 October 2025   Room 305A
CONFERENCE 13718 ..... 38-41 <b>Optoelectronic Imaging and Multimedia Technology XII</b> Chairs: Jinli Suo; Zhenrong Zheng 13 - 14 October 2025   Room 305B	CONFERENCE 13727 ..... 83-85 <b>Artificial Intelligence in Photonics</b> Chairs: Liangcai Cao; Partha P. Banerjee; Lilin Yi; Bo Gu 13 - 14 October 2025   Room 301
CONFERENCE 13719 ..... 42-49 <b>Holography, Diffractive Optics, and Applications XV</b> Chairs: Changhe Zhou; Ting-Chung Poon; Liangcai Cao; Hiroshi Yoshikawa 12 - 14 October 2025   Rooms 308 (Sun-Tues) and 305D (Mon)	

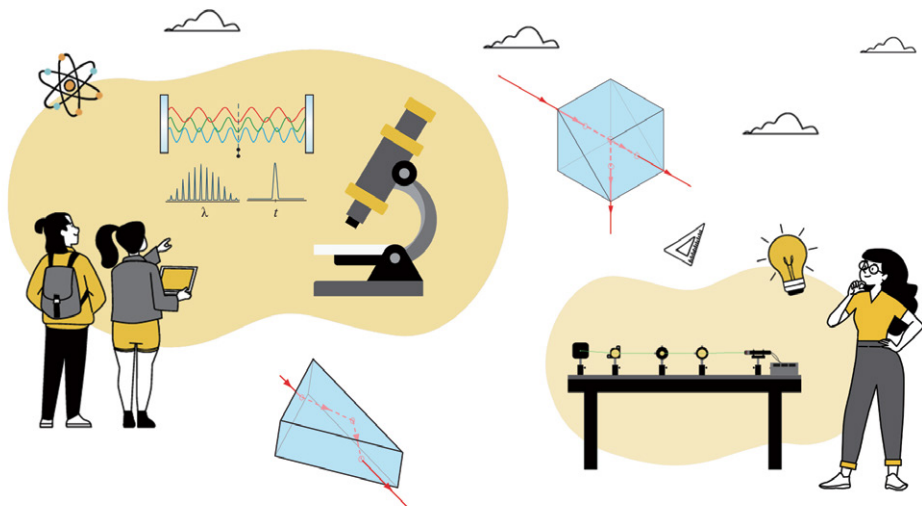
**SPIE.** DIGITAL LIBRARY

### Papers on the Digital Library

The Photonics Asia Conference proceedings papers are published in the SPIE Digital Library. All paid Conference registrations include 50 downloads for ongoing access.

# 超 34,000 种标准光学元件现货供应

## 7x24 小时在线技术支持



**立享95折**

**扫码申请**



爱特蒙特光学(深圳)有限公司

中国深圳市龙华工业东路

利金城科技工业园3栋5楼, 518109

+86 (0755) 8435 5459 Email: chinasales@edmundoptics.cn

技术支持微信



**GO Edmund**  
optics | china

欲了解更多信息, 请点击此处:  
[www.edmundoptics.cn](http://www.edmundoptics.cn)

# Conference 13711

## Advanced Lasers, High-Power Lasers, and Applications XVI

12 - 14 October 2025 | Room 302

**Conference Chairs:** **Shibin Jiang**, AdValue Photonics, Inc. (United States); **Zhaoyang Li**, Zhangjiang Lab. (China), Shanghai Institute of Optics and Fine Mechanics (China); **Ingmar Hartl**, Deutsches Elektronen-Synchrotron (Germany)

**Program Committee:** **Willy L. Bohn**, BohnLaser Consult (Germany); **Guoqing Chang**, Institute of Physics, Chinese Academy of Sciences (China); **Minglie Hu**, Tianjin Univ. (China); **Hiromitsu Kiriya**, National Institutes for Quantum Science and Technology (Japan); **Ruxin Li**, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **Chong Liu**, Zhejiang Univ. (China); **Jun Liu**, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **Deyuan Shen**, Fudan Univ. (China); **Upendra N. Singh**, NASA Langley Research Ctr. (United States); **Shigeki Tokita**, Kyoto Univ. (Japan); **Fengqiu Wang**, Nanjing Univ. (China); **Guoqiang Xie**, Shanghai Jiao Tong Univ. (China); **Jianquan Yao**, Tianjin Univ. (China); **Heping Zeng**, East China Normal Univ. (China); **Pu Zhou**, National Univ. of Defense Technology (China); **Shou-huan Zhou**, Sichuan Univ. (China); **Ping Li**, China Academy of Engineering Physics (China); **Meiping Zhu**, Shanghai Institute of Optics and Fine Mechanics, CAS (China)

### OPENING CEREMONY AND PLENARY SESSION

12 October 2025 • 08:30 - 12:00 | Convention Hall 2, Level 2

*View Full Details: [spie.org/photonics-asia-plenary](https://spie.org/photonics-asia-plenary)*

08:30 - 08:50

#### Opening Ceremony, Awards and Recognition

13715-501

#### Photonics and electronics convergence: oscillation, computing, and interconnection (Plenary Presentation)

Ming Li, Institute of Semiconductors, Chinese Academy of Sciences (China)

12 October 2025 • 08:50 - 09:30 | Convention Hall 2, Level 2

13722-502

#### When metasurfaces meet photodetectors (Plenary Presentation)

Cheng-Wei Qiu, College of Design and Engineering, National Univ. of Singapore (Singapore)

12 October 2025 • 09:30 - 10:10 | Convention Hall 2, Level 2

Tea/Coffee Break 10:10 - 10:40

13717-503

#### Super-resolution in ultra-thin lumens (Plenary Presentation)

Qing Yang, Zhejiang Univ. (China), ZJU-Hangzhou Global Scientific and Technological Innovation Ctr. (China), Shanxi Univ. (China)

12 October 2025 • 10:40 - 11:20 | Convention Hall 2, Level 2

13720-504

#### Much ado about nothing: Light fields with phase singularities for precision measurement (Plenary Presentation)

Kishan Dholakia, School of Biological Sciences, The Univ. of Adelaide (Australia), Ctr. of Light for Life, The Univ. of Adelaide (Australia)

12 October 2025 • 11:20 - 12:00 | Convention Hall 2, Level 2

Lunch Break 12:00 - 13:30

### SESSION 1: LASER TECHNOLOGY FOR LARGE FACILITY AND APPLICATION

12 October 2025 • 13:30 - 15:10 | Room 302

*Session Chair:* **Zhaoyang Li**, Zhangjiang Lab. (China)

13711-1

#### Generation of picosecond-resolution chirp-free pulse sequences via nonlinear spectral-temporal transcription (Invited Paper)

Youen Jiang, Dongning Liu, Xue Pan, Li Zhou, Xiaochao Wang, Yuxuan Deng, Xuechun Li, Jianqiang Zhu, Shanghai Institute of Optics and Fine Mechanics (China)

12 October 2025 • 13:30 - 14:00 | Room 302

13711-2

#### Spatiotemporal measurement techniques for ultrashort pulse lasers (Invited Paper)

Ping Zhu, Shanghai Institute of Optics and Fine Mechanics (China)

12 October 2025 • 14:00 - 14:30 | Room 302

13711-3

#### Modeling of compressor diffraction grating defects impact on femtosecond laser beam quality and possibility of their correction

Aleksandr Cheplakov, Shanghai Institute of Optics and Fine Mechanics (China), China-Russian Belt and Road Joint Lab. on Laser Science (China); Anton Kochetkov, Efim Khazanov, Institute of Applied Physics (Russian Federation), China-Russian Belt and Road Joint Lab. on Laser Science (China); Shijie Liu, Jianda Shao, Shanghai Institute of Optics and Fine Mechanics (China), China-Russian Belt and Road Joint Lab. on Laser Science (China)

12 October 2025 • 14:30 - 14:50 | Room 302

13711-4

#### High-power broadband ultraviolet laser technology based on stimulated rotational Raman scattering with signal light injection

Xiangbing Wang, China Academy of Engineering Physics (China)

12 October 2025 • 14:50 - 15:10 | Room 302

Tea/Coffee Break 15:10 - 15:40

# Conference 13711

## SESSION 2: ULTRAFAST LASERS AND APPLICATIONS

12 October 2025 • 15:40 - 17:20 | Room 302

*Session Chair:* **Youen Jiang**, Shanghai Institute of Optics and Fine Mechanics, CAS (China)

13711-5

### **Development of freely controllable optical frequency comb based on ultrashort pulse fiber laser for highly sensitive spectroscopy applications** (*Invited Paper*)

Norihiko Nishizawa, Shotaro Kitajima, Hideki Tomita, Nagoya Univ. (Japan); Hisashi Abe, National Institute of Advanced Industrial Science and Technology (Japan)

12 October 2025 • 15:40 - 16:10 | Room 302

13711-6

### **Passively synchronized ultrafast fiber lasers and their applications** (*Invited Paper*)

Kun Huang, East China Normal Univ. (China)

12 October 2025 • 16:10 - 16:40 | Room 302

13711-7

### **Simulation analysis of underwater transmission characteristics of high-power multispectral laser radar**

Zhichao Chen, Univ. of Chinese Academy of Sciences (China), Institute of Aerospace Information Innovation (China); Zhaoyan Liu, Shi Qiu, Huijing Zhang, Institute of Aerospace Information Innovation (China); Yuwei Chen, Hangzhou Institute for Advanced Study, UCAS (China); Weiyan Yao, Yu Zhang, Hongjia Cheng, Feihong Wang, Zhan Shu, Tong Zhang, Institute of Aerospace Information Innovation (China)

12 October 2025 • 16:40 - 17:00 | Room 302

13711-8

### **Experimental validation of the equivalent power density model**

Zhaoyan Xia, Shanghai Institute of Optics and Fine Mechanics (China); Quanzhong I. O. Zhao, Shanghai Institute of Optics and Fine Mechanics, CAS (China)

12 October 2025 • 17:00 - 17:20 | Room 302

## SESSION 3: ULTRAFAST AND ADVANCED SOLID-STATE LASERS I

13 October 2025 • 08:30 - 10:10 | Room 302

*Session Chair:* **Jiaqi Zhou**, Shanghai Institute of Optics and Fine Mechanics, CAS (China)

13711-9

### **Femtosecond Ho-doped solid-state mode-locked lasers and prospects** (*Invited Paper*)

Weichao Yao, Shanghai Institute of Optics and Fine Mechanics (China)

13 October 2025 • 08:30 - 09:00 | Room 302

13711-10

### **Ultra-large-mode-area Tm-doped anti-resonant tapered fiber design for high power 2.3 $\mu\text{m}$ laser** (*Invited Paper*)

Tianzhi Wu, Hongru Zhao, Tianjin Univ. (China), Key Lab. of Opto-electronics Information Technology (China); Shijie Fu, School of Precision Instrument and Opto-electronics Engineering, Tianjin University (China), Key Laboratory of Opto-electronics Information Technology (Ministry of Education), Tianjin University (China); Quan Sheng, Wei Shi, Jianquan Yao, Tianjin Univ. (China), Key Lab. of Opto-electronics Information Technology (China)

13 October 2025 • 09:00 - 09:30 | Room 302

13711-11

### **High-power high-energy 2- $\mu\text{m}$ lasers based on singly Ho-doped MOPA systems**

Enhao Li, Panqiang Kang, Shanghai Institute of Optics and Fine Mechanics (China); Yuchun Liu, ShanghaiTech Univ. (China); Weichao Yao, Yujie Peng, Yuxin Leng, Shanghai Institute of Optics and Fine Mechanics (China)

13 October 2025 • 09:30 - 09:50 | Room 302

13711-12

### **Generation of burst-mode pulse in thulium-doped fiber laser based on MoS<sub>2</sub> passive Q-switching and pump modulation technology**

Cheng Zhou, Xin-yue HE, Univ of Jinan (China)

13 October 2025 • 09:50 - 10:10 | Room 302

Tea/Coffee Break 10:10 - 10:40

## SESSION 4: ULTRAFAST AND ADVANCED SOLID-STATE LASERS II

13 October 2025 • 10:40 - 12:10 | Room 302

*Session Chair:* **Weichao Yao**, Shanghai Institute of Optics and Fine Mechanics (China)

13711-13

### **High-power all-solid-state femtosecond laser technology and cutting-edge applications** (*Invited Paper*)

Wenlong Tian, Xidian Univ. (China)

13 October 2025 • 10:40 - 11:10 | Room 302

13711-16

### **Three-wavelength-switched high-energy picosecond laser by employing hybrid amplification and frequency conversion with KDP/DKDP crystals**

Qian Tang, Junjie Yuan, Yuting Ouyang, Houwen Yang, Wenyong Cheng, Shandong Univ. (China)

13 October 2025 • 11:10 - 11:30 | Room 302

13711-14

### **Reducing ASE in thin-disk lasers through optimization of the active element-heatsink interface**

Dmitry Kuzin, Institute of Applied Physics (Russian Federation); Ivan Kuznetsov, Institute of Applied Physics of the RAS (Russian Federation); Aleksander Mitrofanov, Evgeny Perevezentsev, Aleksey V. Starobor, Oleg Palashov, Institute of Applied Physics (Russian Federation)

13 October 2025 • 11:30 - 11:50 | Room 302

13711-15

### **Implementation of the multi-element thin disc Yb:YAG amplifier based on the unique telescopic multi-pass scheme**

Anton Gorokhov, IAP RAS (Russian Federation); Evgeny Perevezentsev, Ivan Mukhin, Institute of Applied Physics (Russian Federation)

13 October 2025 • 11:50 - 12:10 | Room 302

Lunch Break 12:10 - 13:30

## POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 - 13:00**

View poster presentation guidelines and set-up instructions at <http://spie.org/PA/poster-presentation-guidelines>

13711-27

### Beam cleaning effect in multimode fiber tapered amplifier with CW single-frequency seed

Sergey A. Babin, Alexey G. Kuznetsov, Mikhail I. Skvortsov, Alexandr A. Vlasov, Mikhail D. Gervaziev, Alexander A. Revyakin, Denis S. Kharenko, Institute of Automation and Electrometry of the SB RAS (Russian Federation); Stefan Wabnitz, Sapienza Univ. di Roma (Italy)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13711-37

### Pulse energy scaling enabled by an enhanced grating compressor

Chenran Sha, Shanghai Institute of Applied Physics (China), Zhangjiang Lab. (China), Univ. of Chinese Academy of Sciences (China); Zhi Zhao, Zhangjiang Lab. (China); Chunlei Li, Shanghai Advanced Research Institute (China); Fanglin Chen, Luming Zhao, Huazhong Univ. of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13711-38

### A rapid pulse shaping method for large-scale laser facilities

Yangfan Li, China Academy of Engineering Physics (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13711-39

### A 0.42 mJ linearly polarized pulsed single-frequency fiber amplifier at 1550 nm based on pre-shaped seed pulse

Jin Yan, Peiheng Jiang, Chaodu Shi, Shijie Fu, Quan Sheng, Wei Shi, Jianquan Yao, Tianjin Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13711-40

### Experimental study on high-power laser scanning irradiation of granite

Bai Yang, Graduate School of China Academy of Engineering Physics (China); Kang Minqiang, Laser Fusion Research Center, China Academy of Engineering Physics (China); Li Ping, Qihua Zhu, China Academy of Engineering Physics (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13711-41

### Nonlinear refractive index-based temporal overlap detection for supercontinuum pump-probe spectroscopy

Pingping Wen, ShanghaiTech Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13711-42

### Wavefront precompensation technology of high-energy lasers

Gang Wang, The 11th Research Institute of China Electronics Technology Group Corp. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13711-43

### Ultrashort petawatt laser single-shot measurement: from one point to 2D cross section

Xiong Shen, Zhangjiang Lab. (China); Yilin Xu, Shanghai Institute of Optics and Fine Mechanics (China); Jun Liu, Zhangjiang Lab. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13711-44

### Increasing-bandwidth of thick crystal SHG-FROG via spectral correction and trace truncation

Zezhao Gong, Fucai Ding, Ping Zhu, Xiuyu Yao, Lijie Cui, Miaoyan Tong, Hailun Zeng, Xuejie Zhang, Dongjun Zhang, Xiao Liang, Meizhi Sun, Ailin Guo, Qingwei Yang, Jun Kang, Haidong Zhu, Qi Gao, Xinglong Xie, Jianqiang Zhu, Shanghai Institute of Optics and Fine Mechanics (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13711-45

### Laser damage of A-type sandwich antenna cover material

Menglong Li, Zewen Li, Tu Xu, Nanjing Univ. of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13711-46

### Evaluation of the output properties of an end-pumped mixed K-Rb-Cs vapor laser

Shunyan Wang, Southwest Institute of Technical Physics (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

## SESSION 5: ULTRAFAST AND ADVANCED SOLID-STATE LASERS III

13 October 2025 • 14:30 - 16:10 | Room 302

*Session Chair: Wenlong Tian*, Xidian Univ. (China)

13711-17

### High-performance ultrafast Raman fiber laser based on nonlinear optical gain modulation (*Invited Paper*)

Jiaqi Zhou, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China)

13 October 2025 • 14:30 - 15:00 | Room 302

13711-18

### Dynamic saturable absorber-enabled high-performance fiber laser (*Invited Paper*)

Wenshu Liu, Fanxi Sun, Zongxiao Fan, Zehao Wu, Yunqi Chen, Chen Wei, Yong Liu, Univ. of Electronic Science and Technology of China (China)

13 October 2025 • 15:00 - 15:30 | Room 302

13711-19

### Wavelength-tunable pulsed laser generation based on metafiber

Chenxi Zhang, Chenlu Zhao, Bo Fu, Beihang Univ. (China)

13 October 2025 • 15:30 - 15:50 | Room 302

13711-20

### Dynamic process simulation and experimental investigation of 1st- and 2nd-Stokes dual-wavelength cascaded Raman laser

Peng Lei, Tianjin University (China); Xin Ding, Yuntao Bai, Guoxin Jiang, Liang Wu, Guizhong Zhang, Jianquan Yao, Tianjin Univ. (China)

13 October 2025 • 15:50 - 16:10 | Room 302

**Tea/Coffee Break 16:10 - 16:30**

# Conference 13711

## SESSION 6: ULTRAFAST AND ADVANCED SOLID-STATE LASERS IV

13 October 2025 • 16:30 - 18:00 | Room 302

*Session Chair:* **Chen Wei**, Univ. of Electronic Science and Technology of China (China)

13711-21

### Long-wave mid-infrared ultrashort laser pulse generation based on two-color fiber CPA: experiment, modeling and extended study (*Invited Paper*)

Xinyang Su, Zhaoyang Tian, Beijing Jiaotong Univ. (China)

13 October 2025 • 16:30 - 17:00 | Room 302

13711-22

### Narrow-band lasing in a random distributed feedback fiber laser with embedded SNAP microresonator

Dmitry V. Kudashkin, Oleg Gorbunov, Ilya D. Vatik, Dmitry V. Churkin, Novosibirsk State Univ. (Russian Federation)

13 October 2025 • 17:00 - 17:20 | Room 302

13711-23

### Simplified super-resolution spectroscopy with random Raman fiber laser

Ilya D. Vatik, Danil V. Nadein, Dmitry V. Churkin, Novosibirsk State Univ. (Russian Federation)

13 October 2025 • 17:20 - 17:40 | Room 302

13711-24

### Real-time observation of pulse transformations in an all-PM spectrum-tailored NALM fiber laser

Handing Xia, Han Zhang, China Academy of Engineering Physics (China)

13 October 2025 • 17:40 - 18:00 | Room 302

## SESSION 7: ULTRAFAST AND ADVANCED SOLID-STATE LASERS V

14 October 2025 • 09:10 - 10:20 | Room 302

*Session Chair:* **Zhaoyang Li**, Zhangjiang Lab. (China)

13711-25

### High-repetition-rate 2.4 W picosecond 213-nm deep ultraviolet light generation at 81 MHz (*Invited Paper*)

Yan Wan, Wenbin Chen, Xuechen Gao, Yang Lu, Jintao Fan, Minglie Hu, Tianjin Univ. (China)

14 October 2025 • 09:10 - 09:40 | Room 302

13711-26

### Pre-chirp and gain jointly managed nonlinear amplification

Yang Yu, Han Liu, Wenlong Tian, Jiangfeng Zhu, Yutong Zhang, Xidian Univ. (China)

14 October 2025 • 09:40 - 10:00 | Room 302

13711-28

### All-fiber narrow line 1.6 mJ/9 ns high-power MOPA system with spun Yb-doped tapered fiber

Valery Filippov, Ebrahim V. Aghayari, Ampliconix Oy (Finland); Hossein V. Fathi, Tampere Univ. (Finland), Ampliconix Oy (Finland); Evgenii Motorin, Andrey Chumachenko, Ampliconix Oy (Finland); Andrejs Griscenko, CeramOptec SIA (Latvia); Regina V. Gumenyuk, Tampere Univ. (Finland), Ampliconix Oy (Finland); Uttam V. Samanta, Tampere Univ. (Finland); Yiran Liu, Tianhua Wang, Zhejiang CeramOptec Co., Ltd. (China)

14 October 2025 • 10:00 - 10:20 | Room 302

Tea/Coffee Break 10:20 - 10:50

## SESSION 8: SPATIOTEMPORAL CONTROL OF POWER LASERS

14 October 2025 • 10:50 - 11:50 | Room 302

*Session Chair:* **Wenyun Du**, Shanghai Institute of Optics and Fine Mechanics, CAS (China)

13711-29

### Over-600th-order HG mode laser and LG vortex beam based on off-axis pumping (*Invited Paper*)

Dechen Zhan, Quan Sheng, Tianjin Univ. (China); Jingni Geng, Tianjin Univ. (China), Chiba Univ. (Japan); Tianchang Liu, Shijie Fu, Wei Shi, Jianquan Yao, Tianjin Univ. (China)

14 October 2025 • 10:50 - 11:20 | Room 302

13711-30

### Pulse velocity control for intense lasers (*Invited Paper*)

Zhaoyang Li, Zhangjiang Lab. (China)

14 October 2025 • 11:20 - 11:50 | Room 302

Lunch 11:50 - 13:20

## SESSION 9: LASER ELEMENTS AND MATERIALS

14 October 2025 • 13:20 - 14:50 | Room 302

*Session Chair:* **Dechen Zhan**, Tianjin Univ. (China)

13711-31

### Modulation of laser-induced damage resistance in Al<sub>2</sub>O<sub>3</sub>-based composite thin films (*Invited Paper*)

Wenyun Du, Tianbao Liu, Jun Shi, Jiahui Wen, Tingting Zeng, Meiping Zhu, Jianda Shao, Shanghai Institute of Optics and Fine Mechanics (China)

14 October 2025 • 13:20 - 13:50 | Room 302

13711-33

### In-situ detection of laser-induced damage onset by photoacoustic spectroscopy

Ryoichi Akiyoshi, Katsuhiro Mikami, Kindai Univ. (Japan)

14 October 2025 • 13:50 - 14:10 | Room 302

13711-35

### Atmospheric turbulence-resilient LIDT prediction for infrared detectors

Huilin Fu, Yushan Hou, Univ. of Electronic Science and Technology of China (China)

14 October 2025 • 14:10 - 14:30 | Room 302

13711-34

### Terbium oxide single crystal as a media for high-power Faraday isolators

Aleksey V. Starobor, Dmitry Kuzin, Oleg Palashov, Institute of Applied Physics (Russian Federation); Ruslan Nikolaev, Vyacheslav Trifonov, Nikolay Naumov, Institute of Inorganic Chemistry A. V. Nikolaev SB (Russian Federation)

14 October 2025 • 14:30 - 14:50 | Room 302

# Conference 13712

## Semiconductor Lasers and Applications XV

13 - 14 October 2025 | Room 305D

**Conference Chairs:** **Wei Li**, Institute of Semiconductors, Chinese Academy of Sciences (China); **Sha Zhu**, Nankai Univ. (China); **Werner H. Hofmann**, Deutsches Patent- und Markenamt (Germany); **Ting Wang**, Institute of Physics, Chinese Academy of Sciences (China)

**Program Committee:** **Minghua Chen**, Tsinghua Univ. (China); **Xiangfei Chen**, Nanjing Univ. (China); **Nan Chi**, Fudan Univ. (China); **Ming Li**, Institute of Semiconductors, Chinese Academy of Sciences (China); **Yong Liu**, Univ. of Electronic Science and Technology of China (China); **Edwin Y. Pun**, City Univ. of Hong Kong (Hong Kong, China); **Yikai Su**, Shanghai Jiao Tong Univ. (China); **Guang-Qiong Xia**, Southwest Univ. (China); **Yujun Xie**, Institute of Semiconductors, Chinese Academy of Sciences (China); **Kun Xu**, Beijing Univ. of Posts and Telecommunications (China); **Baoping Zhang**, Xiamen Univ. (China); **Shangjian Zhang**, Univ. of Electronic Science and Technology of China (China); **Xinliang Zhang**, Wuhan National Research Ctr. for Optoelectronics (China); **Zhiping Zhou**, Aijie Optoelectronic Technology (China); **Ning Hua Zhu**, Institute of Semiconductors, Chinese Academy of Sciences (China); **Xihua Zou**, Southwest Jiaotong Univ. (China)

### POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 - 13:00**

View poster presentation guidelines and set-up instructions at <http://spie.org/PA/poster-presentation-guidelines>

13712-1

#### **Supersymmetry engineering and theoretical analysis in VCSELS**

Yu Cao, Yinli Zhou, Jianwei Zhang, Changchun Institute of Optics, Fine Mechanics and Physics (China); Yingli Zhou, Shandong Institute of Commerce and Technology (China); Xing Zhang, Ace Photonics (China); Chao Chen, Zhuo Zhang, Tianjiao Liu, Jingfei Mu, Gaohui Yuan, Xiaoyan Gao, Changchun Institute of Optics, Fine Mechanics and Physics (China); Tianqi Zhang, Changchun Institute of Optics, Fine Mechanics and Physics, CAS (China); Yongqiang Ning, Lijun Wang, Changchun Institute of Optics, Fine Mechanics and Physics (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13712-20

#### **Identification of exceptional points in electrically pumped tandem nanolasers**

Guojie Zhou, Xidian Univ. (China); Yuanlong Fan, Hangzhou Institute of Technology, Xidian University (China); K. Alan Shore, Bangor Univ. (United Kingdom)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13712-22

#### **A micro-ring modulator supporting 112Gbps data rate**

Jie Peng, State Key Laboratory of Optoelectronic Materials and Technologies, Institute of Semiconductors, Chinese Academy of Sciences; University of Chinese Academy of Sciences (China); Shuaihang Guo, State Key Lab. of Optoelectronic Materials and Technologies (China), Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China); Yujun Xie, Wei Li, Ming Li, State Key Lab. of Optoelectronic Materials and Technologies (China), Institute of Semiconductors (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13712-23

#### **Photonic-based generation and antidispersion transmission of dual-band arbitrarily phase-coded microwave signals**

Yumo Lei, Nan Zhang, Ming Li, Wei Li, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13712-24

#### **Simulation and experiment on surface Bragg gratings for high-performance taper diode laser**

Zubin Qin, Guilin Univ. of Electronic Technology (China); Yi Li, Weichuan Du, Haomiao Wang, Zhiyu Zhou, Yuwen He, Institute of Applied Electronics (China); Tangyou Sun, Guilin Univ. of Electronic Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13712-25

#### **Hydrogen sulfide monitoring system based on tunable diode laser absorption spectroscopy**

Gleb A. Petrov, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation); Galina E. Romanova, Guanqiao Su, ITMO Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13712-26

#### **End-to-end learning-based geometric constellation shaping of 16-QAM optical fiber communication systems in the regime of high nonlinearity**

Fengliang Chi, CHN Energy Heilongjiang New Energy Co., Ltd (China); Chaoxiang Chen, Tianjin University (China); Yongwei Ji, CHN Energy Heilongjiang New Energy Co., Ltd. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13712-27

#### **Defect characterization and failure mechanism of high-power blue semiconductor laser chips**

WenYuan Liao, China Electronic Product Reliability and Environmental Testing Research Institute (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13712-28

#### **Mode optimization of 1550nm VCSEL based on mesa-dielectric film synergistic control**

Xiaoyan Gao, Changchun Institute of Optics, Fine Mechanics and Physics (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

# Conference 13712

## SESSION 1: INTEGRATED OPTOELECTRONIC DEVICES

14 October 2025 • 08:30 - 10:00 | Room 305D

Session Chair: **Wenchan Dong**, Huazhong Univ. of Science and Technology (China)

13712-2

**Nonlinear optical effects in reversed-polarized double-layer thin film lithium niobate microresonators** (*Invited Paper*)

Xiao Wu, Fang Bo, Sha Zhu, Nankai Univ. (China)

14 October 2025 • 08:30 - 08:55 | Room 305D

13712-3

**Virtual state model of electro-optic ring modulators** (*Invited Paper*)

Zhengyi Wan, Beijing Univ. of Posts and Telecommunications (China)

14 October 2025 • 08:55 - 09:20 | Room 305D

13712-4

**Directly modulated laser for optically generated microwave signal** (*Invited Paper*)

Yali Zhang, Zhengjie Cheng, Chengzhen Meng, Juncheng Li, Tingchuan Gao, Shangjian Zhang, Yong Liu, Univ. of Electronic Science and Technology of China (China)

14 October 2025 • 09:20 - 09:40 | Room 305D

13712-5

**Stability enhancement of quantum-dot comb lasers**

Ning Liang, Bo Yang, Institute of Physics (China), Univ. of Chinese Academy of Science (China); Jiajian Chen, Institute of Physics (China), Songshan Lake Materials Lab. (China); Xiangru Cui, Jiale Qin, Institute of Physics (China), Univ. of Chinese Academy of Science (China); Zihao Wang, Jianjun Zhang, Ting Wang, Institute of Physics (China), Univ. of Chinese Academy of Science (China), Songshan Lake Materials Lab. (China)

14 October 2025 • 09:40 - 10:00 | Room 305D

Tea/Coffee Break 10:00 - 10:30

## SESSION 2: APPLICATIONS OF LASER DIODES

14 October 2025 • 10:30 - 12:05 | Room 305D

Session Chair: **Jiajing He**, Shanghai Institute of Optics and Fine Mechanics, CAS (China)

13712-6

**Real-time interoperability demonstration of 400Gb/s QSFP-DD and QSFP112 transceivers over 10km fiber** (*Invited Paper*)

Hao Liu, Xia Sheng, Research Institute of China Telecom Co., Ltd. (China); Kai Lv, Anxu Zhang, Yuyang Liu, Lipeng Feng, Xishuo Wang, Yadong Gong, Xiaoli Huo, China Telecom Corp. Ltd. (China)

14 October 2025 • 10:30 - 10:55 | Room 305D

13712-7

**Research on portable targeted healing laser treatment device for oral ulcers** (*Invited Paper*)

Shuwang Chen, Tong Sun, Hebei Univ. of Science and Technology (China); Xiaoxuan Zhang, Hebei Univ. of Technology (China); Peilun Liu, Hebei Univ. of Science and Technology (China)

14 October 2025 • 10:55 - 11:20 | Room 305D

13712-8

**High-efficiency and stable tuning methods for modulated grating Y-branch lasers** (*Invited Paper*)

Yi Huang, Linhao Liu, Chengyong Hu, Chuanlu Deng, Qi Zhang, Xiaobei Zhang, Tingyun Wang, Shanghai Univ. (China)

14 October 2025 • 11:20 - 11:45 | Room 305D

13712-9

**Four-wave mixing in a Fabry-Perot laser diode induced by reflection from a SNAP microresonator**

Dmitry V. Kudashkin, Ilya Vatnik, Novosibirsk State Univ. (Russian Federation)

14 October 2025 • 11:45 - 12:05 | Room 305D

Lunch Break 12:05 - 13:30

## SESSION 3: MICROWAVE PHOTONICS LINK

14 October 2025 • 13:30 - 15:30 | Room 305D

Session Chair: **Junjia Wang**, Southeast Univ. (China)

13712-10

**Manipulations of structured radio-frequency waves based on microwave photonics** (*Invited Paper*)

Xiyao Song, Peking Univ. (China)

14 October 2025 • 13:30 - 13:55 | Room 305D

13712-11

**Optoelectronic collaboration enabled optical transmission system: from data center to long-haul scenarios** (*Invited Paper*)

Yuyang Liu, China Telecom Corp. Ltd. (China)

14 October 2025 • 13:55 - 14:20 | Room 305D

13712-12

**Advanced techniques for high-precision SAR geolocation and cross-modal image registration** (*Invited Paper*)

Xuecong Liu, Northeastern Univ. (China)

14 October 2025 • 14:20 - 14:45 | Room 305D

13712-13

**Distributed MIMO integrated sensing and communication system based on tunable notch chaotic OEO** (*Invited Paper*)

Yunxin Wang, Beijing Univ. of Technology (China)

14 October 2025 • 14:45 - 15:10 | Room 305D

13712-14

**Monolithic quantum-dot distributed feedback laser with laterally coupled grating by directly grown on silicon**

Bo Yang, Dong Han, Institute of Physics (China); Wenqi Wei, Songshan Lake Materials Lab. (China); Xiangru Cui, Zihao Wang, Ting Wang, Jianjun Zhang, Institute of Physics (China)

14 October 2025 • 15:10 - 15:30 | Room 305D

Tea/Coffee Break 15:30 - 15:50

## SESSION 4: PHOTONIC INTEGRATED CIRCUITS

14 October 2025 • 15:50 - 17:30 | Room 305D

Session Chair: **Yuyang Liu**, China Telecom Corp. Ltd. (China)

13712-15

**Thin-film lithium niobate based nonlinear optical chips** (*Invited Paper*)

Xiaohui Tian, The Hong Kong Polytechnic Univ. (China), Nanjing Univ. (China); Chenyu Wang, Mengwen Chen, Zexing Zhao, Kunpeng Jia, Zhenda Xie, Nanjing Univ. (China); Hong Cai, Aiqun Liu, The Hong Kong Polytechnic Univ. (China); Shi-Ning Zhu, Nanjing Univ. (China)

14 October 2025 • 15:50 - 16:15 | Room 305D

13712-16

**Heterogeneous integrated optical modulators on SOI**  
*(Invited Paper)*

Junjia Wang, Southeast Univ. (China)

14 October 2025 • 16:15 - 16:40 | Room 305D

13712-17

**Programmable optical computing chips and systems**  
*(Invited Paper)*

Wenchan Dong, Huazhong Univ. of Science and Technology (China)

14 October 2025 • 16:40 - 17:05 | Room 305D

13712-18

**Room-temperature silicon-based light source** *(Invited Paper)*

Jiajing He, Shanghai Institute of Optics and Fine Mechanics (China)

14 October 2025 • 17:05 - 17:30 | Room 305D

# Conference 13713

## Advanced Laser Processing and Manufacturing IX

12 - 13 October 2025 | Room 305B

**Conference Chairs:** **Minghui Hong**, Xiamen Univ. (China); **Ting Huang**, Beijing Univ. of Technology (China); **Yuji Sano**, Institute for Molecular Science, National Institutes of Natural Sciences (Japan), SANKEN, Osaka Univ. (Japan); **Jianhua Yao**, Zhejiang Univ. of Technology (China)

**Conference Co-Chair:** **Min Zheng**, Beijing Univ. of Technology (China)

**Program Committee:** **Liang Guo**, Southern Univ. of Science and Technology (China); **Anming Hu**, The Univ. of Tennessee Knoxville (United States); **Yongxiang Hu**, Shanghai Jiao Tong Univ. (China); **Sungho Jeong**, Gwangju Institute of Science and Technology (Republic of Korea); **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); **Rongshi Xiao**, Beijing Univ. of Technology (China); **Haibin Zhang**, MKS Instruments, Inc. (United States); **Wenwu Zhang**, Ningbo Institute of Materials Technology and Engineering (China); **Jianzhong Zhou**, Jiangsu Univ. (China)

### OPENING CEREMONY AND PLENARY SESSION

12 October 2025 • 08:30 - 12:00 | Convention Hall 2, Level 2

*View Full Details:* [spie.org/photonics-asia-plenary](https://spie.org/photonics-asia-plenary)

08:30 - 08:50

#### Opening Ceremony, Awards and Recognition

13715-501

#### Photonics and electronics convergence: oscillation, computing, and interconnection *(Plenary Presentation)*

Ming Li, Institute of Semiconductors, Chinese Academy of Sciences (China)

12 October 2025 • 08:50 - 09:30 | Convention Hall 2, Level 2

13722-502

#### When metasurfaces meet photodetectors *(Plenary Presentation)*

Cheng-Wei Qiu, College of Design and Engineering, National Univ. of Singapore (Singapore)

12 October 2025 • 09:30 - 10:10 | Convention Hall 2, Level 2

Tea/Coffee Break 10:10 - 10:40

13717-503

#### Super-resolution in ultra-thin lumens *(Plenary Presentation)*

Qing Yang, Zhejiang Univ. (China), ZJU-Hangzhou Global Scientific and Technological Innovation Ctr. (China), Shanxi Univ. (China)

12 October 2025 • 10:40 - 11:20 | Convention Hall 2, Level 2

13720-504

#### Much ado about nothing: Light fields with phase singularities for precision measurement *(Plenary Presentation)*

Kishan Dholakia, School of Biological Sciences, The Univ. of Adelaide (Australia), Ctr. of Light for Life, The Univ. of Adelaide (Australia)

12 October 2025 • 11:20 - 12:00 | Convention Hall 2, Level 2

Lunch Break 12:00 - 13:30

### SESSION 1: LASER PROCESSING AND MANUFACTURING

12 October 2025 • 13:30 - 15:10 | Room 305B

**Session Chairs:** **Minghui Hong**, Xiamen Univ. (China), **Ting Huang**, Beijing Univ. of Technology (China)

13713-1

#### A new keyhole-based wire laser direct-energy deposition method: process, microstructure, and mechanical properties

Demin Zou, Ting Huang, Min Zheng, Rongshi Xiao, Beijing Univ. of Technology (China)

12 October 2025 • 13:30 - 13:50 | Room 305B

13713-2

#### Laser welding of aluminum alloys assisted by a constant magnetic field

Yao Ou, Quan Tang, Qingchuan Guo, Lunzhen Hu, Yuqiang Hou, Le Sun, Yonghao Du, Bingjie Yang, Chao Xu, Qiuyu Li, Wenchen Liao, Anhui Univ. (China)

12 October 2025 • 13:50 - 14:10 | Room 305B

13713-3

#### Study on the micro-mechanism of fracture failure of 7075 aluminum alloy under external loads and laser irradiation

Niu Yubo, Zewen Li, Nanjing Univ. of Science and Technology (China)

12 October 2025 • 14:10 - 14:30 | Room 305B

13713-4

#### Research on the influence of ultrafast laser shock peening on the microstructure and mechanical properties of TB6 titanium alloy

Wenchen Liao, Lunzhen Hu, Anhui Univ. (China); Yi Li, Hao Zhang, Northwestern Polytechnical Univ. (China); Qingchuan Guo, Liang Lu, Yuqiang Hou, Quan Tang, Bingjie Yang, Le Sun, Yao Ou, Yonghao Du, Chao Xu, Qiuyu Li, Anhui Univ. (China)

12 October 2025 • 14:30 - 14:50 | Room 305B

13713-5

#### High-precision micron-scale adjustable laser repair with uniform spot for micro-LED displays

Qiuyu Li, Lunzhen Hu, Liang Lu, Qingchuan Guo, Quan Tang, Yuqiang Hou, Bingjie Yang, Yonghao Du, Le Sun, Yao Ou, Wenchen Liao, Chao Xu, Anhui Univ. (China)

12 October 2025 • 14:50 - 15:10 | Room 305B

Tea/Coffee Break 15:10 - 15:40

## SESSION 2: LASER PROCESS OPTIMIZATION

12 October 2025 • 15:40 - 17:20 | Room 305B

*Session Chairs:* **Jianhua Yao**, Zhejiang Univ. of Technology (China),  
**Yuji Sano**, Institute for Molecular Science (Japan)

13713-7

### Improving pulse distribution in redundant-axis laser systems through feed-forward pulse frequency setpoint adjustment

Daniel Kurth, Colin Reiff, David Hecht, Alexander Verl, Univ. Stuttgart (Germany)

12 October 2025 • 15:40 - 16:00 | Room 305B

13713-8

### A multi-level collaborative laser high-efficiency machining method for large-scale hole arrays on FPC

Tian Zhang, Shanghai Jiao Tong Univ. (China); Yu Huang, Huazhong Univ. of Science and Technology (China); Honghao Zhang, Xinquan Zhang, Shanghai Jiao Tong Univ. (China)

12 October 2025 • 16:00 - 16:20 | Room 305B

13713-9

### Mild fabrication of polymeric porous/nonporous micro-composite structures via enhancing the photothermal effects of ultrafast laser

Pei Xiang, South China Univ. of Technology (China)

12 October 2025 • 16:20 - 16:40 | Room 305B

13713-11

### Preparation of large-area laser roughening structure on magnesium fluoride ceramics: enhancing adhesion at heterogeneous interfaces

Li Chenyong, Wenjun Wang, Aifei Pan, Xi'an Jiaotong Univ. (China)

12 October 2025 • 16:40 - 17:00 | Room 305B

13713-12

### The measurement and application of laser-induced graphene nanostructures

Zhiyao Wang, Jie Zhou, Xinru Zhang, Chenyu Yu, Bolin Huang, Zelin He, Yingyu Feng, Xinyi Wu, Qingyang Zheng, Hongkang Zhang, Yandong Gong, Beijing Information Science and Technology Univ. (China)

12 October 2025 • 17:00 - 17:20 | Room 305B

## SESSION 3: LASER PROCESSING FOR MATERIALS AND DEVICES

13 October 2025 • 09:00 - 12:00 | Room 305B

*Session Chairs:* **Ting Huang**, Beijing Univ. of Technology (China),  
**Yuji Sano**, Institute for Molecular Science (Japan)

13713-13

### Si carrier wafer reuse for advanced packaging using laser lift-off (LLO) and thermal damage characterization (*Invited Paper*)

Jungrae Park, Joshua Peck, TEL Technology Ctr., America, LLC (United States); Joshua Hooge, Tokyo Electron America, Inc. (United States); Tushar Meshram, Bin Ding, Ilseok Son, Angelique Raley, TEL Technology Ctr., America, LLC (United States); Yoshihiro Kondo, Tokyo Electron Kyushu Ltd. (Japan); Sitaram Arkalgud, TEL Technology Ctr., America, LLC (United States)

13 October 2025 • 09:00 - 09:30 | Room 305B

13713-14

### Femtosecond laser processing of controllable size microcavities in quartz fiber cyanate resin composites

Jie Wang, Xi'an Jiaotong Univ. (China)

13 October 2025 • 09:30 - 09:50 | Room 305B

13713-15

### Femtosecond laser burst mode processing for modified layer fabrication in 4H-SiC wafers

Chunwei Wang, Wenjun Wang, Xuesong Mei, Xi'an Jiaotong Univ. (China)

13 October 2025 • 09:50 - 10:10 | Room 305B

Tea/Coffee Break 10:10 - 10:40

13713-34

### Used for etching grooves on sapphire single wafers direct metal film-confined plasma ablation (DMF-CPA) method

Sun Xiao, Wen Zhang, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 10:40 - 11:00 | Room 305B

13713-16

### Magnetic-lens-assisted pulsed laser deposition for micro-fabrication

Juqing Li, Jincheng Lei, South China Univ. of Technology (China)

13 October 2025 • 11:00 - 11:20 | Room 305B

13713-17

### Directional bouncing of droplets on femtosecond-laser-processed stepped micropillar arrays for self-cleaning and anti-icing

Meng Zhou, Wenjun Wang, Aifei Pan, Xi'an Jiaotong Univ. (China)

13 October 2025 • 11:20 - 11:40 | Room 305B

13713-19

### Femtosecond laser inscription of low-loss mid-IR waveguides in Suprasil 3001

Wajahat Hussain, Thuy Ha, Macquarie Univ. (Australia); Gayathri Bharathan, Macquarie Univ. (Australia), Indian Institute of Technology Delhi (India); Alex Fuerbach, Macquarie Univ. (Australia)

13 October 2025 • 11:40 - 12:00 | Room 305B

Lunch Break 12:00 - 13:30

## POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 - 13:00**

View poster presentation guidelines and set-up instructions at <http://spie.org/PA/poster-presentation-guidelines>

13713-18

### Femtosecond laser radiation patterning of GST thin-film based on structured light

Vladislav Fedyaj, Alexander Revyakin, Institute of Automation and Electrometry SB RAS (Russian Federation), Novosibirsk State Univ. (Russian Federation); Vadim Terentyev, Victor Simonov, Andrey Simanchuk, Mikhail Gervaziev, Denis Kharenko, Institute of Automation and Electrometry SB RAS (Russian Federation); Alexey Kokhanovskiy, ITMO Univ. (Russian Federation); Alexey Zhizhchenko, Institute for Automation and Control Processes (Russian Federation); Konstantin Okotrub, Institute of Automation and Electrometry SB RAS (Russian Federation); Alexey Yakubov, Petr Lazarenko, National Research Univ. of Electronic Technology (Russian Federation); Aleksandr Kuchmizhak, Institute of Automation and Control Processes (Russian Federation), Far Eastern Federal Univ. (Russian Federation); Alexander Dostovalov, Institute of Automation and Electrometry SB RAS (Russian Federation), Novosibirsk State Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

# Conference 13713

13713-20

## **The mechanisms and patterns of plasma generation during femtosecond laser processing of diamond**

Hongying Wang, Yi Li, Yazhi Niu, Wenxuan Dou, Mingxia Liu, Han Liu, Xi'an Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13713-21

## **Microstructure and tribological performance of a laser clad steel**

Haonan Zhang, Linyue Wang, Xiayu Leng, Shunli He, Jianli Song, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13713-22

## **Double-pulse laser peening using near infrared laser**

Akio Geshiro, Sota Kakinuma, Tomohiro Shimotsuma, Manabu Heya, Hitoshi Nakano, Kindai Univ. (Japan)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13713-23

## **Fabrication of X-ray optical components based on two-photon 3D printing**

Boyong Wang, ShanghaiTech Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13713-24

## **Feed rate-dependent laser power control**

David Hecht, ISW, University of Stuttgart (Germany); Lukas Keppler, Univ. of Stuttgart (Germany); Daniel Kurth, Colin Reiff, Alexander Verl, ISW, University of Stuttgart (Germany)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13713-25

## **Short-pulse CO<sub>2</sub> laser processing for crack removal with initial cracks**

Yuhao Cai, Hangzhou Dianzi Univ. (China); Kazuyuki Uno, Univ. of Yamanashi (Japan); Changlun Hou, Hangzhou Dianzi Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13713-26

## **Crack-free processing of two different thin glasses by short-pulse CO<sub>2</sub> laser with and without pulse tail**

Kazuyuki Uno, Univ. of Yamanashi (Japan)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13713-27

## **Laser cladding of 316L/WC gradient coatings: crack behavior and stress control**

Linyue Wang, Xiayu Leng, Haonan Zhang, Shunli He, Jianli Song, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13713-28

## **Mitigation of surface thermal stress in laser peening by varying intensity distribution of the laser beam**

Yang Zhang, Manabu Heya, Hitoshi Nakano, Kindai Univ. (Japan)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13713-29

## **Acoustic signal analysis for evaluating effect of laser peening**

Jingyao Shangguan, Akio Geshiro, Hitoshi Nakano, Kindai Univ. (Japan)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13713-30

## **Study on the mechanism of femtosecond laser ablation of gold thin films based on TTM-MD coupling theory**

Xinyi Zhu, ITMO Univ (Russian Federation); Eduard Ageev, Dmitry Zuev, ITMO Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13713-31

## **Effects of multi-spot laser peening on residual stresses distribution**

Natsuki Furukawa, Yusuke Fukui, Hitoshi Nakano, Manabu Heya, Kindai Univ. (Japan)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13713-32

## **Femtosecond laser modification process of semiconductor silicon carbide**

Xinyang Ling, Xi'an Jiaotong Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13713-33

## **An open control architecture for the application of machine learning methods in laser material processing with galvanometer scanners**

Colin Reiff, ISW, Univ. of Stuttgart (Germany); Daniel Kurth, David Hecht, Alexander Verl, Univ. Stuttgart (Germany)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

# Conference 13714

## Photonics for Energy V

13 - 14 October 2025 | Room 311B

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

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

### POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 - 13:00**

View poster presentation guidelines and set-up instructions at <http://spie.org/PA/poster-presentation-guidelines>

13714-20

#### Machine-learning-assisted fiber-optic photonic sensors for thermal monitoring of energy storage systems

Marta Szczerska, Kacper Cierpiak, Tomasz Talaśka, Malgorzata Szczerska, Gdansk Univ. of Technology (Poland)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13714-21

#### Measurement and application of spectral responsivity of pyranometers in photovoltaics

Qiankai Wang, Junchao Zhang, Limin Xiong, Haifeng Meng, Wende Liu, Zhifeng Wu, National Institute of Metrology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

### SESSION 1: PHOTONICS FOR ENERGY I

14 October 2025 • 08:30 - 10:20 | Room 311B

*Session Chair:* **Haizheng Zhong**, Beijing Institute of Technology (China)

13714-1

#### Engineering charge transport layers for efficient and stable InP-based quantum-dot light-emitting diodes (Invited Paper)

Jeonghun Kwak, Seoul National Univ. (Republic of Korea)

14 October 2025 • 08:30 - 09:00 | Room 311B

13714-2

#### Efficient and bright blue perovskite light-emitting diodes

Nana Wang, Nanjing Tech Univ. (China)

14 October 2025 • 09:00 - 09:20 | Room 311B

13714-3

#### Additive engineering boosts efficiency of perovskite LEDs

Lin Zhu, Nanjing Tech Univ. (China)

14 October 2025 • 09:20 - 09:40 | Room 311B

13714-4

#### Perovskite heterojunction toolbox for optoelectronic devices

Xiaoyu Yang, Peking University (China); Xinqiang Wang, Peking Univ. (China)

14 October 2025 • 09:40 - 10:00 | Room 311B

13714-5

#### A switchable electrochromic device with solar heating and radiative cooling for energy saving

Shenghao Jin, Tao Xie, Chinese Academy of Sciences (China), Shanghai Jiao Tong Univ. (China); Boxiang Wang, Chinese Academy of Sciences (China)

14 October 2025 • 10:00 - 10:20 | Room 311B

Tea/Coffee Break 10:20 - 10:50

### SESSION 2: PHOTONICS FOR ENERGY II

14 October 2025 • 10:50 - 11:50 | Room 311B

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

13714-7

#### Stability of quantum-dot light-emitting diodes

Song Chen, Soochow Univ. (China)

14 October 2025 • 10:50 - 11:10 | Room 311B

13714-8

#### Growth regulation and heterostructure construction of perovskite single crystals towards high-performance photodetection

Yu Chen, Beijing Institute of Technology (China)

14 October 2025 • 11:10 - 11:30 | Room 311B

13714-9

#### To be determined

Chaoyu Xiang, Ningbo Institute of Materials Technology and Engineering (China)

14 October 2025 • 11:30 - 11:50 | Room 311B

Lunch Break 11:50 - 13:20

# Conference 13714

## SESSION 3: PHOTONICS FOR ENERGY III

14 October 2025 • 13:20 - 14:50 | Room 311B  
Session Chair: **Deying Luo**, Beihang Univ. (China)

13714-10

### **Quantum-dot solar cells** (*Invited Paper*)

Wanli Ma, Soochow Univ. (China)

14 October 2025 • 13:20 - 13:50 | Room 311B

13714-11

### **Stable PbS quantum-dot inks for near-infrared photovoltaics**

Xintong Zhang, Yinglin Wang, Yichun Liu, Northeast Normal Univ. (China)

14 October 2025 • 13:50 - 14:10 | Room 311B

13714-12

### **Perovskite lasers: structure, mechanism, regulation, and realization of ultra-low threshold**

Chen Zou, Zhejiang Univ. (China)

14 October 2025 • 14:10 - 14:30 | Room 311B

13714-13

### **Probing the operation of quantum-dot light-emitting diodes using electrically pumped transient absorption spectroscopy**

Xianchang Yan, Boning Wu, Wenming Tian, Shengye Jin, Dalian Institute of Chemical Physics (China)

14 October 2025 • 14:30 - 14:50 | Room 311B

Tea/Coffee Break 14:50 - 15:20

## SESSION 4: PHOTONICS FOR ENERGY IV

14 October 2025 • 15:20 - 17:30 | Room 311B  
Session Chair: **Gaoling Yang**, Weizmann Institute of Science (Israel)

13714-14

### **Interface science and engineering in perovskite solar cells** (*Invited Paper*)

Deying Luo, Beihang Univ. (China)

14 October 2025 • 15:20 - 15:50 | Room 311B

13714-15

### **Direct photopatterning of quantum-dot light-emitting diodes: the role of photochemistry**

Hao Zhang, Tsinghua Univ. (China)

14 October 2025 • 15:50 - 16:10 | Room 311B

13714-16

### **Perovskite material for color conversion layer of micro-LEDs**

Yue Lin, Xiamen Univ. (China)

14 October 2025 • 16:10 - 16:30 | Room 311B

13714-17

### **Controllable synthesis of environmentally friendly II-VI semiconductor quantum dots and their light-emitting diodes**

Fei Huang, Univ. of Science and Technology Beijing (China)

14 October 2025 • 16:30 - 16:50 | Room 311B

13714-18

### **MEMS MOS gas sensors: from sensor unit to system integration**

Mingzhi Jiao, China Univ. of Mining and Technology (China)

14 October 2025 • 16:50 - 17:10 | Room 311B

13714-19

### **Multifunctional 1D perovskites: combining broadband emission and ferroelectric properties**

Chen Xue, Nanjing Tech Univ. (China)

14 October 2025 • 17:10 - 17:30 | Room 311B

# Conference 13715

## Optoelectronic Devices and Integration XIV

13 - 14 October 2025 | Room 303

**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); Daoxin Dai, Zhejiang Univ. (China); Ho-Pui Ho, The Chinese Univ. of Hong Kong (Hong Kong, China); Zhongcheng Liang, Nanjing Univ. of Posts and Telecommunications (China); Gang-Ding Peng, The Univ. of New South Wales (Australia); Yaocheng Shi, Zhejiang Univ. (China); Yonghui Tian, Lanzhou Univ. (China); Yu Yu, Huazhong Univ. of Science and Technology (China); Yuan Yu, Wuhan National Lab. for Optoelectronics (China); Xiaobei Zhang, Shanghai Univ. (China); Ningmu Zou, Advanced Micro Devices, Inc. (United States)

### OPENING CEREMONY AND PLENARY SESSION

12 October 2025 • 08:30 - 12:00 | Convention Hall 2, Level 2

*View Full Details: [spie.org/photonics-asia-assembly](https://spie.org/photonics-asia-assembly)*

08:30 - 08:50

#### Opening Ceremony, Awards and Recognition

13715-501

#### Photonics and electronics convergence: oscillation, computing, and interconnection (Plenary Presentation)

Ming Li, Institute of Semiconductors, Chinese Academy of Sciences (China)

12 October 2025 • 08:50 - 09:30 | Convention Hall 2, Level 2

13722-502

#### When metasurfaces meet photodetectors (Plenary Presentation)

Cheng-Wei Giu, College of Design and Engineering, National Univ. of Singapore (Singapore)

12 October 2025 • 09:30 - 10:10 | Convention Hall 2, Level 2

Tea/Coffee Break 10:10 - 10:40

13717-503

#### Super-resolution in ultra-thin lumens (Plenary Presentation)

Qing Yang, Zhejiang Univ. (China), ZJU-Hangzhou Global Scientific and Technological Innovation Ctr. (China), Shanxi Univ. (China)

12 October 2025 • 10:40 - 11:20 | Convention Hall 2, Level 2

13720-504

#### Much ado about nothing: Light fields with phase singularities for precision measurement (Plenary Presentation)

Kishan Dholakia, School of Biological Sciences, The Univ. of Adelaide (Australia), Ctr. of Light for Life, The Univ. of Adelaide (Australia)

12 October 2025 • 11:20 - 12:00 | Convention Hall 2, Level 2

### SESSION 1: OPTOELECTRONIC DEVICES AND INTEGRATION I

13 October 2025 • 09:00 - 10:10 | Room 303

*Session Chairs:* Baojun Li, Jinan Univ. (China), Xinlong Xu, Northwest Univ. (China)

13715-1

#### Subwavelength nanotechnology for broadband modal and power management in silicon photonics (Invited Paper)

Aitor V. Velasco, Instituto de Optica Daza de Valdes (CSIC) (Spain); Raquel Fernandez, ICFO - Institut de Ciències Fotòniques (Spain); David González-Andrade, Univ. de Málaga (Spain); Irene Olivares, Irena Stolic, Instituto de Óptica "Daza de Valdés" (Spain); Yijun Yang, Daniele Melati, Carlos Alonso-Ramos, Paula Nuño Ruano, Roy Ronald Prosopio-Galarza, Ctr. de Nanosciences et de Nanotechnologies (France); Alejandro Sánchez-Sánchez, Univ. de Málaga (Spain); Pavel Cheben, National Research Council Canada (Canada)

13 October 2025 • 09:00 - 09:30 | Room 303

13715-2

#### Hybrid photonic designer materials for enhanced light-matter interaction and functional devices

Dangyuan Lei, Ye Li, City Univ. of Hong Kong (Hong Kong, China)

13 October 2025 • 09:30 - 09:50 | Room 303

13715-4

#### Ultrafast real-time photonic random number generators

Pu Li, Guangdong Univ. of Technology (China)

13 October 2025 • 09:50 - 10:10 | Room 303

Tea/Coffee Break 10:10 - 10:40

### SESSION 2: OPTOELECTRONIC DEVICES AND INTEGRATION II

13 October 2025 • 10:40 - 12:00 | Room 303

*Session Chairs:* Jing Feng, Jilin Univ. (China), Aitor Villafranca Velasco, Instituto de Óptica "Daza de Valdés" (Spain)

13715-5

#### Photonic probes for optical trapping and manipulation (Invited Paper)

Baojun Li, Jinan Univ. (China)

13 October 2025 • 10:40 - 11:10 | Room 303

13715-6

#### Ultrafast photocurrent in photoferroelectric $\alpha$ - $\text{In}_2\text{Se}_3$ observed by terahertz emission spectroscopy (Invited Paper)

Xinlong Xu, Northwest Univ. (China)

13 October 2025 • 11:10 - 11:40 | Room 303

13715-7

#### Programmable nonlinear interferometer meshes for neural networks

Mikhail Saygin, Stanislav Straupe, Sber Quantum Technology Ctr. (Russian Federation)

13 October 2025 • 11:40 - 12:00 | Room 303

Lunch Break 12:00 - 13:30

# Conference 13715

## POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 - 13:00**

View poster presentation guidelines and set-up instructions at <http://spie.org/PA/poster-presentation-guidelines>

13715-22

### **A novel low-noise wide-bandwidth transimpedance amplifier for LiDAR applications**

Guoteng Ren, Beijing Information Science & Technology University (China); Saifei Yuan, Tsinghua University (China); Heng Wang, Haonan Liu, Baosen Yang, Ting Sun, Shijie Yu, Beijing Information Science & Technology University (China); Fei Xing, Tsinghua University (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-32

### **Properties of near-field distribution of terahertz wave through subwavelength Cu metal slit with modified surfaces on microchips**

Shihao Song, Beijing Information Science & Technology Univ. (China); kuo meng, Beijing Information Science & Technology University (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-33

### **Enhanced fast object classification using complementary single-pixel detection**

Yicheng Peng, Ting Sun, Beijing Information Science & Technology Univ. (China); Jianing Yang, Tsinghua Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-34

### **Blur invariants constructed by digital micromirror device for target recognition**

Yicheng Peng, Beijing Information Science & Technology Univ. (China); Jianing Yang, Tsinghua Univ. (China); Ting Sun, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-35

### **Broadband multisection grating coupler for efficient fiber-to-chip coupling**

Huimin Yan, Zhejiang University (China); Jialin Cheng, Jiayin Yan, Qiongchan Shao, Jian-Jun He, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-36

### **Application potential of miniaturized acoustic arrays in photoacoustic fusion platforms: algorithms and hardware implementation**

Chunming Li, Yuyang Liu, Yashuang Feng, Hebei Univ. of Science and Technology (China); Songling Yuan, Hebei Semiconductor Display Application Technology Innovation Ctr. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-37

### **On-chip high-performance spectrometer based on MRR**

Haoda Wang, Pei Yuan, Qi Wang, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-38

### **Wavelength demodulation of multi-type FBGs based on AWG with cascaded neural network**

Qi Wang, Pei Yuan, Haoda Wang, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-39

### **A design of computational spectrometer based on waveguide grating filters with varied period number**

Yating Cui, Institute of Semiconductors, Chinese Academy of Sciences (China); Zan Zhang, Chang'an Univ. (China); Beiju Huang, Institute of Semiconductors (China), Univ. of Chinese Academy of Sciences (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-40

### **Reconfigurable multifunctional nanophotonic device based on metasurface and phase change material**

Mingyu Luo, Zhengyu Zhang, Chao Lu, The Hong Kong Polytechnic Univ. (Hong Kong, China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-41

### **Spectral computational reconstruction algorithm assisted by window-sampled artificial neural network**

Tong Zhou, Zan Zhang, Chang'an Univ. (China); Beiju Huang, Institute of Semiconductors (China), Suzhou Institute of Microelectronics and Optoelectronics Integration (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-42

### **Hetero-integrated optical beam-forming network for broadband microwave photonics receiver**

Hanling Long, Chang Zheng, Jinghui Li, Wenhao Wu, Zhiqiang Qi, Chensheng Wang, Huazhong Institute of Electro-Optics (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-43

### **A deep-learning-based optical fiber sensor for non-invasive electrocardiogram monitoring**

Xiuyuan Wang, The Hong Kong Polytechnic Univ. (Hong Kong, China); Kaili Yang, Changshu No. 2 People's Hospital (China); Wei Xu, Suzhou Univ. of Technology (China); Tongyu Ma, Changyuan Yu, The Hong Kong Polytechnic Univ. (Hong Kong, China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-44

### **Research on multiparameter regulation of output performance based on 4H-SiC photoconductive switches**

Yuan wenjing, Li juncheng, Shang Jiyang, Shanghai Institute of Aerospace Electronic Communication Equipment (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-45

### **Studies on the wideband design of anisotropic acousto-optic deflector with tellurium dioxide crystal**

Qiubo Zhang, Jiang Yang, Yanyan Song, Hebei Normal Univ. (China); Zhaoguang Pang, Hebei Normal Univ (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-46

### **A scheme on optical delay module based on chirped gratings for photonic computing**

GuangPing Zhong, Guang Chen, Lidan Lu, Fengyu She, Jieyu Yang, Lianqing Zhu, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13715-47

## Inverse-designed ultra-compact on-chip 1x2 power splitter with low insertion loss

Jie Huang, Yang Wang, Chuanyi Lu, Xiaogang Qiang, Defense Innovation Institute (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

### SESSION 3: OPTOELECTRONIC DEVICES AND INTEGRATION III

13 October 2025 • 14:30 - 18:10 | Room 303

*Session Chairs:* **Yuan Wang**, Jiangsu Univ. of Science and Technology (China), **Shangran Xie**, Beijing Institute of Technology (China)

13715-8

## Organic single-crystal semiconductors for light-emitting applications (*Invited Paper*)

Jing Feng, Jilin Univ. (China)

13 October 2025 • 14:30 - 15:00 | Room 303

13715-9

## On-chip super-resolution imaging based on spatial-frequency-shift (*Invited Paper*)

Haonan Zhang, Xu Liu, Qing Yang, Zhejiang Univ. (China)

13 October 2025 • 15:00 - 15:30 | Room 303

13715-10

## A successive variational mode decomposition-based positioning method for asymmetric dual Mach-Zehnder fiber optic sensor

Zhenshi Sun, Jinqi Zhang, Jun Niu, Xing Ju, Nanyang Institute of Technology (China); Fei Chang, Senba Sensing Technology Co., Ltd. (China); Kang Xue, Tianjin Univ. (China); Haokun Yang, Henan Univ. (China); Peizhou Fang, Nanyang Institute of Technology (China)

13 October 2025 • 15:30 - 15:50 | Room 303

13715-11

## High-resolution spatial responsivity of PureB single-photon avalanche diodes using focused-laser scanning

Tihomir Knezevic, Eva Jelavic, Ruder Boskovic Institute (Croatia); Lovro Markovic, Tomislav Suligoj, University of Zagreb, Faculty of Electrical Engineering and Computing (Croatia); Lis K. Nanver, University of Twente, Faculty of Electrical Engineering Mathematics & Computer Science (Netherlands)

13 October 2025 • 15:50 - 16:10 | Room 303

Tea/Coffee Break 16:10 - 16:30

13715-12

## Real-time and high-accuracy photonics-assisted microwave measurements for fiber sensors (*Invited Paper*)

Yuan Wang, University of Ottawa (Canada), Jiangsu University of Science and Technology (China); Xiaoyi Bao, Univ. of Ottawa (Canada)

13 October 2025 • 16:30 - 17:00 | Room 303

13715-13

## Optical trapping and metrology in hollow-core optical fibers (*Invited Paper*)

Shangran Xie, Beijing Institute of Technology (China)

13 October 2025 • 17:00 - 17:30 | Room 303

13715-14

## Cascaded metasurfaces enabling achromatic focus scanning

Li Chen, Huazhong Univ. of Science and Technology (China); Yu Qu, South-Central Minzu Univ. (China); Xinliang Zhang, Yu Yu, Huazhong Univ. of Science and Technology (China)

13 October 2025 • 17:30 - 17:50 | Room 303

13715-15

## Approach to tuning phase for periodical subwavelength grating based on Sb<sub>2</sub>Se<sub>3</sub>-incorporated silicon metalines

Guang Chen, Fengyu She, Lidan Lu, Guangping Zhong, Beijing Information Science & Technology Univ. (China); Zhibei Gui, Beijing Teenmai Measurement and Control Technology Co., Ltd. (China); Senyan Chun, Yulin Li, Lianqing Zhu, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 17:50 - 18:10 | Room 303

### SESSION 4: OPTOELECTRONIC DEVICES AND INTEGRATION IV

14 October 2025 • 08:30 - 10:10 | Room 303

*Session Chairs:* **Fan Zhang**, Peking Univ. (China), **Zhang-Kai Zhou**, Sun Yat-Sen Univ. (China)

13715-16

## Centimeter scale supercritical lens for sub-diffraction limited field modulation (*Invited Paper*)

Fei Qin, Jinan Univ. (China)

14 October 2025 • 08:30 - 09:00 | Room 303

13715-17

## 1.79-GHz acquisition rate absolute distance measurement with lithium niobate electro-optic comb (*Invited Paper*)

Yang Li, Sun Yat-Sen Univ. (China)

14 October 2025 • 09:00 - 09:30 | Room 303

13715-18

## Optical micro/nanofibers and their potential for on-chip integration

Xin Guo, Jianbin Zhang, Liu Yang, Yuxin Yang, Limin Tong, Zhejiang Univ. (China)

14 October 2025 • 09:30 - 09:50 | Room 303

13715-19

## Bandwidth-tunable dual-wavelength erbium-doped fiber laser based on nonlinear polarization evolution

Wen Zhong, Zehai Zhou, Xiaochun Liao, Guoqing Hu, Guangwei Chen, Li Chen, Pengyu Yan, Beijing Information Science & Technology Univ. (China); Tengfei Wu, Changcheng Institute of Metrology & Measurement (China); Ying Qin, Beijing Information Science & Technology Univ. (China)

14 October 2025 • 09:50 - 10:10 | Room 303

Tea/Coffee Break 10:10 - 10:30

# Conference 13715

## SESSION 5: OPTOELECTRONIC DEVICES AND INTEGRATION V

14 October 2025 • 10:30 - 12:10 | Room 303

*Session Chairs:* **Fei Qin**, Jinan Univ. (China), **Yang Li**, Sun Yat-Sen Univ. (China)

13715-20

### **Ultrahigh-speed optical interconnect with thin-film lithium niobate modulators** (*Invited Paper*)

Fan Zhang, Lingjun Zhou, Xiang Cai, Peking Univ. (China); Yixiao Zhu, Shanghai Jiao Tong Univ. (China); Xiansong Fang, Peking Univ. (China)

14 October 2025 • 10:30 - 11:00 | Room 303

13715-21

### **Manipulating optical field based on metasurfaces** (*Invited Paper*)

Zhang-Kai Zhou, Sun Yat-Sen Univ. (China)

14 October 2025 • 11:00 - 11:30 | Room 303

13715-29

### **Mode chirality in integrated optical microresonators**

Jiawei Wang, Harbin Institute of Technology Shenzhen Graduate School (China)

14 October 2025 • 11:30 - 11:50 | Room 303

13715-31

### **Hybrid white OLEDs with dual-host and sandwich emissive layers for enhanced exciton management and color quality**

Chunfang Zhang, Yuan-Bo Zhang, Feng Qi, Beijing Information Science & Technology Univ. (China); Tian-Yi Li, Univ. of Science and Technology Beijing (China); Yuan Liu, Beijing Information Science & Technology Univ. (China)

14 October 2025 • 11:50 - 12:10 | Room 303

**Lunch Break 12:10 - 13:30**

## SESSION 6: OPTOELECTRONIC DEVICES AND INTEGRATION VI

14 October 2025 • 13:30 - 15:30 | Room 303

*Session Chairs:* **Bo Zhang**, Zhejiang Univ. (China), **Shuailong Zhang**, Beijing Institute of Technology (China)

13715-23

### **Optoelectronic tweezers and digital microfluidics for biomicromanipulation** (*Invited Paper*)

Shuailong Zhang, Gong Li, Rongxin Fu, Beijing Institute of Technology (China)

14 October 2025 • 13:30 - 14:00 | Room 303

13715-27

### **3D ultra-broadband optically dispersive microregions in lithium niobate** (*Invited Paper*)

Bo Zhang, Zhejiang Univ. (China)

14 October 2025 • 14:00 - 14:30 | Room 303

13715-25

### **Analysis of crosstalk in 7-core single-mode homogeneous trench-assisted uncoupled multicore fiber with 125- $\mu\text{m}$ cladding for metro network interconnects**

Kwong Fai WONG, The Hong Kong Polytechnic University (Hong Kong, China); Changyuan Yu, Li Wang, The Hong Kong Polytechnic Univ. (Hong Kong, China)

14 October 2025 • 14:30 - 14:50 | Room 303

13715-26

### **Ripple-free high-performance DC-DC booster based on integrated optoelectronic devices**

Junyu Chen, Tsinghua University (China); He Ding, Beijing Institute of Technology (China); Xing Sheng, Tsinghua Univ. (China)

14 October 2025 • 14:50 - 15:10 | Room 303

13715-28

### **Development of a bespoke open-source programme for GHz and THz coaxial delay line phase shifters design utilising liquid crystal for 5.5G-6G applications and education purposes**

Jinfeng Li, Beijing Institute of Technology (China), Imperial College London (United Kingdom); Haorong Li, Beijing Institute of Technology (China)

14 October 2025 • 15:10 - 15:30 | Room 303

# Conference 13716

## Optical Design and Testing XV

12 - 13 October 2025 | Room 305A

**Conference Chairs:** **Yongtian Wang**, Beijing Institute of Technology (China); **Tina E. Kidger**, Kidger Optics Associates (United Kingdom); **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); **Stuart David**, SRD Consulting (United States); **Zhishan Gao**, Nanjing Univ. of Science and Technology (China); **Sen Han**, Suzhou Graduate School of Nanjing Univ. (China); **Andrew R. Harvey**, Univ. of Glasgow (United Kingdom); **Chulmin Joo**, Yonsei Univ. (Republic of Korea); **Ki-Nam Joo**, Chosun Univ. (Republic of Korea); **Donglin Ma**, Huazhong Univ. of Science and Technology (China); **Youri Meuret**, KU Leuven (Belgium); **Julius A. Muschaweck**, JMO GmbH (Germany); **Yunfeng Nie**, Vrije Univ. Brussel (Belgium); **Takanori Nomura**, Wakayama Univ. (Japan); **Tomoyoshi Shimobaba**, Chiba Univ. (Japan); **Jan M. ten Thije Boonkkamp**, Technische Univ. Eindhoven (Netherlands); **Simon Thibault**, Univ. Laval (Canada); **Sandy To**, The Hong Kong Polytechnic Univ. (Hong Kong, China); **Peter Török**, Nanyang Technological Univ. (Singapore); **Tong Yang**, Beijing Institute of Technology (China); **Chunyu Zhao**, Arizona Optical Metrology LLC (United States)

### OPENING CEREMONY AND PLENARY SESSION

12 October 2025 • 08:30 - 12:00 | Convention Hall 2, Level 2

*View Full Details:* [spie.org/photonics-asia-plenary](https://spie.org/photonics-asia-plenary)

08:30 - 08:50

#### Opening Ceremony, Awards and Recognition

13715-501

#### Photonics and electronics convergence: oscillation, computing, and interconnection *(Plenary Presentation)*

Ming Li, Institute of Semiconductors, Chinese Academy of Sciences (China)

12 October 2025 • 08:50 - 09:30 | Convention Hall 2, Level 2

13722-502

#### When metasurfaces meet photodetectors *(Plenary Presentation)*

Cheng-Wei Qiu, College of Design and Engineering, National Univ. of Singapore (Singapore)

12 October 2025 • 09:30 - 10:10 | Convention Hall 2, Level 2

Tea/Coffee Break 10:10 - 10:40

13717-503

#### Super-resolution in ultra-thin lumens *(Plenary Presentation)*

Qing Yang, Zhejiang Univ. (China), ZJU-Hangzhou Global Scientific and Technological Innovation Ctr. (China), Shanxi Univ. (China)

12 October 2025 • 10:40 - 11:20 | Convention Hall 2, Level 2

13720-504

#### Much ado about nothing: Light fields with phase singularities for precision measurement *(Plenary Presentation)*

Kishan Dholakia, School of Biological Sciences, The Univ. of Adelaide (Australia), Ctr. of Light for Life, The Univ. of Adelaide (Australia)

12 October 2025 • 11:20 - 12:00 | Convention Hall 2, Level 2

Lunch Break 12:00 - 13:30

### SESSION 1: ADVANCED IMAGING TECHNIQUES I

12 October 2025 • 13:30 - 15:15 | Room 305A

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

13716-1

#### Plate-corrected adaptive optics relays *(Invited Paper)*

Andrew P. Rakich, Mersenne Optical Consulting (New Zealand)

12 October 2025 • 13:30 - 14:00 | Room 305A

13716-2

#### Computational lensless cameras for task-specific imaging and sensing *(Invited Paper)*

Seung Ah Lee, Seoul National Univ. (Republic of Korea)

12 October 2025 • 14:00 - 14:30 | Room 305A

13716-3

#### Method for fast simulation of ghosts in imaging optical systems

Yan Wang, ITMO Univ. (Russian Federation), Shanghai Aozhan Intelligent Technology Co., Ltd. (China); Dmitry Zhdanov, ITMO Univ. (Russian Federation); Andrei Zhdanov, ITMO Univ. (Russian Federation), Shanghai Aozhan Intelligent Technology Co. Ltd (China); Igor Potemin, ITMO Univ. (Russian Federation)

12 October 2025 • 14:30 - 14:45 | Room 305A

13716-4

#### Optical design based on hybrid meta-optics

Mingwei Tang, Zhejiang Univ. (China)

12 October 2025 • 14:45 - 15:00 | Room 305A

13716-5

#### A general neural network structure based on KAN-transformer for the electromagnetic response prediction of micro/nano-optical devices

Yu Zhang, National Univ. of Defense Technology (China); Yue Wang, Yu Wang, Harbin Institute of Technology (China); Heng Yin, Rui Yang, Jianghuai Advance Technology Ctr. (China); Hua Mu, National Univ. of Defense Technology (China); Jinyong Wang, National Univ. of Singapore (Singapore); Zhenyu Liang, Bingwen Wang, Yangyang Wang, National Univ. of Defense Technology (China); Baoling Qi, Jiangxi Hongdu Aviation Industry Group (China); Chunhui Wang, Harbin Institute of Technology (China); Xing Yang, National Univ. of Defense Technology (China)

12 October 2025 • 15:00 - 15:15 | Room 305A

Tea/Coffee Break 15:15 - 15:35

# Conference 13716

## SESSION 2: FABRICATION AND TESTING

12 October 2025 • 15:35 - 17:35 | Room 305A

Session Chair: **Andrew P. Rakich**, KiwiStar Optics (New Zealand)

13716-6

### Femtosecond laser micro-nano-fabrication: new technology and application (*Invited Paper*)

Qi-Dai Chen, Jilin Univ. (China)

12 October 2025 • 15:35 - 16:05 | Room 305A

13716-7

### Femtosecond laser microfabrication towards high efficiency, new materials, and advanced devices (*Invited Paper*)

Dong Wu, Univ. of Science and Technology of China (China)

12 October 2025 • 16:05 - 16:35 | Room 305A

13716-8

### Model-based alignment method for segmented space telescopes using extended beacon

Zexia Zhang, Yukun Song, Bing Dong, Beijing Institute of Technology (China)

12 October 2025 • 16:35 - 16:50 | Room 305A

13716-9

### Precision optical axis alignment optimization approach based on differentiable optics in optical assembly

Yunlong Wan, Tianjin University (China); Zhuoyang Liu, Lei Yang, Hongbo Xie, Tianjin Univ. (China)

12 October 2025 • 16:50 - 17:05 | Room 305A

13716-10

### Phase retrieval from two-frame random phase-shifted interferograms based on normalized phase-shifting frame insert network

Baokun Wu, Zhejiang University (China); Runzhou Shi, Tian Zhang, Jian Bai, Zhejiang Univ. (China)

12 October 2025 • 17:05 - 17:20 | Room 305A

13716-11

### An optimization method used to measure chromatic aberration with Shack-Hartmann wavefront sensor

Dexuan Fu, Xinqi Hu, Chuanxu Wu, Beijing Institute of Technology (China)

12 October 2025 • 17:20 - 17:35 | Room 305A

## SESSION 3: ADVANCED IMAGING TECHNIQUES II

13 October 2025 • 08:30 - 10:15 | Room 305A

Session Chair: **Seung Ah Lee**, Yonsei Univ. (Republic of Korea)

13716-12

### Learning-based implementation of binary phase optics for depth-enhanced optical microscopy (*Invited Paper*)

Chulmin Joo, Yonsei Univ. (Republic of Korea)

13 October 2025 • 08:30 - 09:00 | Room 305A

13716-13

### Pushing profiling accuracy limit of laser interferometric microscopy towards femtometer-level and beyond (*Invited Paper*)

Renjie Zhou, The Chinese Univ. of Hong Kong (Hong Kong, China)

13 October 2025 • 09:00 - 09:30 | Room 305A

13716-14

### Compact high-resolution microscope objective lens with wide field-of-view

Vasilisa Ezhova, ITMO University (Russian Federation); Artem Ponomarenko, Helen A. Tsyganok, Shan Gao, Min Jin, ITMO Univ. (Russian Federation)

13 October 2025 • 09:30 - 09:45 | Room 305A

13716-15

### Zoom control and aberration trade-off method for stabilized zoom systems

Shen Jiahui, Xuemin Cheng, Tsinghua Univ. (China)

13 October 2025 • 09:45 - 10:00 | Room 305A

13716-16

### Diffraction efficiency restoration method for single-plane diffractive element considering machining errors

Xian Zhang, Changchun Univ. of Science and Technology (China)

13 October 2025 • 10:00 - 10:15 | Room 305A

Tea/Coffee Break 10:15 - 10:30

## SESSION 4: OPTICAL SYSTEM DESIGNS

13 October 2025 • 10:30 - 12:00 | Room 305A

Session Chair: **Renjie Zhou**, The Chinese Univ. of Hong Kong (Hong Kong, China)

13716-17

### Design and application of double-pass optical systems (*Invited Paper*)

Gaoxing Zhao, Jun Zhu, Tsinghua Univ. (China)

13 October 2025 • 10:30 - 11:00 | Room 305A

13716-18

### Design and calibration of ultra-broadband spectrometer for a visible-near-infrared OCT (*Invited Paper*)

Shau Poh Chong, Peter Török, Nanyang Technological Univ. (Singapore)

13 October 2025 • 11:00 - 11:30 | Room 305A

13716-19

### Research on chromatic aberration sensitivity-weighted optimization method for freeform surface deformation zoom systems

Siyi Tang, Xuemin Cheng, Tsinghua Univ. (China)

13 October 2025 • 11:30 - 11:45 | Room 305A

13716-20

### Data-driven freeform imaging system design using real-time wave aberration propagation maps

Zixin Ge, Zhejiang Univ. (China)

13 October 2025 • 11:45 - 12:00 | Room 305A

Lunch Break 12:00 - 13:30

## POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 - 13:00**

View poster presentation guidelines and set-up instructions at <http://spie.org/PA/poster-presentation-guidelines>

13716-31

### **Generation of orthogonally-polarized dual-wavelength non-reciprocal beams by a bilayer grating**

Jianhua Yao, Chao Tang, Nanyang Lida Optic-electronics Co., Ltd. (China); Qingyu Zeng, Costar (Shanghai) Science & Technology Co., Ltd. (China); Hongjie Yang, Nanyang Lida Optic-electronics Co., Ltd. (China); Jing Wang, Costar (Shanghai) Science & Technology Co., Ltd. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-32

### **Two-step phase-shifting interferometry based on model-driven deep learning**

Runzhou Shi, Zhejiang University (China); Tian Zhang, Yuqi Shao, Jian Bai, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-33

### **Automatic measurement method of the field-of-view angle and optical axis alignment accuracy of LiDAR**

Yijun Shi, Tianjin University (China), Tianjin KHZX Technology Co., Ltd. (China); Kun Liu, Jianying Jing, Tianjin University (China); Wanshan Zhu, Tianjin University (China), Tianjin Sino-German Univ. of Applied Sciences (China); Tiegeng Liu, Tianjin University (China); Dongyang Huo, Wenhao Liu, Tianjin Kehong Zhenxing Technology Co., Ltd. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-34

### **Design of multi-object-distance imaging system using hybrid Moiré metalenses and refractive lenses**

Zudong Zhao, Tong Yang, Dewen Cheng, Yongtian Wang, Beijing Institute of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-35

### **Design of a lightweight mid-wave infrared panoramic imaging system**

Ruoyan Wei, Zhejiang University (China); Shaohua Gao, Jian Bai, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-36

### **Real-time minimalist optical system based on a re-parameterization network**

Hanwen Zhang, Runzhou Shi, Ruoyan Wei, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-37

### **DUV-compatible multifocal metalens design via two-stage adjoint optimization achieving EBL-level efficiency**

Rong Shi, Hamza Kurt, Jonghwa Shin, KAIST (Republic of Korea)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-38

### **Hybrid optimization algorithm for Ronchi lateral shearing interferometry**

Haoran Zhu, Runzhou Shi, Huiwen Liu, Jian Bai, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-39

### **Effectiveness evaluation method for the ground satellite station with laser communication capability**

Chenyang Li, China Satellite Network System Co., Ltd. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-40

### **Optimization analysis of star sensor imaging performance based on hybrid imaging system**

Yang Cao, Ning Pan, Jian Bai, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-41

### **Targeted filtering algorithm for batwing effect in white-light microscopic interferometry**

Yidong Xue, Zhejiang University (China); Yiyong Liang, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-42

### **Dynamic star map simulation and deep-learning-based centroiding for star sensors**

Yi Zhang, Jian Bai, Zhejiang University (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-43

### **Design of progressive addition lenses for myopia control**

Jiaqi Wang, Beijing Institute of Technology (China), Beijing Engineering Research Ctr. of Mixed Reality and Advanced Display (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-44

### **The search method for the optimal initial structure of the freeform-prism AR optical system based on ray tracing techniques and global optimization**

Guanqiao Su, ITMO UNIVERSITY (Russian Federation); Galina E. Romanova, ITMO Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-45

### **Research on imaging and spectral performance of multi-channel scene projector for machine vision system test**

Yikang Gong, Yuanrui Dong, Zhe Peng, Wende Liu, National Institute of Metrology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-46

### **Multiple-folding-geometry freeform reflective afocal systems design enabled by deep-learning-based neural network**

Guogen Chen, Tong Yang, Dewen Cheng, Yongtian Wang, Beijing Institute of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-47

### **Comparative analysis of phase tilted interferometry algorithms in point diffraction interferometer**

Peiyu Yin, Zhejiang University (China); Runzhou Shi, Zheming Zhang, Jian Bai, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

# Conference 13716

13716-48

## **Design of a wideband zoom panoramic system with a double-layer diffractive optical element**

Wenchuang Yu, Zhejiang University (China); Ruoyan Wei, Shaohua Gao, Jian Bai, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-49

## **Analyzing noise arising from finite source size in double-Ronchi interferometry**

Yicheng Zhu, Zhejiang University (China); Huiwen Liu, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-50

## **Bringing PMMA freeform optics fabrication to the desktop: a low-cost system based on cold atmospheric plasma etching**

Daba A. Radnatarov, Ivan Gromov, Sergey Kobtsev, Novosibirsk State Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-51

## **Design and calibration of an imaging filter radiometer for spectral radiance measurement**

Shi-ze WANG, NIM (China), NIM (China), NIM (China); Qi-ming WANG, Ling LI, Cai-hong DAI, Yan-fei WANG, Qiu-tong CHENG, Zhi-feng WU, NIM (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-52

## **Extreme ultraviolet lithography projection system design based on third-order aberration theory**

Shan Gao, Helen A. Tsyganok, Galina E. Romanova, Vasilisa Ezhova, ITMO Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-53

## **Detection device for surface scratches and internal defects of optical fiber imaging elements**

Yajie Du, Yuwen Xing, China Building Materials Academy (China); Zhicheng Huang, Tiangong University (China); Miao Chu, Yun Wang, Peng Jiao, Yonggang Huang, China Building Materials Academy (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-55

## **Research on optical detection methods for miniature droplet lens**

Yajing Wang, Hongtao Cheng, Minghui Fang, Wei Zhang, Shenzhen Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-56

## **Calculation of the entrance pupil contour for image synthesis using the backward ray-tracing method**

Yan Wang, ITMO Univ. (Russian Federation), Shanghai Aozhan Intelligent Technology Co., Ltd. (China); Dmitry Zhdanov, ITMO Univ. (Russian Federation); Andrei Zhdanov, ITMO Univ. (Russian Federation), Shanghai Aozhan Intelligent Technology Co. Ltd (China); Igor Potemin, Zhan Wang, ITMO Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-57

## **Telescope design based on tilt-to-length coupling noise in far-field propagation for space-based gravitational wave detector**

Zichao Fan, Chongqing Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-58

## **Design of a dynamic star simulator illumination optical system based on dual compound eye lenses**

Zikang Jiang, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-59

## **Stepwise variable-release implementation method for deformable mirrors**

Yu Qiu, Xuemin Cheng, Tsinghua Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13716-60

## **Secondary optical design of uniform illumination for non-Lambertian light sources based on reflection compensation mechanism**

Xue-liang Kang, Lun Wang, North Minzu Univ. (China); Li Wang, North Minzu Univ. (China), Hefei Univ. of Technology (China); Bai Zhang, Jia Liu, North Minzu Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

### SESSION 5: FREEFORM OPTICS

13 October 2025 • 14:30 - 16:00 | Room 305A

*Session Chair:* **Enguo Chen**, Fuzhou Univ. (China)

13716-21

## **Freeform optical design: mathematical models and numerical methods** (*Invited Paper*)

Jan M. ten Thije Boonkkamp, Koondanibha Mitra, Martijn Anthonissen, Lisa Kusch, Pieter Braam, Technische Univ. Eindhoven (Netherlands); Wilbert IJzerman, Signify N.V. (Netherlands)

13 October 2025 • 14:30 - 15:00 | Room 305A

13716-22

## **Broadband adaptive illumination with programmable freeform optics**

Jeroen Cerpentier, Youri Meuret, KU Leuven (Belgium)

13 October 2025 • 15:00 - 15:15 | Room 305A

13716-23

## **Janus freeform lens for direction-dependent beam shaping**

Shili Wei, Univ. of Electronic Science and Technology of China (China)

13 October 2025 • 15:15 - 15:30 | Room 305A

13716-24

## **Tailoring freeform optics design for extended light source**

Haotian Sun, Yuqin Chen, Rengmao Wu, Zhejiang Univ. (China)

13 October 2025 • 15:30 - 15:45 | Room 305A

13716-25

## **Freeform light control for prescribed wavefronts and irradiances on the off-axis target plane**

Yuchen Zhang, Zhejiang Univ. (China)

13 October 2025 • 15:45 - 16:00 | Room 305A

**Tea/Coffee Break 16:00 - 16:15**

## SESSION 6: NOVEL DISPLAY TECHNIQUES

13 October 2025 • 16:15 - 18:00 | Room 305A

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

13716-26

### **Direct-view retinal projection near-eye display for augmented reality** (*Invited Paper*)

Enguo Chen, Fuzhou Univ. (China)

13 October 2025 • 16:15 - 16:45 | Room 305A

13716-27

### **Addressing color fidelity challenges in holographic displays** (*Invited Paper*)

Chun Chen, Jae-Hyeong Park, Yoonchan Jeong, Seoul National Univ. (Republic of Korea)

13 October 2025 • 16:45 - 17:15 | Room 305A

13716-28

### **Extended depth-of-field stereo vision via high-speed dual-lens cameras with electrically tunable focus**

Lihui Wang, Soochow Univ. (China)

13 October 2025 • 17:15 - 17:30 | Room 305A

13716-29

### **Rock-paper-scissors interaction via vision-based recognition and retroreflective midair display**

Jiayu Wang, Jinzhi Zhou, Soochow Univ. (China); Shuangjiang Huang, Shenyang Univ. of Technology (China); Lihui Wang, Soochow Univ. (China), Guangdong Academy of Sciences (China)

13 October 2025 • 17:30 - 17:45 | Room 305A

13716-30

### **Novel design and intelligent orthogonal surface optimization of ultrawide-field infrared panoramic imaging system**

Zhen Zhang, Yunhan Huang, Zhying Liu, Changchun Univ. of Science and Technology (China)

13 October 2025 • 17:45 - 18:00 | Room 305A

# Conference 13717

## Advanced Optical Imaging Technologies VIII

12 - 14 October 2025 | Room 311A

**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**, Xiamen Univ. (China); **Zhenli Huang**, Wuhan National Lab. 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); **Małgorzata Kujawińska**, Warsaw Univ. of Technology (Poland); **Puxiang Lai**, The Hong Kong Polytechnic Univ. (Hong Kong, China); **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**, Jilin Univ. (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)

### OPENING CEREMONY AND PLENARY SESSION

12 October 2025 • 08:30 - 12:00 | Convention Hall 2, Level 2

*View Full Details: [spie.org/photonics-asia-plenary](https://spie.org/photonics-asia-plenary)*

08:30 - 08:50

#### Opening Ceremony, Awards and Recognition

13715-501

#### Photonics and electronics convergence: oscillation, computing, and interconnection (*Plenary Presentation*)

Ming Li, Institute of Semiconductors, Chinese Academy of Sciences (China)

12 October 2025 • 08:50 - 09:30 | Convention Hall 2, Level 2

13722-502

#### When metasurfaces meet photodetectors (*Plenary Presentation*)

Cheng-Wei Qiu, College of Design and Engineering, National Univ. of Singapore (Singapore)

12 October 2025 • 09:30 - 10:10 | Convention Hall 2, Level 2

Tea/Coffee Break 10:10 - 10:40

13717-503

#### Super-resolution in ultra-thin lumens (*Plenary Presentation*)

Qing Yang, Zhejiang Univ. (China), ZJU-Hangzhou Global Scientific and Technological Innovation Ctr. (China), Shanxi Univ. (China)

12 October 2025 • 10:40 - 11:20 | Convention Hall 2, Level 2

13720-504

#### Much ado about nothing: Light fields with phase singularities for precision measurement (*Plenary Presentation*)

Kishan Dholakia, School of Biological Sciences, The Univ. of Adelaide (Australia), Ctr. of Light for Life, The Univ. of Adelaide (Australia)

12 October 2025 • 11:20 - 12:00 | Convention Hall 2, Level 2

Lunch Break 12:00 - 13:30

### SESSION 1: HIGH RESOLUTION IMAGING

12 October 2025 • 13:30 - 15:10 | Room 311A

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

13717-1

#### High axial resolution and imaging speeds three-dimensional live cell imaging (*Invited Paper*)

Xiaoshuai Huang, Peking Univ. (China)

12 October 2025 • 13:30 - 14:00 | Room 311A

13717-2

#### Multidimensional multiplexing metalens for STED microscopy (*Invited Paper*)

Ziheng Ji, Qinmiao Chen, Xinbo Sha, Haili Wang, Xing Ma, Harbin Institute of Technology, Shenzhen (China); Zhengtong Liu, Peng Cheng Lab. (China); Qinghai Song, Shumin Xiao, Harbin Institute of Technology, Shenzhen (China)

12 October 2025 • 14:00 - 14:30 | Room 311A

13717-4

#### Physics-guided lateral and axial restoration for fast in vivo two-photon fluorescence imaging

Zhengyuan Pan, Bobo Gu, Shanghai Jiao Tong Univ. (China)

12 October 2025 • 14:30 - 14:50 | Room 311A

13717-5

#### High-resolution dark-field Fourier ptychographic diffraction tomography via non-matched illumination condition

Habib Ullah, Chao Zuo, Nanjing Univ. of Science and Technology (China)

12 October 2025 • 14:50 - 15:10 | Room 311A

Tea/Coffee Break 15:10 - 15:40

## SESSION 2: NOVEL IMAGING TECHNIQUES I

12 October 2025 • 15:40 - 17:10 | Room 311A  
*Session Chair: Ziheng Ji*, Peking Univ. (China)

13717-6

### Ultrahigh-throughput single-pixel complex-field microscopy with frequency-comb acousto-optic coherent encoding (*Invited Paper*)

Yuecheng Shen, East China Normal Univ. (China)  
 12 October 2025 • 15:40 - 16:10 | Room 311A

13717-8

### Label-free stimulated Raman scattering imaging of intracellular microplastics in mammalian cells

Hyeon Jeong Lee, College of Biomedical Engineering & Instrument Science, and Key Laboratory for Biomedical Engineering of Ministry of Education, Zhejiang University (China); Jingyuan Li, Zhejiang Univ. (China)  
 12 October 2025 • 16:10 - 16:30 | Room 311A

13717-9

### Motion-resolved event-based holographic imaging

Chutian Wang, Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China)  
 12 October 2025 • 16:30 - 16:50 | Room 311A

13717-24

### Modelling of an imaging aspheric lens using the ray-mapping method

Yan V. Terlo, Alexey V. Bakholdin, Anna O. Voznesenskaya, ITMO Univ. (Russian Federation)  
 12 October 2025 • 16:50 - 17:10 | Room 311A

## SESSION 3: NOVEL IMAGING TECHNIQUES II

13 October 2025 • 09:00 - 10:10 | Room 311A  
*Session Chair: Dalong Qi*, East China Normal Univ. (China)

13717-10

### Cortex-wide observational miniature mesoscopic technique (COMET) enables single-cell resolution imaging of large cortical neuron populations in freely moving mice (*Invited Paper*)

Changliang Guo, Peking Univ. (China), Institute of Molecular Medicine (China); Liangyi Chen, Peking Univ. (China)  
 13 October 2025 • 09:00 - 09:30 | Room 311A

13717-12

### Event-based dynamic speckle pattern synthesis for imaging through scattering media

Yuqing Cao, Shuo Zhu, Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China)  
 13 October 2025 • 09:30 - 09:50 | Room 311A

13717-13

### 1.3 $\mu\text{m}$ ultra-flat and low-noise supercontinuum source for shot-noise limited and ultrahigh-resolution optical coherence tomography

Shuyuan Zhu, Beijing Univ. of Technology (China); Laiyang Dang, The Hong Kong Polytechnic Univ. (China); Dongmei Huang, Photonics Research Institute, The Hong Kong Polytechnic Univ. (China); Pu Wang, Xiuhong Wang, Beijing Univ. of Technology (China)  
 13 October 2025 • 09:50 - 10:10 | Room 311A

Tea/Coffee Break 10:10 - 10:40

## SESSION 4: COMPUTATIONAL IMAGING I

13 October 2025 • 10:40 - 12:00 | Room 311A  
*Session Chair: Changliang Guo*, Peking Univ. (China)

13717-14

### Single-shot high-dimensional and high-fidelity ultrafast optical imaging techniques (*Invited Paper*)

Dalong Qi, Shian Zhang, East China Normal Univ. (China)  
 13 October 2025 • 10:40 - 11:10 | Room 311A

13717-15

### Full-field wavefront correction for resonant-scanning two-photon microscopy (*Invited Paper*)

Yanlong Yang, Ruiwen Yang, Tengfei Wu, Yang Zhang, Dan Dan, Junwei Min, Xianghua Yu, Baoli Yao, Xi'an Institute of Optics and Precision Mechanics (China)  
 13 October 2025 • 11:10 - 11:40 | Room 311A

13717-16

### Opportunities and challenges in snapshot ghost diffraction holographic imaging

Vinu R.V., Huaqiao Univ. (China)  
 13 October 2025 • 11:40 - 12:00 | Room 311A

Lunch Break 12:00 - 13:30

## POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 - 13:00

View poster presentation guidelines and set-up instructions at <http://spie.org/PA/poster-presentation-guidelines>

13717-3

### Mixed spatial-frequency-shift retrieval method for single-shot ultra-high-resolution microscopy

Haonan Zhang, Xiaoyu Yang, Conghui Gan, Qing Yang, Zhejiang Univ. (China)  
 13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13717-20

### BiNeRF: Binocular 3D reconstruction with neural radiance field

Zhe Peng, Yikang Gong, Wende Liu, National Institute of Metrology (China)  
 13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13717-30

### AI-augmented optical coherence tomography for non-radiative diagnosis of early dental caries

Nazila Kazemigazestane, David Mills, Simon Rawlinson, Queen Mary Univ. of London (United Kingdom)  
 13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13717-31

### Breaking the resolution limit of single-pixel imaging based on joint reconstruction and deconvolution

Rui Sun, Jiaye Kuang, Optics Valley Lab. (China); Yi Ding, Optics Valley Laboratory (China); Jingjing Cheng, Optics Valley Lab. (China); Ryszard Buczyński, Univ. of Warsaw (Poland); Wenzhong Liu, Huazhong Univ. of Science and Technology (China)  
 13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

# Conference 13717

13717-32

## **Dust3R-3DGS: Differentiable 3D reconstruction with transformer-based matching and Gaussian splatting**

Heng Wang, Shijie Yu, Beijing Information Science & Technology Univ. (China); Ting Sun, Beijing Information Science & Technology University (China); Lei Deng, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13717-33

## **An LO regularized decomposition-based method for image tone mapping**

Yan Zhang, Huai'an First People's Hospital (China); Zhicheng Wu, Siyuan Wang, Yuqing Han, Han Zhu, Yucai Tang, Huasong Chen, Huaiyin Institute of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13717-34

## **Study on dual-space joint-intensity of SFS super-resolution imaging under multi-mode illumination**

Xiaoyu Yang, Haonan Zhang, Feihong Lin, Qing Yang, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13717-35

## **The microenvironmental and protein binding dependence of the photophysical properties of pyridoxal-5-phosphate revealed by time-resolved polarized spectroscopy**

Ioanna A. Gorbunova, Ioffe Institute (Russian Federation), First Moscow State Medical University (Russian Federation); Maxim E. Sasin, Denis A. Volkov, Oleg S. Vasyutinskii, Ioffe Institute (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13717-36

## **Single magnetic nanoparticle detection via interferometric scattering microscopy**

Yulong Dong, Huazhong Univ. of Science and Technology (China); Yi Ding, Optics Valley Lab. (China); Wenzhong Liu, Feidi Xiang, Huazhong Univ. of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13717-37

## **Discrete cosine single-pixel wavefront reconstruction based on DCT spectrum restoration**

Jiaye Kuang, Rui Sun, Yi Ding, Jingjing Cheng, Optics Valley Lab. (China); Ryszard Buczyński, Univ. of Warsaw (Poland); Wenzhong Liu, Huazhong Univ. of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13717-38

## **Generation and modulation of spatiotemporal multimodal light fields**

Yao Zhang, Zhangyu Zhou, Changjun Min, Shenzhen Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13717-39

## **Whole-brain long-term optical imaging of brain tissue oxygenation during various biological disorders**

DAWID SHENG, Xing Sheng, Tsinghua (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13717-40

## **Depth prediction method based on monocular images and sparse point cloud fusion**

Zijie Ma, Beijing Institute of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13717-42

## **Universal quantitative phase imaging via neural field-driven differential phase contrast microscopy**

Xingyu Huang, Nanjing Univ. of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13717-43

## **Polarization metasurface enables tunable 1D directional edge enhancement**

Wenli Wang, Chery Automobile Co., Ltd. (China); Yao Hu, Beijing Institute of Technology (China); Qiusheng Huang, Chery Automobile Co., Ltd. (China); Qun Hao, Beijing Institute of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13717-44

## **Micrometer-scale high-numerical-aperture objective with large field-of-view fabricated by two-photon nanolithography**

Yuting Guo, University of Shanghai for Science and Technology (China); Chao Meng, Qiming Zhang, Min Gu, Haoyi Yu, Univ. of Shanghai for Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

### **SESSION 5: COMPUTATIONAL IMAGING II**

13 October 2025 • 14:30 - 16:30 | Room 311A

*Session Chair: Lei-Ting Pan, Nankai Univ. (China)*

13717-17

## **Confocal airy beam oblique light-sheet tomography for brain-wide cell type distribution and morphology** *(Invited Paper)*

Xiaoli Qi, National Institute of Biological Sciences (China)

13 October 2025 • 14:30 - 15:00 | Room 311A

13717-18

## **Computational reflective light sheet microscopy** *(Invited Paper)*

Yue Wang, Peking Univ. (China)

13 October 2025 • 15:00 - 15:30 | Room 311A

13717-19

## **Neural network model for hologram generation with open data training**

Kaipeng Lu, Shenzhen Univ. (China); Ruping Deng, Nankai Univ. (China); Wanlong Zhang, Changjun Min, Yuquan Zhang, Xiaocong Yuan, Shenzhen Univ. (China)

13 October 2025 • 15:30 - 15:50 | Room 311A

13717-21

## **Rapid three-dimensional volumetric imaging microscope with oblique-field patterned illumination**

Huang Yankan, University of Science and Technology of China (China); Baixi Cao, Cheng Zhang, Wenxuan Liang, Univ. of Science and Technology of China (China)

13 October 2025 • 15:50 - 16:10 | Room 311A

13717-22

## **Confocal photoacoustic remote sensing microscopy for label-free optical sectioning**

Yihan Pi, Jijing Chen, Hao Zhang, Jiao Li, Zhen Tian, Tianjin Univ. (China)

13 October 2025 • 16:10 - 16:30 | Room 311A

## SESSION 6: NOVEL IMAGING TECHNIQUES III

14 October 2025 • 09:00 - 09:50 | Room 311A

Session Chair: **Yunhua Yao**, East China Normal Univ. (China)

13717-23

### **Nearest paired cloud: Resolution-matched fast drift correction for single-molecule localization microscopy** (Invited Paper)

Lei-Ting Pan, Nankai Univ. (China)

14 October 2025 • 09:00 - 09:30 | Room 311A

13717-25

### **Time-varying ultrafast holographic light field generated by spatial frequency multiplexed meta-holography**

Qizhen Wang, Shen Zhen University (China)

14 October 2025 • 09:30 - 09:50 | Room 311A

Tea/Coffee Break 09:50 - 10:20

## SESSION 7: COMPUTATIONAL IMAGING III

14 October 2025 • 10:20 - 12:00 | Room 311A

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

13717-26

### **Compressive imaging-based structured illumination microscopy** (Invited Paper)

Yunhua Yao, East China Normal Univ. (China)

14 October 2025 • 10:20 - 10:50 | Room 311A

13717-27

### **MPIS-IDTM: Multi-plane assisted iterative solution against scattering in intensity diffraction tomographic microscopy** (Invited Paper)

Jijai Li, Wuhan Univ. of Technology (China)

14 October 2025 • 10:50 - 11:20 | Room 311A

13717-28

### **Structural characterization of plants using non-contact polarized photoacoustic microscopy**

Ying Long, Bingxue Zhang, Yihan Pi, Jijing Chen, Jiao Li, Zhen Tian, Tianjin Univ. (China)

14 October 2025 • 11:20 - 11:40 | Room 311A

13717-29

### **High-speed imaging systems with brightness amplifiers**

Maxim V. Trigub, V.E. Zuev Institute of Atmospheric Optics (Russian Federation)

14 October 2025 • 11:40 - 12:00 | Room 311A

# Conference 13718

## Optoelectronic Imaging and Multimedia Technology XII

13 - 14 October 2025 | Room 305B

Conference Chairs: **Jinli Suo**, Tsinghua Univ. (China); **Zhenrong Zheng**, Zhejiang Univ. (China)

Program Committee: **Liheng Bian**, Beijing Institute of Technology (China); **Liangcai Cao**, Tsinghua Univ. (China); **Xun Cao**, Nanjing Univ. (China); **Qionghai Dai**, Tsinghua Univ. (China); **Yu Qi Han**, Dalian Univ. of Technology (China); **Gangyi Jiang**, Ningbo Univ. (China); **Jun Ke**, Beijing Institute of Technology (China); **Xiaoyan Luo**, Beihang Univ. (China); **Tsutomu Shimura**, The Univ. of Tokyo (Japan); **Baoqing Sun**, Shandong Univ. (China); **Mingjie Sun**, Beihang Univ. (China); **Qiong-Hua Wang**, Beihang Univ. (China); **Shigang Wang**, Jilin Univ. (China); **Xin Yuan**, Westlake Univ. (China); **Chao Zuo**, Nanjing Univ. of Science and Technology (China)

### POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 - 13:00**

View poster presentation guidelines and set-up instructions at <http://spie.org/PA/poster-presentation-guidelines>

13718-24

#### **Simulation of Star Fields and Classification of Disturbance Intensity Under Aero-thermal Radiation Effects**

Haonan Liu, Zongyu Zhang, Guoteng Ren, Ye Tian, Ting Sun, Beijing Information Science and Technology University (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-25

#### **Dynamic star simulator technology for modeling hypersonic aerothermal radiation effects**

Ye Tian, Beijing Information Science & Technology Univ (China); Shijie Yu, Beijing Information Science & Technology Univ. (China); Haonan Liu, Baokang You, Ting Sun, Beijing Information Science & Technology Univ (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-26

#### **A ground-based method for dim satellite detection and tracking via adaptive spatiotemporal filtering and trajectory matching**

Baosen Yang, Beijing Information Science & Technology Univ. (China); Ting Sun, College of Instrument Science and Optoelectronics Engineering, Intelligent Microsystems Laboratory, Beijing Information Science and Technology University, Beijing, 100192, China (China); Fei Xing, Tsinghua Univ. (China); Haonan Liu, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-27

#### **Global prior-guided distortion representation learning network for remote sensing image blind super-resolution**

Guanwen Li, Beijing Information Science & Technology Univ. (China); Ting Sun, Beijing Information Science & Technology Univ (China); Shijie Yu, Ye Tian, Xue Yan, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-28

#### **Generative adversarial network design based on a dual-path snapshot spectral imaging system**

Xiang Li, Zhenrong Zheng, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-29

#### **Deep learning applied to CT sparse-view reconstruction**

Xiaozhong Guo, Fujian Normal Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-30

#### **Robot-guided Multi-view point-cloud fusion for accurate 3D reconstruction**

Juyi Wang, Yong Huang, Beijing Institute of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-31

#### **Simultaneous global and local anisotropic gradient priors based method for single image deraining**

Zhicheng Wu, Huaiyin Institute of Technology (China); Yan Zhang, Huai'an First People's Hospital (China); Siyuan Wang, Yuqing Han, Han Zhu, Yucui Tang, Junhao Wang, Huasong Chen, Huaiyin Institute of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-32

#### **2D medical image segmentation based on spectral-spatial dual-branch Transformer U-Net**

Jiaqi Cao, Jinying Ma, Debin Zhou, Tianjin Univ. of Technology and Education (China); Junfeng Jiang, Tiegeng Liu, Tianjin Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-33

#### **Design of a thermally robust reflective EUV focusing element using Mo/Si/C multilayer nanostructures**

Zhenrong Zheng, Changwei Zhang, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-34

#### **High-precision defect detection method for extreme ultraviolet (EUV) photomasks based on Fourier ptychographic imaging**

Jiayin Li, Zhenrong Zheng, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-35

#### **Information-maximizing optical encoder for parameter optimization in multifocal microscopy**

Hao Wu, Tingdong Kou, Sichuan Univ. (China); Jun Fei Shen, Sichuan University (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-36

## Learned metalens for extended depth-of-field snapshot hyperspectral imaging

Yuhang Zhou, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-37

## Full-Stokes polarization imaging using a polarization-multiplexed multifocal metasurface

Yubo Wang, Huai Xia, Zhenrong Zheng, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-38

## Learning-based correction of smile effect in hyperspectral imaging

Bingliang Chen, Zhenrong Zheng, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-39

## A multi-scale attention and exposure-guided dual-branch network for ghost-free high dynamic range imaging

Guanwen Li, Beijing Information Science & Technology Univ. (China); Ting Sun, Beijing Information Science & Technology Univ. (China); Shijie Yu, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-40

## Investigation of multispectral image registration for the fusion system: comparison between Depth Anything V2 and Design Calibration Board

Yuandong Shao, Aleksandr Vasilev, ITMO Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-41

## Simulation study of single-photon imaging system based on cross-delay line position-sensitive anode MCPs

Jianli Yu, Haomeng Yin, Ze Jiang, Yongan Liu, Hui Zhao, Xi'an Institute of Optics and Precision Mechanics (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-42

## Low-light remote sensing image enhancement via deep Retinex network

Dai Hong, Hui Zhao, Xi'an Institute of Optics and Precision Mechanics (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-43

## End-to-end 3D point cloud fitting via multi-view reconstruction and deep geometric modeling

Beier He, Beijing Information Science & Technology Univ. (China); Ting Sun, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-44

## Research on real-time face recognition and tracking model based on embedded platform

Jihui Wang, Zhe Tang, Beijing Institute of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-45

## An outdoor scene image generation algorithm based on multi-environmental element fusion

Feng Xue, Yuzhuo Miao, Shuo Wang, Qi Wang, Dagong Jia, Tianjin Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-46

## Research on LiDAR-camera extrinsic calibration methodology via adaptive multi-stage hybrid optimization

Baokang You, Beijing Information Science & Technology Univ. (China); Ting Sun, Beijing Information Science & Technology Univ. (China); Baosen Yang, Cunyi Guo, Ye Tian, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-47

## Enhanced 3DGS based on refraction compensation for novel view synthesis in inhomogeneous media

Hongyu Zhu, Di He, Chang Liu, Jun Qiu, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-48

## HDR video reconstruction from events and LDR frames via spatiotemporal attention and exposure compensation

Ruijie Kong, Jun Qiu, Chang Liu, Lina Wu, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-49

## Research on Pedestrian Gaze Detection in Autonomous Driving Systems

Zhan Wang, Dmitrii Zhdanov, Andrei Zhdanov, ITMO University (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-50

## Occlusion-robust unsupervised disparity estimation with statistical data priors

Yue Dong, Qiu Jin, Xiaojuan Deng, Chang Liu, Jun Qiu, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-51

## Method for recovering texture of diffuse scene objects

Stanislav Kupriianov, Dmitry Zhdanov, ITMO Univ (Russian Federation); Yan Wang, ITMO Univ (Russian Federation), Shanghai Aozhan Intelligent Technology Co. Ltd (China); Zhan Wang, ITMO Univ (Russian Federation); Andrei Zhdanov, ITMO Univ (Russian Federation), Shanghai Aozhan Intelligent Technology Co. Ltd (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-52

## Adaptive block-rooting image enhancement with learnable fusion for surveillance Imaging systems

Marina M. Zhdanova, Don State Technical Univ. (Russian Federation); Alexander A. Zelensky, Viacheslav V. Voronin, Evgeny Semenishchev, Scientific-Production Complex "Technological Ctr." (Russian Federation); Nikolay V. Gapon, Don State Technical Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13718-53

## Disparity reconstruction from light fields based on implicit neural representation of central view image

Chengxia Liu, Beijing Information Science & Technology Univ. (China); Chang Liu, Beijing Information Sci. and Tech. Univ. (China); Junyao Weng, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

# Conference 13718

## SESSION 1: SPECTRAL IMAGING I

13 October 2025 • 14:30 - 16:10 | Room 305B

*Session Chair: Jinli Suo, Tsinghua Univ. (China)*

13718-1

### Multispectral-to-RGB virtual H&E staining of renal cancer tissue using a dual-branch SwinIR-UNet network

Bingshan Chen, Tingdong Kou, Chaoqiang Wu, Junfei Shen, Sichuan Univ. (China)

13 October 2025 • 14:30 - 14:50 | Room 305B

13718-2

### Multispectral road segmentation with spectral attention network

Zhengyi Zhao, Zhen Wang, Pengming Peng, Liheng Bian, State Key Lab. of CNS/ATM, Beijing Institute of Technology (China)

13 October 2025 • 14:50 - 15:10 | Room 305B

13718-3

### High-efficiency RGB-IR image fusion with heterogeneous resolutions based on MoE model

Songqian Zhang, Weijian Su, Lei Meng, Yuqi Han, Qiang Zhang, Dalian Univ. of Technology (China)

13 October 2025 • 15:10 - 15:30 | Room 305B

13718-4

### Real-time hyperspectral imaging and biochemical sensing via explainable optical AI

Qizhou Wang, King Abdullah Univ of Science and Technology (Saudi Arabia); Ning Li, Arturo Burguete-Lopez, Zhao He, Andrea Fratolocchi, King Abdullah Univ. of Science and Technology (Saudi Arabia)

13 October 2025 • 15:30 - 15:50 | Room 305B

13718-54

### All-weather in sensor near-infrared image recognition and feature extraction based on short-term stimulation and long-term depression mechanisms

Xian-qin Liu, Haijiao Ma, Siwen Zhang, Jincheng Zhang, Yue Hao, Xidian Univ. (China)

13 October 2025 • 15:50 - 16:10 | Room 305B

Tea/Coffee Break 16:10 - 16:20

## SESSION 2: COMPUTATIONAL IMAGING AND RECONSTRUCTION

13 October 2025 • 16:20 - 18:20 | Room 305B

*Session Chair: Zhenrong Zheng, Zhejiang Univ. (China)*

13718-55

### High-performance integral imaging 3D display and acquisition

Wei-Ze Li, Yuan-Yi Huang, Xing-Yu Lin, Yan Xing, Qiong-Hua Wang, Beihang Univ. (China)

13 October 2025 • 16:20 - 16:40 | Room 305B

13718-5

### High-performance reconstruction algorithm based on deep denoiser for active non-line-of-sight imaging

Chengquan Pei, Jingbo Hu, Xidian Univ. (China)

13 October 2025 • 16:40 - 17:00 | Room 305B

13718-6

### Hyperspectral image reconstruction based on spatial-spectral feature fusion with two-branch networks

Sen Ai, Beijing University of Information Science and Technology (China); Yanlin He, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 17:00 - 17:20 | Room 305B

13718-7

### Degraded image simulation for microlens array scanning imaging system

Zhida Pan, Tianjin Univ (China); Lei Yang, Hongbo Xie, Tianjin Univ. (China)

13 October 2025 • 17:20 - 17:40 | Room 305B

13718-8

### Estimation method for the medium point-spread function in imaging with complex environmental characteristics

Zesen Zhang, Tsinghua Univ. (China); Xuemin Cheng, Tsinghua Univ. (China)

13 October 2025 • 17:40 - 18:00 | Room 305B

13718-9

### Large-dynamic high-accuracy wavefront sensing using deep-learning-assisted phase diversity phase retrieval

Yiwei Hu, Ming Liu, Yikui Ning, Bing Dong, Beijing Institute of Technology (China)

13 October 2025 • 18:00 - 18:20 | Room 305B

## SESSION 3: ADVANCED OPTICAL SYSTEMS

14 October 2025 • 09:00 - 10:40 | Room 305B

*Session Chair: Jun Fei Shen, Sichuan Univ. (China)*

13718-10

### Considerations of aberrations in high numerical aperture extreme ultraviolet lithography for computational imaging

Guojin Li, Zhenrong Zheng, Zhejiang Univ. (China)

14 October 2025 • 09:00 - 09:20 | Room 305B

13718-11

### Wide-field-of-view multi-layer light-field 3D display based on eye-tracking and square pyramid

Rongxing Deng, Huarong Gu, Nanjing Univ. of Aeronautics and Astronautics (China)

14 October 2025 • 09:20 - 09:40 | Room 305B

13718-12

### Hybrid multi-layer compressive light-field near-eye 3D display using focus tunable lenses

Xinyuan Wang, Huarong Gu, Minghao Liu, Yusheng Wu, Nanjing Univ. of Aeronautics and Astronautics (China)

14 October 2025 • 09:40 - 10:00 | Room 305B

13718-13

### Large zoom ratio and adaptive aberration correction microscope using PSF-aware physical degradation-guided network

Yi Zheng, Dong-Xu Yu, Qiong-Hua Wang, Chao Liu, Beihang Univ. (China)

14 October 2025 • 10:00 - 10:20 | Room 305B

13718-14

### Holographic display technology with subwavelength resolution in visible light based on metasurfaces

Zhenrong Zheng, Zhejiang Univ (China); Ziqi Pan, Zhejiang Univ. (China)

14 October 2025 • 10:20 - 10:40 | Room 305B

Tea/Coffee Break 10:40 - 11:10

## SESSION 4: SPECTRAL IMAGING II

14 October 2025 • 11:10 - 11:50 | Room 305B

*Session Chair:* **Liheng Bian**, Beijing Institute of Technology (China)

13718-15

### **Dielectric metalens for miniaturized imaging systems: progress and challenges**

Zhenrong Zheng, Zhejiang Univ. (China)

14 October 2025 • 11:10 - 11:30 | Room 305B

13718-16

### **A mid-infrared computational spectrometer enabled by a PCMs based thin-film spectral encoder**

Lianwei Huang, Chenning Tao, Zhiyong Zhou, Zhejiang Normal Univ. (China)

14 October 2025 • 11:30 - 11:50 | Room 305B

**Lunch Break 11:50 - 13:20**

## SESSION 5: DEEP LEARNING AND TARGET DETECTION

14 October 2025 • 13:20 - 14:20 | Room 305B

*Session Chairs:* **Jinli Suo**, Tsinghua Univ. (China),  
**Zhenrong Zheng**, Zhejiang Univ. (China)

13718-19

### **Development of an algorithm for rapid analysis of NADH fluorescence decay curves**

Ilya Shchechkin, Privolzhsky Research Medical Univ. (Russian Federation), N.I. Lobachevsky Nizhny Novgorod National Research State Univ. (Russian Federation); Svetlana Rodimova, Privolzhsky Research Medical Univ. (Russian Federation); Nikolai Bobrov, The Volga District Medical Ctr. (Russian Federation), Privolzhsky Research Medical Univ. (Russian Federation); Mozherov Artem, I.M. Sechenov First Moscow State Medical Univ. (Russian Federation); Vladislav Shcheslavsky, Privolzhsky Research Medical Univ. (Russian Federation); Vladimir Zagainov, Nizhny Novgorod Regional Clinical Oncologic Dispensary (Russian Federation); Elena Zagaynova, Lopukhin Federal Research and Clinical Ctr. of Physical-Chemical Medicine of Federal Medical Bio-logical Agency (Russian Federation); Daria Kuznetsova, Privolzhsky Research Medical Univ. (Russian Federation), I.M. Sechenov First Moscow State Medical Univ. (Russian Federation)

14 October 2025 • 13:20 - 13:40 | Room 305B

13718-21

### **A neural transient fields network for scattering imaging**

Xiaoya Lei, Xi'an Univ. (China)

14 October 2025 • 13:40 - 14:00 | Room 305B

13718-22

### **Implicit neural representation via MLPs-KANs fusion with spatial-frequency transforms**

Wen Yan, Ligen Shi, Shuchen Sun, Jun Qiu, Chang Liu, Beijing Information Science & Technology Univ. (China)

14 October 2025 • 14:00 - 14:20 | Room 305B

# Conference 13719

## Holography, Diffractive Optics, and Applications XV

12 - 14 October 2025 | Rooms 308 (Sun-Tues) and 305D (Mon)

**Conference Chairs:** **Changhe Zhou**, Jinan Univ. (China); **Ting-Chung Poon**, Virginia Polytechnic Institute and State Univ. (United States); **Liangcai Cao**, Tsinghua Univ. (China); **Hiroshi Yoshikawa**, Nihon Univ. (Japan)

**Program Committee:** **Partha P. Banerjee**, Univ. of Dayton (United States); **Chau-Jern Cheng**, National Taiwan Normal Univ. (Taiwan, China); **Gaoliang Dai**, Physikalisch-Technische Bundesanstalt (Germany); **Wei Gao**, Tohoku Univ. (Japan); **Elena Goi**, Univ. of Shanghai for Science and Technology (China); **Min Gu**, Univ. of Shanghai for Science and Technology (China); **Yoshio Hayasaki**, Utsunomiya Univ. Ctr. for Optical Research & Education (Japan); **Hoonjong Kang**, Wonkwang Univ. (Republic of Korea); **Taegeun Kim**, Sejong Univ. (Republic of Korea); **Xiangping Li**, Jinan Univ. (China); **Xinghui Li**, Tsinghua Univ. Shenzhen International Graduate School (China); **Ai Qun Liu**, Nanyang Technological Univ. (Singapore); **Juan Liu**, Beijing Institute of Technology (China); **Jung-Ping Liu**, Feng Chia Univ. (Taiwan, China); **Ignacio Moreno Soriano**, Univ. Miguel Hernández (Spain); **Pascal Picart**, Lab. d'Acoustique de l'Univ. du Maine (France); **Keqiang Qiu**, Univ. of Science and Technology of China (China); **Xinzhu Sang**, Beijing Univ. of Posts and Telecommunications (China); **Yunlong Sheng**, Univ. Laval (Canada); **Tatsuki Tahara**, National Institute of Information and Communications Technology (Japan); **Xiaodi Tan**, Fujian Normal Univ. (China); **Vladimir Y. Venediktov**, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation); **Baoli Yao**, Xi'an Institute of Optics and Precision Mechanics of CAS (China); **JunJie Yu**, Shanghai Institute of Optics and Fine Mechanics, CAS (China); **Qiwen Zhan**, Univ. of Shanghai for Science and Technology (China); **Fucaai Zhang**, Southern Univ. of Science and Technology (China); **Yan Zhang**, Capital Normal Univ. (China); **Yaping Zhang**, Kunming Univ. of Science and Technology (China); **Jianlin Zhao**, Northwestern Polytechnical Univ. (China); **Renjie Zhou**, The Chinese Univ. of Hong Kong (Hong Kong, China); **Wenjing Zhou**, Shanghai Univ. (China); **Chao Zuo**, Nanjing Univ. of Science and Technology (China)

### OPENING CEREMONY AND PLENARY SESSION

12 October 2025 • 08:30 - 12:00 | Convention Hall 2, Level 2  
*View Full Details: [spie.org/photonics-asia-pleinary](https://spie.org/photonics-asia-pleinary)*

08:30 - 08:50

#### Opening Ceremony, Awards and Recognition

13715-501

#### Photonics and electronics convergence: oscillation, computing, and interconnection (*Plenary Presentation*)

Ming Li, Institute of Semiconductors, Chinese Academy of Sciences (China)

12 October 2025 • 08:50 - 09:30 | Convention Hall 2, Level 2

13722-502

#### When metasurfaces meet photodetectors (*Plenary Presentation*)

Cheng-Wei Qiu, College of Design and Engineering, National Univ. of Singapore (Singapore)

12 October 2025 • 09:30 - 10:10 | Convention Hall 2, Level 2

Tea/Coffee Break 10:10 - 10:40

13717-503

#### Super-resolution in ultra-thin lumens (*Plenary Presentation*)

Qing Yang, Zhejiang Univ. (China), ZJU-Hangzhou Global Scientific and Technological Innovation Ctr. (China), Shanxi Univ. (China)

12 October 2025 • 10:40 - 11:20 | Convention Hall 2, Level 2

13720-504

#### Much ado about nothing: Light fields with phase singularities for precision measurement (*Plenary Presentation*)

Kishan Dholakia, School of Biological Sciences, The Univ. of Adelaide (Australia), Ctr. of Light for Life, The Univ. of Adelaide (Australia)

12 October 2025 • 11:20 - 12:00 | Convention Hall 2, Level 2

Lunch Break 12:00 - 13:30

### SESSION 1: COMPUTATIONAL IMAGING

12 October 2025 • 13:30 - 15:25 | Room 308

*Session Chair:* Changhe Zhou, Jinan Univ. (China)

13719-1

#### Ptychographic wavefront cameras (*Invited Paper*)

David J. Brady, Wyant College of Optical Sciences (United States); Ni Chen, The Univ. of Hong Kong (Hong Kong, China)

12 October 2025 • 13:30 - 13:55 | Room 308

13719-2

#### Embracing uncertainties in computational imaging (*Invited Paper*)

Ni Chen, The University of Hong Kong (Hong Kong, China); Edmund Y. Lam, The Univ. of Hong Kong (China)

12 October 2025 • 13:55 - 14:20 | Room 308

13719-3

#### Integrated quantitative phase imaging and its applications in refractive index measurement of materials and biology (*Invited Paper*)

Junwei Min, Yuge Xue, Yingjie Feng, Siying Wang, Ruihua Liu, Yan Li, Baoli Yao, Xi'an Institute of Optics and Precision Mechanics (China)

12 October 2025 • 14:20 - 14:45 | Room 308

13719-4

#### Realization of spatial differentiations using acousto-optic modulators: a review (*Invited Paper*)

Ting-Chung Poon, Virginia Polytechnic Institute and State Univ. (United States); Yaping Zhang, Kunming Univ. of Science and Technology (China)

12 October 2025 • 14:45 - 15:10 | Room 308

13719-5

#### Single-shot holographic speckle correlation for polarization imaging through scattering layer

Vinu R.V., Xingpeng Du, Ziyang Chen, Jixiong Pu, Huaqiao Univ. (China)

12 October 2025 • 15:10 - 15:25 | Room 308

Tea/Coffee Break 15:25 - 15:55

## SESSION 2: HOLOGRAPHY I

12 October 2025 • 15:55 - 17:15 | Room 308

*Session Chair:* **David J. Brady,**

Wyant College of Optical Sciences (United States)

13719-6

### **Theory-trained deep holography for mode decomposition towards multimode fiber-based information transmission** (*Invited Paper*)

Jürgen W. Czarske, TU Dresden (Germany)

12 October 2025 • 15:55 - 16:20 | Room 308

13719-7

### **Holographic video display using liquid crystal panel for 3D printer** (*Invited Paper*)

Hiroshi Yoshikawa, Nihon Univ (Japan); Takeshi Yamaguchi, Nihon Univ. (Japan)

12 October 2025 • 16:20 - 16:45 | Room 308

13719-8

### **Noise-reduced reconstruction sampling using phase-controlled tiled holograms**

Ayan Rakshit, Univ of Cambridge (United Kingdom); Antoni J. Wojcik, Timothy D. Wilkinson, Hannah J. Joyce, Univ. of Cambridge (United Kingdom)

12 October 2025 • 16:45 - 17:00 | Room 308

13719-10

### **AI promotes holographic phase recovery**

Kaiqiang Wang, Northwestern Polytechnical Univ. (China)

12 October 2025 • 17:00 - 17:15 | Room 308

## SESSION 3: OPTICAL DATA STORAGE

12 October 2025 • 17:15 - 17:55 | Room 308

*Session Chair:* **David J. Brady,**

Wyant College of Optical Sciences (United States)

13719-11

### **Light-field control devices produced by polarization holography** (*Invited Paper*)

Xiaodi Tan, Shujun Zheng, Jinyu Wang, Junhui Wu, Shenghui Ke, Xinyi Yuan, Yi Yang, Yuhong Ren, Fujian Normal Univ. (China)

12 October 2025 • 17:15 - 17:40 | Room 308

13719-12

### **Research on low pass filter size based on double phase holographic storage**

Minghui Song, Yilong Zhuang, Yongkun Lin, Jianying Hao, Xiao Lin, Xiaodi Tan, Fujian Normal Univ. (China)

12 October 2025 • 17:40 - 17:55 | Room 308

## SESSIONS 4-8 RUN CONCURRENTLY WITH SESSIONS 9-12

### SESSION 4: HOLOGRAPHY II

#### NOTE ROOM

13 October 2025 • 08:35 - 10:10 | Room 308

Session Chair: **Ting-Chung Poon**, Virginia Polytechnic Institute and State Univ. (United States)

13719-85

#### **Phase imaging under off-the-shelf confocal microscopy** (Invited Paper)

Naru Yoneda, Kobe Univ. (Japan); Joe Sakamoto, Exploratory Research Ctr. on Life and Living Systems, Biophotonics Research Group (Japan); Takumi Tomoi, Saitama Univ. (Japan); Tomomi Nemoto, Exploratory Research Ctr. on Life and Living Systems, Biophotonics Research Group (Japan); Yosuke Tamada, Utsunomiya Univ. (Japan); Osamu Matoba, Kobe Univ. (Japan)

13 October 2025 • 08:35 - 09:00 | Room 308

13719-13

#### **Holographic strategies for scale-robust 3D face recognition: from Mellin-domain encoding to hybrid optical correlation** (Invited Paper)

Yaping Zhang, Yongwei Yao, Kunming Univ. of Science and Technology (China); Ting-Chung Poon, Virginia Polytechnic Institute and State Univ. (United States)

13 October 2025 • 09:00 - 09:25 | Room 308

13719-14

#### **Holographic lithography technology based on lensless coding**

Juan Liu, Jiahao Wei, Yongtian Wang, Beijing Institute of Technology (China)

13 October 2025 • 09:25 - 09:40 | Room 308

13719-15

#### **Synthetic aperture holography for high-resolution patterning**

Antoni J. Wojcik, Univ of Cambridge (United Kingdom); Dilawer Singh, Ayan Rakshit, Solomon M. Gardner, Hannah J. Joyce, Timothy D. Wilkinson, Univ. of Cambridge (United Kingdom)

13 October 2025 • 09:40 - 09:55 | Room 308

13719-16

#### **Holographic modal wavefront sensing for adaptive correction of turbulence-induced aberrations in vortex beam**

Yikui Ning, Ming Liu, Yukun Song, Yiwei Hu, Bing Dong, Beijing Institute of Technology (China)

13 October 2025 • 09:55 - 10:10 | Room 308

Tea/Coffee Break 10:10 - 10:40

### SESSION 9: HOLOGRAPHY III

#### NOTE ROOM

13 October 2025 • 08:30 - 10:00 | Room 305D

Session Chair: **Jürgen W. Czarske**, TU Dresden (Germany)

13719-33

#### **Patterned photoalignment for holographic structures based on chiral liquid crystal** (Invited Paper)

Kristiaan Neyts, Pouya Nosrathkhanh, Ke Xu, Hong Kong Univ. of Science and Technology (Hong Kong, China); Rohan Sharma, Migle Stebryte, Univ. Gent (Belgium); Le Zhou, Hong Kong Univ. of Science and Technology (Hong Kong, China); Inge Nys, Univ. Gent (Belgium); Sunqian Liu, Hong Kong Univ. of Science and Technology (Hong Kong, China)

13 October 2025 • 08:30 - 08:55 | Room 305D

13719-34

#### **Physics-informed complex-valued networks for high-fidelity inline holography reconstruction** (Invited Paper)

Jianglei Di, Jiazhen Dou, Guangdong Univ. of Technology (China)

13 October 2025 • 08:55 - 09:20 | Room 305D

13719-35

#### **Autostereoscopic display of optical scanning holograms** (Invited Paper)

Peter W. M. Tsang, Consultant (Hong Kong, China); Yaping Zhang, Kunming Univ. of Science and Technology (China); Ting-Chung Poon, Virginia Polytechnic Institute and State Univ. (United States)

13 October 2025 • 09:20 - 09:45 | Room 305D

13719-36

#### **Zero-order removal in on-axis holographic projection using filter-based optimization**

Songzhi Tian, Runze Zhu, Hao Zhang, Qiaofeng Tan, Liqun Sun, Tsinghua Univ. (China)

13 October 2025 • 09:45 - 10:00 | Room 305D

Tea/Coffee Break 10:00 - 10:30

## SESSIONS 4-8 RUN CONCURRENTLY WITH SESSIONS 9-12

## SESSION 5: MANIPULATION OF OPTICAL FIELD

13 October 2025 • 10:40 - 12:00 | Room 308

Session Chair: **Naveen K. Nishchal**,  
Indian Institute of Technology Patna (India)

13719-19

**Advanced optical systems through flat optics for biomedical applications** (*Invited Paper*)

Yuan Luo, National Taiwan Univ. (Taiwan, China)

13 October 2025 • 10:40 - 11:05 | Room 308

13719-20

**An enhanced optoelectronic hybrid photonics ising accelerator for large-scale 0-1 Knapsack problems solving** (*Invited Paper*)

Junjie Yu, Junze Yao, Shanghai Institute of Optics and Fine Mechanics (China)

13 October 2025 • 11:05 - 11:30 | Room 308

13719-21

**Design of holographic data storage material measurement system**

Yilong Zhuang, Yongkun Lin, Rupeng Yang, Zhengyu Li, Minghui Song, Xiao Lin, Xiaodi Tan, Fujian Normal Univ. (China)

13 October 2025 • 11:30 - 11:45 | Room 308

13719-22

**Improved phase space sampling analysis for the discrete Bai distribution function**

Yushi Zheng, Univ. College Dublin (Ireland); John J. Healy, Univ. College Dublin (Ireland), Beijing-Dublin International College (China)

13 October 2025 • 11:45 - 12:00 | Room 308

**Lunch Break 12:00 - 13:30**

## SESSION 10: LASER FABRICATION

13 October 2025 • 10:30 - 12:05 | Room 305D

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

13719-37

**Laser interference lithography for high-precision metrology and sensing: techniques and applications** (*Invited Paper*)

Xinghui Li, Jingwen Li, Shuonan Shan, Tianshi Lu, Tsinghua Univ. Shenzhen International Graduate School (China)

13 October 2025 • 10:30 - 10:55 | Room 305D

13719-38

**High-diffraction-efficiency blazed gratings fabricated by holographic-ion beam etching** (*Invited Paper*)

Keqiang Qiu, Univ. of Science and Technology of China (China)

13 October 2025 • 10:55 - 11:20 | Room 305D

13719-39

**Simulation-based analysis of SAMP-induced topography effects on the diffraction efficiency of interference lithography masks**

Bojian Wu, Univ of Science and Technology of China (China); Linzi Wu, Shiyang Li, Ao Li, Keqiang Qiu, Fanfan Lu, Luyu Wang, Univ. of Science and Technology of China (China)

13 October 2025 • 11:20 - 11:35 | Room 305D

13719-40

**Laser-induced damage threshold enhancement in diffraction gratings via substrate-embedded microchannel active cooling**

Shengyang Zhan, Shanwen Zhang, Wei Jia, Changhe Zhou, Jin Wang, Jinan Univ. (China)

13 October 2025 • 11:35 - 11:50 | Room 305D

13719-41

**Numerical investigation of sub-period gratings fabricated by standing-wave-suppressed holographic lithography based on spatial polarization modulation**

Xinghui Li, Tianshi Lu, Hao Lv, Tsinghua Univ. Shenzhen International Graduate School (China)

13 October 2025 • 11:50 - 12:05 | Room 305D

**Lunch Break 12:05 - 13:30**

## POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 - 13:00**

View poster presentation guidelines and set-up instructions at  
<http://spie.org/PA/poster-presentation-guidelines>

13719-77

**Decomposing the discrete Bai distribution function for efficient computation**

Yushi Zheng, Univ. College Dublin (Ireland); John J. Healy, Univ. College Dublin (Ireland), Beijing-Dublin International College (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13719-78

**Blind ptychography via implicit neural representation**

Yongcun Hu, Beijing Institute of Technology (China); Wenhui Liu, Yangtze Delta Region Academy of Beijing Institute of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

# Conference 13719

## POSTER SESSION (continued)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13719-79

### Hologram recognition and classification using neural networks in the complex plane

Dilawer Singh, Antoni J. Wojcik, Solomon M. Gardner, Timothy D. Wilkinson, Univ. of Cambridge (United Kingdom)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13719-80

### Local calibration of phase-only spatial light modulators using digital holography

Ising Lau, Zehao He, Yan Zhang, Capital Normal Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13719-81

### Fabrication of high-precision metrological gratings with fringe-stabilized interference lithography

Jingwen Li, Yufeng Wei, Changfeng Shao, Tsinghua Univ. Shenzhen International Graduate School (China); Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13719-82

### Phase unwrapping in digital holographic interferometry via convolutional and Fourier neural networks

Qiang Fang, Haiting Xia, Kunming Univ. of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13719-83

### Phase-shifting-free method for resolution enhancement in off-axis structured illumination DHM via high-frequency component isolation

Meng Huang, Quzhou University (China); Yiwei Liu, North Minzu Univ. (China); Yalong Zhang, Quzhou Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13719-84

### Research on the algorithm for generating pure phase holograms using multi-stage generative adversarial networks integrated with attention mechanism

Kang You, Anhui Univ. of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13719-87

### Wide-bandwidth reflective volume Bragg gratings for grouped filtering

Jiachuang Deng, Kuaisheng Zou, Yi Ren, Soochow Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

## SESSIONS 4-8 RUN CONCURRENTLY WITH SESSIONS 9-12

### SESSION 6: MICROSCOPY

13 October 2025 • 14:30 - 15:50 | Room 308

Session Chair: **Yoshio Hayasaki**, Utsunomiya Univ. Ctr. for Optical Research & Education (Japan)

13719-23

### Evaluating GAN-based lensless holographic microscopy system for accurate and cost-effective pollen classification (*Invited Paper*)

Blaž Cugmas, Eva Štruc, Vetamplify SIA (Latvia); Bor Ivanuš, Miran Bürmen, Univ. of Ljubljana (Slovenia); Peter Naglič, Institut für Lasertechnologien in der Medizin und Meßtechnik an der Univ. Ulm (Germany); Maksims Ivanovs, Univ. of Latvia (Latvia)

13 October 2025 • 14:30 - 14:55 | Room 308

13719-24

### Computational phase imaging for label-free 3D microscopy: noninterferometric phase retrieval and intensity diffraction tomography (*Invited Paper*)

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

13 October 2025 • 14:55 - 15:20 | Room 308

13719-25

### Lightweight 3D transformer-based fast 3D computational microscopy imaging with fluorescence self-interference digital holography

Yuwen Zhang, Tianlong Man, Yuhong Wan, Beijing Univ. of Technology (China)

13 October 2025 • 15:20 - 15:35 | Room 308

13719-26

### A coherent lensless microscope for EUV mask inspection

Peng Li, Ao Li, Xiaosong Liu, Univ. of Science and Technology of China (China)

13 October 2025 • 15:35 - 15:50 | Room 308

### SESSION 11: OPTICAL COMPUTING AND NEURAL NETWORK

13 October 2025 • 14:30 - 16:45 | Room 305D

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

13719-42

### Deep-learning-driven 3D hologram generation (*Invited Paper*)

Tomoyoshi Shimobaba, Chiba University (Japan); Fan Wang, Masato Shotoku, Kai Kumano, Yudai Fujima, Keisuke Ono, Tomoyoshi Ito, Chiba Univ. (Japan)

13 October 2025 • 14:30 - 14:55 | Room 305D

13719-43

### Bridging domain knowledge and deep learning for transparent and generalizable digital holography (*Invited Paper*)

Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China); Yunping Zhang, The Univ. of Hong Kong (China)

13 October 2025 • 14:55 - 15:20 | Room 305D

13719-44

### Holotomography in optics and X-ray: Advancing 3D imaging with refractive index and dielectric tensor reconstructions (*Invited Paper*)

YongKeun P. Park, KAIST (Republic of Korea)

13 October 2025 • 15:20 - 15:45 | Room 305D

13719-45

### Optimization algorithm for beam control in grating antenna-based optical phased arrays

Junhao Li, Univ. of Shanghai for Science and Technology (China)

13 October 2025 • 15:45 - 16:00 | Room 305D

13719-46

### Motion-resolved non-interferometric holographic imaging with spatiotemporal priors

Yunhui Gao, Liangcai Cao, Tsinghua Univ. (China)

13 October 2025 • 16:00 - 16:15 | Room 305D

## SESSIONS 4-8 RUN CONCURRENTLY WITH SESSIONS 9-12

## SESSION 7: 3D DISPLAY

13 October 2025 • 15:50 - 16:40 | Room 308

Session Chair: **Hiroshi Yoshikawa**, Nihon Univ. (Japan)

13719-27

**Microcloud display** (*Invited Paper*)

Yoshio Hayasaki, Kota Kumagai, Utsunomiya Univ. Ctr. for Optical Research &amp; Education (Japan)

13 October 2025 • 15:50 - 16:15 | Room 308

13719-28

**Complex filter synthesis for object recognition with optical correlator** (*Invited Paper*)

Naveen K. Nishchal, Indian Institute of Technology Patna (India)

13 October 2025 • 16:15 - 16:40 | Room 308

## SESSION 8: MEASUREMENT I

13 October 2025 • 16:40 - 18:00 | Room 308

Session Chair: **Hiroshi Yoshikawa**, Nihon Univ. (Japan)

13719-29

**The physical optics method for light scattering by atmospheric dust and ice particles for lidar applications** (*Invited Paper*)

Alexander V. Konoshonkin, V.E. Zuev Institute of Atmospheric Optics (Russian Federation), National Research Tomsk State Univ. (Russian Federation), Anhui Institute of Optics and Fine Mechanics (China); Dmitriy N. Timofeev, Viktor A. Shishko, V.E. Zuev Institute of Atmospheric Optics (Russian Federation); Zhenzhu Wang, Dong Liu, Anhui Institute of Optics and Fine Mechanics (China)

13 October 2025 • 16:40 - 17:05 | Room 308

13719-30

**Large-scale high-precision gratings and measurement applications** (*Invited Paper*)

Wenhao Li, Changchun Institute of Optics, Fine Mechanics and Physics (China)

13 October 2025 • 17:05 - 17:30 | Room 308

13719-31

**Coherence of the bending magnet source at the metrology beamline of NSRL**

Liang Yue, Peng Li, Keqiang Qiu, Bojian Wu, Univ. of Science and Technology of China (China)

13 October 2025 • 17:30 - 17:45 | Room 308

13719-32

**Research on diffractive wavefront measurement of 2D grating**

Yigao Ling, College of Physics &amp; Optoelectronic Engineering, Jinan University (China); Meiqi Yu, Yang Zhang, Huan Wang, Chunlong Wei, Wei Jia, Changhe Zhou, Shanwen Zhang, Jinan Univ. (China)

13 October 2025 • 17:45 - 18:00 | Room 308

## SESSION 11: OPTICAL COMPUTING AND NEURAL NETWORK (CONTINUED)

13719-47

**Conversion of 2D picture to color 3D holography using convolutional neural network (CNN)**

Chenliang Chang, Univ. of Shanghai for Science and Technology (China)

13 October 2025 • 16:15 - 16:30 | Room 305D

13719-48

**Improved spectral filtering of broadband diffractive neural network by loss function engineering**

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

13 October 2025 • 16:30 - 16:45 | Room 305D

## SESSION 12: DIGITAL HOLOGRAPHY

13 October 2025 • 16:45 - 18:10 | Room 305D

Session Chair: **Tomoyoshi Shimobaba**, Chiba Univ. (Japan)

13719-49

**Space-division phase-shifting incoherent digital holography towards high-definition 3D videography** (*Invited Paper*)

Teruyoshi Nobukawa, Kei Hagiwara, Tetsuhiko Muroi, NHK Japan Broadcasting Corp. (Japan)

13 October 2025 • 16:45 - 17:10 | Room 305D

13719-50

**A location and detection method for shallow layer diseases of murals based on time inversion: digital holography collaboration**

Huiling Zhang, Shanghai University (China), China-Greece Joint Laboratory of Cultural Heritage Conservation Technology on the Belt and Road (China); Wenjing Zhou, Shanghai Univ. (China), Key Lab. of Silicate Cultural Relics Conservation, Ministry of Education, Shanghai Univ. (China), China-Greece Belt-and-Road Joint Lab. on Cultural Heritage Conservation Technology (China); Yingjie Yu, Shanghai Univ. (China), China-Greece Belt-and-Road Joint Lab. on Cultural Heritage Conservation Technology (China); Guanghua Li, Yao Chen, Liang Qu, The Palace Museum (China)

13 October 2025 • 17:10 - 17:25 | Room 305D

13719-51

**Continuous-wavelet normalised cross-correlation: a perceptually motivated loss for high fidelity digital holography**

Solomon M. Gardner, Antoni J. Wojcik, Univ. of Cambridge (United Kingdom); Navin D. Khoshnan, Stanford Univ. (United States); Dilawer Singh, Timothy D. Wilkinson, Univ. of Cambridge (United Kingdom)

13 October 2025 • 17:25 - 17:40 | Room 305D

13719-52

**The HAPP-Net method for high-quality computer-generated holograms**

Shuo Wang, Dayong Wang, Jie Zhao, Yunxin Wang, Shufeng Lin, Beijing Univ. of Technology (China)

13 October 2025 • 17:40 - 17:55 | Room 305D

13719-53

**Fluorescence polarimetry for microplastics identification**

Shuo Li, Yanmin Zhu, Yuxing Li, Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China)

13 October 2025 • 17:55 - 18:10 | Room 305D

# Conference 13719

## SESSION 13: META-OPTICS

### NOTE ROOM

14 October 2025 • 09:00 - 10:35 | Room 308

Session Chair: **Yunlong Sheng**, Univ. Laval (Canada)

13719-54

### Planar metasurface from vectorial holography to polarization imaging (*Invited Paper*)

Xiangping Li, Jinan Univ. (China)

14 October 2025 • 09:00 - 09:25 | Room 308

13719-55

### Terahertz metasurface for mathematic operation (*Invited Paper*)

Yan Zhang, Capital Normal Univ. (China)

14 October 2025 • 09:25 - 09:50 | Room 308

13719-56

### CMOS-compatible bifunctional gratings serving as optical diodes and polarization beam splitters

Hongjie Yang, Nanyang Lida Optic-electronics Co., Ltd. (China); Qingyu Zeng, Costar (Shanghai) Science & Technology Co., Ltd. (China); Chao Tang, Jianhua Yao, Nanyang Lida Optic-electronics Co., Ltd. (China); Jing Wang, Costar (Shanghai) Science & Technology Co., Ltd. (China)

14 October 2025 • 09:50 - 10:05 | Room 308

13719-57

### Research on light-induced and thermally-generated bubbles in photopolymer materials

Hao Wu, Junhui Wu, Jingjun Huang, Jinyu Wang, Xiao Lin, Xiaodi Tan, Enqiang Wu, Fujian Normal Univ. (China)

14 October 2025 • 10:05 - 10:20 | Room 308

13719-58

### Multicore fiber imaging for microplastic recognition

Yunfei Tian, Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China)

14 October 2025 • 10:20 - 10:35 | Room 308

Tea/Coffee Break 10:35 - 11:05

## SESSION 14: MEASUREMENT II

14 October 2025 • 11:05 - 12:05 | Room 308

Session Chair: **Yuan Luo**, National Taiwan Univ. (Taiwan, China)

13719-59

### A novel subdivision method for enhancing laser interferometer measurement accuracy using holographic light field period

Rui Yang, Jinan University (China); Changhe Zhou, Jinan Univ. (China); Jin Wang, Jinan University (China)

14 October 2025 • 11:05 - 11:20 | Room 308

13719-60

### Hilbert transform-based phase extraction for robust displacement measurement in dual-grating interferometers

Linbin Luo, Yuyu Yuan, Tsinghua Univ. (China); Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

14 October 2025 • 11:20 - 11:35 | Room 308

13719-61

### Design of a displacement measurement system for acoustic waveguide materials based on reflective off-axis digital holography

Yiwei Liu, North Minzu Univ. (China); Haiwei La, Yaling Xian, Xinghai Deng, Lei Wan, Ningxia Univ. (China)

14 October 2025 • 11:35 - 11:50 | Room 308

13719-62

### Measurement of 2D grating period using pseudo phase-stepping interferometry

Yang Zhang, Meiqi Yu, Yigao Ling, Huan Wang, Chunlong Wei, Changhe Zhou, Shanwen Zhang, Wei Jia, Jinan Univ. (China)

14 October 2025 • 11:50 - 12:05 | Room 308

Lunch Break 12:05 - 13:30

## SESSION 15: DIFFRACTIVE OPTICS I

14 October 2025 • 13:30 - 15:05 | Room 308

Session Chair: **Changhe Zhou**, Jinan Univ. (China)

13719-63

### Self-charging near-eye display system based on integrated holographic waveguide (*Invited Paper*)

Juan Liu, Beijing Institute of Technology (China)

14 October 2025 • 13:30 - 13:55 | Room 308

13719-64

### Advances in two-dimensional grating-based hybrid micro-nano structures for optical absorption and sensing (*Invited Paper*)

Bo Wang, Guangdong Univ. of Technology (China)

14 October 2025 • 13:55 - 14:20 | Room 308

13719-65

### Preparation of femtosecond laser two-photon micro nano three-dimensional structures

Mingchao Zhu, Dayong Wang, Beijing Univ. of Technology (China); Tao Liu, Institute of Microelectronics (China); Yunxin Wang, Jie Zhao, Shufeng Lin, Beijing Univ. of Technology (China)

14 October 2025 • 14:20 - 14:35 | Room 308

13719-70

### Effective grating prediction and optimization based on the attention mechanism

Yuanming Tian, Shanwen Zhang, Wei Jia, Changhe Zhou, Jinan University (China)

14 October 2025 • 14:35 - 14:50 | Room 308

13719-67

### Phase-tunable double-sided subwavelength gratings on fused silica for spectral and wavefront control

Shuonan Shan, Zhipeng Zeng, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

14 October 2025 • 14:50 - 15:05 | Room 308

Tea/Coffee Break 15:05 - 15:30

## SESSION 16: DIFFRACTIVE OPTICS II

14 October 2025 • 15:30 - 17:40 | Room 308

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

13719-69

### **Superwavelength grating** (*Invited Paper*)

Shanwen Zhang, Jinan Univ. (China)

14 October 2025 • 15:30 - 15:55 | Room 308

13719-66

### **Monolithic metagratings with enhanced diffraction efficiency and wide angular response in near-IR applications**

Yu Taicheng, Chi-Wai Chow, Hao-Chung Kuo, National Yang Ming Chiao Tung Univ. (Taiwan, China)

14 October 2025 • 15:55 - 16:10 | Room 308

13719-71

### **A 1×2 beam splitter grating with 90° phase delay at wavelength 1550nm**

Huabin Li, Jinan university (China); Yongfang Xie, Jin Wang, Shanwen Zhang, Wei Jia, Changhe Zhou, Jinan Univ. (China)

14 October 2025 • 16:10 - 16:25 | Room 308

13719-72

### **Fabrication of Photoresist Gratings Using Dual-Beam Exposure with Substrate Rotation Control**

Minhui Du, Jinan University (China); Changhe Zhou, Wei Jia, Jinan Univ. (China)

14 October 2025 • 16:25 - 16:40 | Room 308

13719-73

### **Propagation characteristics of two-dimensional picometer comb**

Darui Zhang, Ning Shen, Changhe Zhou, Shanwen Zhang, Jinan Univ. (China)

14 October 2025 • 16:40 - 16:55 | Room 308

13719-74

### **Evaluation of two-dimensional grating period based on double least squares iteration**

Meiqi Yu, Jinan University (China); Yang Zhang, Yigao Ling, Huan Wang, Chunlong Wei, Changhe Zhou, Wei Jia, Shanwen Zhang, Jinan Univ. (China)

14 October 2025 • 16:55 - 17:10 | Room 308

13719-75

### **Non-contact defect detection system for gratings based on high-precision displacement stage**

Ying Nie, Jinan University (China)

14 October 2025 • 17:10 - 17:25 | Room 308

13719-76

### **Wet cleaning process of large-size diffraction grating**

Jiale Chao, Shanwen Zhang, Changhe Zhou, Wei Jia, Jinan Univ. (China)

14 October 2025 • 17:25 - 17:40 | Room 308

## Conference 13720

# Optical Metrology and Inspection for Industrial Applications XII

13 - 14 October 2025 | Room 305E

**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:** **Yasuhiro Awatsuji**, Kyoto Institute of Technology (Japan); **Xiaohao Dong**, Shanghai Advanced Research Institute, Chinese Academy of Sciences (China); **Fabian Duerr**, Vrije Univ. Brussel (Belgium); **Claas Falldorf**, BIAS - Bremer Institut für angewandte Strahltechnik GmbH (Germany); **Lianhua Jin**, Univ. of Yamanashi (Japan); **Tina E. Kidger**, Kidger Optics Associates (United Kingdom); **Jaejoong Kwon**, SAMSUNG Display Co., Ltd. (Republic of Korea); **Peter Lehmann**, Univ. Kassel (Germany); **Xiao Luo**, Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences (China); **Yukitoshi Otani**, Utsunomiya Univ. (Japan); **Giancarlo Pedrini**, Institut für Technische Optik (Germany); **Xiang Peng**, Shenzhen Univ. (China); **Christof Pruss**, Institut für Technische Optik (Germany); **Wenjuan Sun**, National Physical Lab. (United Kingdom); **Takamasa Suzuki**, Niigata Univ. (Japan); **Haoyu Wang**, Univ. of Shanghai for Science and Technology (China); **Wei Wang**, Heriot-Watt Univ. (United Kingdom); **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); **Dawei Zhang**, Univ. of Shanghai for Science and Technology (China); **Xiangchao Zhang**, Fudan Univ. (China); **Zonghua Zhang**, Hebei Univ. of Technology (China); **Chao Zuo**, Nanjing Univ. of Science and Technology (China)

### OPENING CEREMONY AND PLENARY SESSION

12 October 2025 • 08:30 - 12:00 | Convention Hall 2, Level 2

*View Full Details: [spie.org/photonics-asia-pleinary](https://spie.org/photonics-asia-pleinary)*

08:30 - 08:50

#### Opening Ceremony, Awards and Recognition

13715-501

#### Photonics and electronics convergence: oscillation, computing, and interconnection (*Plenary Presentation*)

Ming Li, Institute of Semiconductors, Chinese Academy of Sciences (China)

12 October 2025 • 08:50 - 09:30 | Convention Hall 2, Level 2

13722-502

#### When metasurfaces meet photodetectors (*Plenary Presentation*)

Cheng-Wei Qiu, College of Design and Engineering, National Univ. of Singapore (Singapore)

12 October 2025 • 09:30 - 10:10 | Convention Hall 2, Level 2

#### Tea/Coffee Break 10:10 - 10:40

13717-503

#### Super-resolution in ultra-thin lumens (*Plenary Presentation*)

Qing Yang, Zhejiang Univ. (China), ZJU-Hangzhou Global Scientific and Technological Innovation Ctr. (China), Shanxi Univ. (China)

12 October 2025 • 10:40 - 11:20 | Convention Hall 2, Level 2

13720-504

#### Much ado about nothing: Light fields with phase singularities for precision measurement (*Plenary Presentation*)

Kishan Dholakia, School of Biological Sciences, The Univ. of Adelaide (Australia), Ctr. of Light for Life, The Univ. of Adelaide (Australia)

12 October 2025 • 11:20 - 12:00 | Convention Hall 2, Level 2

### SESSION 1: OPTICAL METROLOGY METHODS I

13 October 2025 • 08:30 - 09:55 | Room 305E

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

13720-1

#### Interferometric full aperture and subaperture systems for form measurements of optics at PTB

Gerd Ehret, Jan Spichtinger, Physikalisch-Technische Bundesanstalt (Germany)

13 October 2025 • 08:30 - 08:55 | Room 305E

13720-2

#### Dynamic range expansion algorithms for Shack-Hartmann wavefront sensing in aspheric lens surface quality assessment

Yukun Song, Bing Dong, Zexia Zhang, Xinqi Hu, Beijing Institute of Technology (China)

13 October 2025 • 08:55 - 09:15 | Room 305E

13720-3

#### High-precision visual inspection system for the inner walls of small diameter ultra-deep holes

Yichen Xu, Jiehu Kang, Zefeng Sun, Zongyang Zhao, Luyuan Feng, Bin Wu, Tianjin Univ. (China)

13 October 2025 • 09:15 - 09:35 | Room 305E

13720-4

#### Temperature compensation prediction of camera imaging parameters based on LSTM

Yuan Man, Jun Wang, Bixi Yan, Peng Sun, Zirun Wang, Wei Zhuang, Beijing Information Science & Technology Univ. (China); Kuai Yu, China Academy of Space Technology (China)

13 October 2025 • 09:35 - 09:55 | Room 305E

#### Tea/Coffee Break 09:55 - 10:30

## SESSION 2: OPTICAL METROLOGY METHODS II

13 October 2025 • 10:30 - 11:55 | Room 305E

Session Chairs: **Gerd Ehret**, Physikalisch-Technische Bundesanstalt (Germany), **Shijie Feng**, Nanjing Univ. of Science and Technology (China)

13720-5

### Uncertainty analysis in optoelectronic and photonic metrology: phase noise, frequency stability, and Brillouin scattering measurements (*Invited Paper*)

Patrice Salzenstein, CNRS FEMTO-ST (France); Ekaterina Pavlyuchenko, CNRS (France)

13 October 2025 • 10:30 - 10:55 | Room 305E

13720-6

### Miniaturized high-stability grating encoder with long-travel capability based on double-grating interferometry

Linbin Luo, Yuyu Yuan, Tsinghua Univ. (China); Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

13 October 2025 • 10:55 - 11:15 | Room 305E

13720-7

### Spectral separation parameter optimization and spectrum prediction algorithms based on deep learning

Jiachen Tang, Tianjin University (China); Chunguang Hu, Zizheng Wang, Zhaoran Liu, Tianjin Univ. (China); Dawei Li, Lidong Gong, Inscinstech Co., Ltd. (China)

13 October 2025 • 11:15 - 11:35 | Room 305E

13720-8

### A compact "3+1" heterodyne grating interferometer for nanometric three-dimensional displacement measurement

Can Cui, Lifu Liu, Pengbo Zhao, Menghan Yang, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

13 October 2025 • 11:35 - 11:55 | Room 305E

**Lunch Break 11:55 - 13:30**

## POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 - 13:00**

View poster presentation guidelines and set-up instructions at <http://spie.org/PA/poster-presentation-guidelines>

13720-10

### A novel calibration method for attitude errors of rotation modulation inertial navigation system

Ziao Liu, Shuai Zhao, Yilan Zhou, Tengchao Huang, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-19

### Metrological verification of DTKF-based UWB/INS loosely-coupled positioning using high-precision infrared positioning system

Wei Lin, Shuai Zhao, Zhijian Hu, Zhejiang Univ. (China); Yilan Zhou, Zhejiang university (China); Tengchao Huang, Zhejiang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-35

### Analysis of corner reflectors for diattenuation and retardance with different types of reflective coatings

Sergei Nezhevenko, ITMO University (Russian Federation); Shan Gao, ITMO Univ. (Russian Federation); Kseniia Ezhova, Dmitriy Kukushkin, Valeriy Korotaev, ITMO University (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-37

### Measurement method and facility for stability of UV-LED

Hongru Zhuang, Yan-Fei Wang, Caihong Dai, National Institute of Metrology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-38

### The method for inspection the characteristics of an optical lens based on a series of interferometric measurements

Mikhail D. Bernikov, ITMO University (Russian Federation); Galina E. Romanova, ITMO Univ. (Russian Federation); Guangqiao Su, ITMO University (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-39

### A precise and robust object detection method for humanoid soccer robot

Guangyu Zhao, Bixi Yan, Jun Wang, Peng Sun, Guangtai Song, Yaqian Wang, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-40

### Analysis of grating mosaic errors effect on spectrometer performance and high-accuracy measurement techniques

Rui Wang, Nanjing Institute of Astronomical Optics & Technology (China), Univ. of Chinese Academy of Sciences (China); Jian Han, Dong Xiao, Huiqi Ye, Liang Tang, Yang Zhai, Nanjing Institute of Astronomical Optics & Technology (China); Junyuan Chen, Jia Li, Nanjing Institute of Astronomical Optics & Technology (China), Univ. of Chinese Academy of Sciences (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-41

### Real-time monitoring of 3D printing process based on optical coherence tomography

Xuanye Zhang, Fan Fan, Zheng Zong, Jiang Zhu, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-42

### A study on the scattering characteristics of dark-field defect detection on curved optical elements

Qirui Wang, Hefei Institutes of Physical Science (China); Jun Wang, Hengwei Qin, Univ. of Science and Technology of China (China); Mingchun Ling, Hefei Institutes of Physical Science (China); Yuheng Chu, Univ. of Science and Technology of China (China); Dapeng Kuang, Zhilong Xu, Hefei Institutes of Physical Science (China); Hengrui Guan, Liqi Lei, Univ. of Science and Technology of China (China); Maoxin Song, Zhenyang Li, Zhenhai Liu, Jin Hong, Hefei Institutes of Physical Science (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

# Conference 13720

13720-43

## **A high-precision measurement method for the azimuth angle of the target point in the measurement of large-size antennas**

Leyun Jiang, Peng Sun, Wei Zhuang, Beijing Information Science & Technology Univ. (China); Kuai Yu, Feihu Liu, China Academy of Space Technology (China); Bixi Yan, Jun Wang, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-44

## **A motion optimization method for biped robots fusing IMU observation data and total disturbance estimation**

Guangtai Song, Jun Wang, Bixi Yan, Peng Sun, Guangyu Zhao, Tingzhu Gu, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-45

## **Investigation of optical-to-mechanical energy conversion efficiency in thermoelastic waves induced by laser excitation**

Kira Nishino, Katsuhiko Mikami, Ryoichi Akiyoshi, Satoshi Ikeda, Kindai Univ. (Japan)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-46

## **Development of novel inspection method for micro object with MHz-band natural vibration**

Reo Terauchi, Grad.School of BOST ,Kindai Univ (Japan); Katsuhiko Mikami, Kindai Univ. (Japan); Kenichi Ikeda, Yusuke Nakaminami, Masanori Otake, Opto System Co., Ltd. (Japan)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-47

## **Research on high-precision intelligent measurement method for grating microstructure parameters based on diffraction spectrum and deep learning**

shengquan nian, Nanjing University of Science and Technology (China); andong xie, University of Shanghai for Science and Technology (China); Yuqing Zheng, Yifan Ding, Shijie Liu, Qi Lu, Yunxia Jin, Shanghai Institute of Optics and Fine Mechanics (China); Zhigang Han, Nanjing University of Science and Technology (China); Jianda Shao, Shanghai Institute of Optics and Fine Mechanics (China); Rihong Zhu, Nanjing University of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-48

## **A high-precision vision measurement model and method integrating laser ranging information**

Xin Li, Peng Sun, Bixi Yan, Jun Wang, Wei Zhuang, Beijing Information Science & Technology Univ. (China); Kuai Yu, China Academy of Space Technology (China); Zirun Wang, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-49

## **Mid-spatial-frequency surface errors measurement of large aperture spatial filter lenses using transmission CGHs**

Jian-Peng Cui, Chengdu Fine Optical Engineering Research Ctr (China); Zhi-Gang Li, Di-Long Wu, Chengdu Fine Optical Engineering Research Ctr. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-50

## **Research on the application of multi-wavelength wavefront detection technology in the transmission wavefront of near-ultraviolet systems**

Bangquan Wang, Univ. of Shanghai for Science and Technology (China); Ying Yang, Changchun Univ. of Science and Technology (China); Yuhang Shen, Liwei Zhang, Jinhua Tu, Sen Han, Tian Tian, Zechuan Wei, Univ. of Shanghai for Science and Technology (China); Siji Lu, Suzhou Univ. of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-51

## **High-precision prediction method for optical thin-film thickness driven by multi-scale fusion and attention mechanism**

andong xie, University of Shanghai for Science and Technology (China); shengquan nian, Nanjing University of Science and Technology (China); Yuqing Zheng, Shijie Liu, Shanghai Institute of Optics and Fine Mechanics (China); Bo Dai, University of Shanghai for Science and Technology (China); Qi Lu, Yunxia Jin, Jianda Shao, Shanghai Institute of Optics and Fine Mechanics (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-52

## **Standard photodetector responsivity measurement based on extended InGaAs units**

Song Liu, China Jiliang Univ. (China), National Institute of Metrology (China); Zhiwei Liu, Xiangliang Liu, Nan Xu, National Institute of Metrology (China); Huaping Gong, China Jiliang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-53

## **Enhancement detection method for weak displacement signals based on monostable stochastic resonance systems**

Fang Wang, Zhejiang Univ. of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-54

## **High-precision film thickness detection method based on multi-angle spectroscopy and LSTM**

andong xie, University of Shanghai for Science and Technology (China); Shengquan Nian, Nanjing University of Science and Technology (China); Yuqing Zheng, Shijie Liu, Shanghai Institute of Optics and Fine Mechanics (China); Bo Dai, University of Shanghai for Science and Technology (China); Qi Lu, Yunxia Jin, Jianda Shao, Shanghai Institute of Optics and Fine Mechanics (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-55

## **Research on constructing a simulated model of various light sources based on the inverse reflection coefficient**

Tianshuo Li, Beijing Univ. of Civil Engineering and Architecture (China), National Institute of Metrology (China); Guojin Feng, Chundi Zheng, National Institute of Metrology (China); Xikuai Xie, Beijing Univ. of Chemical Technology (China), National Institute of Metrology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-56

## **Calibration method of UVC-LED irradiance meter**

Haixi Luo, Yan-Fei Wang, Caihong Dai, National Institute of Metrology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

## SESSION 3: OPTICAL METROLOGY METHODS III

13 October 2025 • 14:30 - 15:55 | Room 305E

*Session Chairs:* **Benyong Chen**, Zhejiang Sci-Tech Univ. (China),  
**Matthias Eifler**, IU International Univ. of Applied Sciences (Germany)

13720-57

### Determination of aerial objects using a multi-camera triangulation method

Anastasiia Babinovich, Alexander Konoshonkin, V.E. Zuev Institute of Atmospheric Optics (Russian Federation), National Research Tomsk State Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-58

### Synchronous phase measurement method for multi-wavelength heterodyne interferometry

Guangyao Huang, Xinghui Li, Guochao Wang, National Univ. of Defense Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-59

### Video frame restoration by hierarchical integration diffusion model

Rui Ma, Ziteng Yang, Baowen Li, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-60

### Towards self-powered smart contact lenses: integration of autonomous power sources, microfabricated antennas, and multidisciplinary design constraints

Patrice Salzenstein, Blandine Guichardaz, Aya M. Bessou, CNRS FEMTO-ST (France); Ekaterina Pavlyuchenko, CNRS (France); Maxim V. Pogumirsky, FAREXPORT Ltd. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-61

### Bound states in the continuum for tunable high-Q PZT resonators in axion dark matter detection

Mahmoud Addouche, Patrice Salzenstein, CNRS FEMTO-ST (France)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-62

### Research on measurement techniques for deflection angle error in pentaprisms

Tian Tian, Sen Han, Univ. of Shanghai for Science and Technology (China); Ying Yang, Changchun Univ. of Science and Technology (China); Yuhang Shen, Liwei Zhang, Jinhua Tu, Zechuan Wei, Bangquan Wang, Univ. of Shanghai for Science and Technology (China); Siji Lu, Suzhou Univ. of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-63

### Research on absolute surface shape interferometry on multi-position spherical surfaces

Jinhua Tu, Sen Han, Liwei Zhang, Univ. of Shanghai for Science and Technology (China); Ying Yang, Changchun Univ. of Science and Technology (China); Yuhang Shen, Tian Tian, Zechuan Wei, Bangquan Wang, Univ. of Shanghai for Science and Technology (China); Siji Lu, Suzhou Univ. of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13720-9

### Homogeneity measurement of cylindrical transparent materials

Zechuan Wei, Univ. of Shanghai for Science and Technology (China); Sen Han, Univ. of Shanghai for Science and Technology (China); Yuhang Shen, Liwei Zhang, Univ. of Shanghai for Science and Technology (China); Ying Yang, Changchun Univ. of Science and Technology (China); Bangquan Wang, Jinhua Tu, Tian Tian, Univ. of Shanghai for Science and Technology (China); Siji Lu, Suzhou Univ. of Science and Technology (China)

13 October 2025 • 14:30 - 14:55 | Room 305E

13720-11

### Absolute measurement of the transfer function for large-aperture Fizeau interferometers

Yuhang Shen, Sen Han, Univ. of Shanghai for Science and Technology (China); Ying Yang, Changchun Univ. of Science and Technology (China); Liwei Zhang, Songlin Zhuang, Univ. of Shanghai for Science and Technology (China)

13 October 2025 • 14:55 - 15:15 | Room 305E

13720-12

### Comprehensive error compensation method for coordinate measuring machine based on geometric error model and neural network

Jian Liang, Shuyang Wang, Bin Wu, Tianjin Univ. (China)

13 October 2025 • 15:15 - 15:35 | Room 305E

13720-14

### Interferometric measurement of ultra-smooth vacuum chucks for high-precision optical manufacturing

Ying Yang, Changchun Univ. of Science and Technology (China); Sen Han, Yuhang Shen, Liwei Zhang, Univ. of Shanghai for Science and Technology (China); Gordon Zhao, The Univ. of British Columbia (Canada); Jincheng Zhuang, Bo Zhang, Suzhou H&L Instruments LLC (China); Hao Sun, Changchun Univ. of Science and Technology (China); Xueyuan Li, Suzhou H&L Instruments LLC (China)

13 October 2025 • 15:35 - 15:55 | Room 305E

Tea/Coffee Break 15:55 - 16:20

## SESSION 4: OPTICAL METROLOGY METHODS IV

13 October 2025 • 16:20 - 17:45 | Room 305E

*Session Chairs:* **Chao Zuo**, Nanjing Univ. of Science and Technology (China), **Gregor Scholz**, Physikalisch-Technische Bundesanstalt (Germany)

13720-13

### Towards absolute optical form measurement for aspheres and freeform surfaces using interferometry (*Invited Paper*)

Gregor Scholz, Physikalisch-Technische Bundesanstalt (Germany); Christof Pruss, Andreas Brenner, Alois Herkommer, Institut für Technische Optik (Germany); Ines Fortmeier, Physikalisch-Technische Bundesanstalt (Germany)

13 October 2025 • 16:20 - 16:45 | Room 305E

# Conference 13720

13720-15

## **Adaptive gaussian residual correction for fisheye camera calibration via automatic radial error peak detection**

Guangyi Dai, Peng Sun, Mingli Dong, Wei Zhuang, Beijing Information Science & Technology Univ. (China); Kuai Yu, Feihu Liu, China Academy of Space Technology (China); Bixi Yan, Jun Wang, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 16:45 - 17:05 | Room 305E

13720-16

## **A 3D measurement method based on chirped interferometry using an optical frequency comb**

Li Chen, Zhehai Zhou, Guangwei Chen, Ying Qin, Wen Zhong, Xiang Zhang, Pengyu Yan, Shiyu Yang, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 17:05 - 17:25 | Room 305E

13720-17

## **A 6DoF spatial pose measurement system based on optical frequency comb frequency-division multiplexing dispersive interference**

Mingxin Teng, Jiarui Lin, Fengcheng Song, Jigui Zhu, Tianjin Univ. (China)

13 October 2025 • 17:25 - 17:45 | Room 305E

### **SESSION 5: OPTICAL METROLOGY METHODS V**

14 October 2025 • 08:45 - 10:15 | Room 305E

*Session Chairs:* **Patrice Salzenstein**, FEMTO-ST (France),  
**Shijie Feng**, Nanjing Univ. of Science and Technology (China)

13720-18

## **Metrology as a key in the high-efficiency manufacturing processes of freeform optics (Invited Paper)**

Yaolong Chen, Xi'an Jiaotong Univ. (China)

14 October 2025 • 08:45 - 09:10 | Room 305E

13720-20

## **Structured-light 3D imaging beyond physical limits of the imaging system (Invited Paper)**

Shijie Feng, Nanjing Univ. of Science and Technology (China)

14 October 2025 • 09:10 - 09:35 | Room 305E

13720-21

## **Large-scale antenna surface measurement method integrating image processing and laser ranging**

Mingli Dong, Beijing information science technology university (China); Hongshun Zhang, Beijing Information Science & Technology Univ. (China)

14 October 2025 • 09:35 - 09:55 | Room 305E

13720-22

## **Automation of stitching interferometric measurement of long X-ray mirrors**

Xuebo Qin, Weizheng Lei, ShanghaiTech Univ. (China); Xiaohao Dong, Shanghai Advanced Research Institute (China)

14 October 2025 • 09:55 - 10:15 | Room 305E

Tea/Coffee Break 10:15 - 10:45

### **SESSION 6: OPTICAL METROLOGY METHODS VI**

14 October 2025 • 10:45 - 11:50 | Room 305E

*Session Chair:* **Matthias Eifler**, IU International Univ. of Applied Sciences (Germany)

13720-23

## **Bi-directional velocity and distance measurements based on a single laser triangulation sensor (Invited Paper)**

Hao Zhang, Shiji Wang, Weishuai Feng, Dalian Maritime Univ. (China)

14 October 2025 • 10:45 - 11:10 | Room 305E

13720-24

## **Middle atmosphere observations using a tethered balloon-based Rayleigh lidar system**

Xianzhong Zhang, Kai Zhong, Tong Wu, Xinqi Li, Degang Xu, Jianquan Yao, Tianjin Univ. (China)

14 October 2025 • 11:10 - 11:30 | Room 305E

13720-25

## **Research on the impact of pedestrian target reflectivity on intelligent vehicle active safety testing systems**

Xikuai Xie, Ruixue Li, Beijing Univ. of Chemical Technology (China), National Institute of Metrology (China); Qing Guo, Beijing Univ. of Chemical Technology (China); Yingwei He, National Institute of Metrology (China)

14 October 2025 • 11:30 - 11:50 | Room 305E

Lunch Break 11:50 - 13:10

### **SESSION 7: OPTICAL METROLOGY APPLICATIONS I**

14 October 2025 • 13:10 - 15:00 | Room 305E

*Session Chair:* **Yaolong Chen**, Xi'an Jiaotong Univ. (China)

13720-26

## **High-speed structured light 3D imaging empowered by deep learning (Invited Paper)**

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

14 October 2025 • 13:10 - 13:35 | Room 305E

13720-27

## **Anti-vibration strategies with iterative phase retrieval in high-resolution large-aperture phase-shifting interferometry**

Sizov Andrei, Shijie Liu, Qi Lu, JianDa Shao, Shanghai Institute of Optics and Fine Mechanics (China)

14 October 2025 • 13:35 - 13:55 | Room 305E

13720-28

## **1GHz loop antennas-based smart contact lenses (Invited Paper)**

Patrice Salzenstein, Aya M. Bessou, CNRS FEMTO-ST (France); Laurine Salzenstein, Univ. Marie et Louis Pasteur (France)

14 October 2025 • 13:55 - 14:20 | Room 305E

13720-29

## **A PFH-TrICPF fusion stitching method for large range surface topography reconstruction in WLI**

YuHang Li, Long Ma, Xin Pei, Civil Aviation Univ. of China (China); Hongguang Liu, Tianjin Institute of Metrological Supervision and Testing (China)

14 October 2025 • 14:20 - 14:40 | Room 305E

13720-30

**A robust phase demodulation method for grating interferometers with enhanced frequency adaptability and multi-sensor optimization**

Jin Li, Yu Ma, Can Cui, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

14 October 2025 • 14:40 - 15:00 | Room 305E

Tea/Coffee Break 15:00 - 15:30

**SESSION 8: OPTICAL METROLOGY APPLICATIONS II**

14 October 2025 • 15:30 - 17:20 | Room 305E

*Session Chairs:* **Hao Zhang**, Dalian Maritime Univ. (China),  
**Patrice Salzenstein**, FEMTO-ST (France)

13720-31

**Optical measurement of surface topography and angular distributions for condition monitoring** (*Invited Paper*)

Matthias Eifler, IU International Univ. of Applied Sciences (Germany); Boris Brodmann, OptoSurf GmbH (Germany)

14 October 2025 • 15:30 - 15:55 | Room 305E

13720-32

**A hybrid multi-anchor and quality-guided phase unwrapping algorithm for efficient 3D structured light measurement**

Qianhao Nie, Yibo Xing, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

14 October 2025 • 15:55 - 16:15 | Room 305E

13720-33

**Joint calibration algorithm for four structured light cameras**

Rui Ma, Li Luo, Zhuang Li, Baowen Li, Xinghui Li, Tsinghua Univ. Shenzhen International Graduate School (China)

14 October 2025 • 16:15 - 16:35 | Room 305E

13720-34

**Multi-scale shape-dependent anisotropic gradient for industrial optical metrology** (*Invited Paper*)

Marina M. Zhdanova, Don State Technical Univ. (Russian Federation); Viacheslav Voronin, Alexander A. Zelensky, Evgeny A. Semenishchev, Scientific-Production Complex "Technological Ctr." (Russian Federation); Nikolay V. Gapon, Don State Technical Univ. (Russian Federation)

14 October 2025 • 16:35 - 17:00 | Room 305E

13720-36

**Power profile estimation method based on linear least squares method in long-distance optical fiber link**

Chenyu Peng, Jian Sun, Kejia Zhu, Yueqin Li, Jun Qin, Weiyi Meng, Beijing Information Science & Technology Univ. (China); Muguang Wang, Beijing Jiaotong Univ. (China)

14 October 2025 • 17:00 - 17:20 | Room 305E

# Conference 13721

## Optics in Health Care and Biomedical Optics XV

12 - 14 October 2025 | Room 307

**Conference Chairs:** **Qingming Luo**, Hainan Univ. (China); **Xingde Li**, Johns Hopkins Univ. (United States); **Ying Gu**, Chinese PLA General Hospital (China); **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**, Fujian Normal Univ. (China); **Santhosh Chidangil**, Manipal Academy of Higher Education (India); **Euiheon Chung**, Gwangju Institute of Science and Technology (Republic of Korea); **Zhihua Ding**, Zhejiang Univ. (China); **Minbiao Ji**, Fudan Univ. (China); **Puxiang Lai**, The Hong Kong Polytechnic Univ. (Hong Kong, China); **Buhong Li**, Hainan Univ. (China); **Wenxuan Liang**, Suzhou Institute for Advanced Research (China); **Hongen Liao**, Shanghai Jiao Tong Univ. (China); **Huafeng Liu**, State Key Lab. of Modern Optical Instrumentation (China); **Hui Ma**, Tsinghua Univ. Shenzhen International Graduate School (China); **Jun Qian**, Zhejiang Univ. (China); **Haixia Qiu**, Chinese PLA General Hospital (China); **Jianan Y. Qu**, Hong Kong Univ. of Science and Technology (Hong Kong, China); **Junle Qu**, Shenzhen Univ. (China); **Oxana V. Semyachkina-Glushkovskaya**, Saratov State Univ. (Russian Federation); **Kebin Shi**, Peking Univ. (China); **Ke Si**, Zhejiang Univ. (China); **Yi-Zhou Tan**, Chinese PLA General Hospital (China); **Valery V. Tuchin**, Saratov State Univ. (Russian Federation); **Hiroki R. Ueda**, The Univ. of Tokyo (Japan); **Ruikang K. Wang**, Univ. of Washington (United States); **Xueding Wang**, Univ. of Michigan (United States); **Xunbin Wei**, Peking Univ. Health Science Ctr. (China); **Changfeng Wu**, Jilin Univ. (China); **Sihua Yang**, South China Normal Univ. (China); **Zhenxi Zhang**, Xi'an Jiaotong Univ. (China); **Wei Zheng**, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences (China); **Feifan Zhou**, Hainan Univ. (China)

### OPENING CEREMONY AND PLENARY SESSION

12 October 2025 • 08:30 - 12:00 | Convention Hall 2, Level 2

[View Full Details: spie.org/photonics-asia-plenary](https://spie.org/photonics-asia-plenary)

08:30 - 08:50

#### Opening Ceremony, Awards and Recognition

13715-501

#### Photonics and electronics convergence: oscillation, computing, and interconnection (Plenary Presentation)

Ming Li, Institute of Semiconductors, Chinese Academy of Sciences (China)

12 October 2025 • 08:50 - 09:30 | Convention Hall 2, Level 2

13722-502

#### When metasurfaces meet photodetectors (Plenary Presentation)

Cheng-Wei Qiu, College of Design and Engineering, National Univ. of Singapore (Singapore)

12 October 2025 • 09:30 - 10:10 | Convention Hall 2, Level 2

Tea/Coffee Break 10:10 - 10:40

13717-503

#### Super-resolution in ultra-thin lumens (Plenary Presentation)

Qing Yang, Zhejiang Univ. (China), ZJU-Hangzhou Global Scientific and Technological Innovation Ctr. (China), Shanxi Univ. (China)

12 October 2025 • 10:40 - 11:20 | Convention Hall 2, Level 2

13720-504

#### Much ado about nothing: Light fields with phase singularities for precision measurement (Plenary Presentation)

Kishan Dholakia, School of Biological Sciences, The Univ. of Adelaide (Australia), Ctr. of Light for Life, The Univ. of Adelaide (Australia)

12 October 2025 • 11:20 - 12:00 | Convention Hall 2, Level 2

Lunch Break 12:00 - 13:30

### SESSION 1: TRANSLATIONAL OPTICAL TECHNIQUES FOR BASIC RESEARCH AND CLINICAL MEDICINE I

12 October 2025 • 13:30 - 15:20 | Room 307

Session Chair: **Xingde Li**, Johns Hopkins Univ. (United States)

13721-1

#### Advances in high-resolution SD-OCT and high-speed SS-OCT angiography for ophthalmology (Keynote Presentation)

James G. Fujimoto, Massachusetts Institute of Technology (United States)

12 October 2025 • 13:30 - 14:10 | Room 307

13721-2

#### Evaluation of donor liver viability with optical coherence tomography (Invited Paper)

Yu Chen, Fujian Normal Univ. (China); Qinggong Tang, Feng Yan, Chongle Pan, The Univ. of Oklahoma (United States)

12 October 2025 • 14:10 - 14:35 | Room 307

13721-3

#### From eye to heart: polarization-sensitive OCT reveals coronary artery disease through retinal vessel birefringence

Hadi Afsharan, Girish Dwivedi, Barry Cense, The Univ. of Western Australia (Australia)

12 October 2025 • 14:35 - 14:50 | Room 307

13721-4

#### Endoscopic acoustic radiation force optical coherence elastography for elasticity measurements

Chongyang Wang, Xiaochen Meng, Xuanye Zhang, Jiawei Ma, Jiang Zhu, Beijing Information Science & Technology Univ. (China)

12 October 2025 • 14:50 - 15:05 | Room 307

13721-5

#### Noninvasive cellular imaging of the crystalline lens with full-field optical coherence tomography

Peng Xiao, Shang Huang, Zhongzhou Luo, Zhongshan Ophthalmic Ctr., Sun Yat-Sen Univ. (China)

12 October 2025 • 15:05 - 15:20 | Room 307

Tea/Coffee Break 15:20 - 15:40

## SESSION 2: TRANSLATIONAL OPTICAL TECHNIQUES FOR BASIC RESEARCH AND CLINICAL MEDICINE II

12 October 2025 • 15:40 - 17:55 | Room 307

Session Chair: **Ying Gu**, Chinese PLA General Hospital (China)

13721-6

### **Diffraction-based structured illuminations in biomedical microscopy: imaging flow cytometry and optical coherence tomography** *(Invited Paper)*

Jingjing Zhao, Huazhong Univ. of Science and Technology (China)

12 October 2025 • 15:40 - 16:05 | Room 307

13721-8

### **FastMC: A heterogeneous-accelerated 3D Monte Carlo platform for precise light propagation modeling in photodynamic therapy** *(Invited Paper)*

Defu Chen, Beijing Institute of Technology (China)

12 October 2025 • 16:05 - 16:30 | Room 307

13721-9

### **In vivo assessment of ulcerative colitis in mice using a multi-modality intravascular OCT-fluorescence imaging system**

Songzhi Wu, Baihan Li, Shuo Wang, Zhao Wang, Univ. of Electronic Science and Technology of China (China)

12 October 2025 • 16:30 - 16:45 | Room 307

13721-10

### **Effect of printing variability in color calibration targets on a smartphone application for skin erythema evaluation**

Blaž Cugmas, Eva Štruc, Vetamplify SIA (Latvia)

12 October 2025 • 16:45 - 17:00 | Room 307

13721-11

### **Preparation and evaluation of a skin erythema phantom**

Deliang Huang, Huiqi Zhan, Zhe Wei, Shengdong Cui, Zheng Huang, Fujian Normal Univ. (China)

12 October 2025 • 17:00 - 17:15 | Room 307

13721-12

### **Multi-parameter intravascular PS-OCT based on similar Mueller matrix method**

Qingrui Li, Kun Liu, Junfeng Jiang, Rongyang Zhu, Tiegeng Liu, Zhenyang Ding, Tianjin Univ. (China)

12 October 2025 • 17:15 - 17:30 | Room 307

13721-7

### **Robust brain malignancy classification using fused attenuation, refined speckle-contrast, and depolarization maps from OCT scans** *(Invited Paper)*

Alexander A. Sovetsky, Institute of Applied Physics of the RAS (Russian Federation); Konstantin S. Yashin, Privolzhsky Research Medical University (Russian Federation); Radik D. Zinatullin, Privolzhsky Research Medical Univ. (Russian Federation); Peter A. Chizhov, Institute of Applied Physics (Russian Federation); Alexander L. Matveyev, Institute of Applied Physics (Russian Federation); Vladimir Y. Zaitsev, Lev A. Matveev, Institute of Applied Physics (Russian Federation)

12 October 2025 • 17:30 - 17:55 | Room 307

## SESSION 3: NOVEL MICROSCOPY I

13 October 2025 • 08:30 - 10:05 | Room 307

Session Chair: **Dan Zhu**, Huazhong Univ. of Science and Technology (China)

13721-13

### **Short-wavelength excitation two-photon microscopy of endogenous fluorophores in biological samples** *(Invited Paper)*

Wei Zheng, Shenzhen Institute of Advanced Technology (China)

13 October 2025 • 08:30 - 08:55 | Room 307

13721-14

### **High-throughput volumetric mapping of synaptic transmission and microcirculations in the brain** *(Invited Paper)*

Wei Chen, Huazhong Univ. of Science and Technology (China)

13 October 2025 • 08:55 - 09:20 | Room 307

13721-15

### **A wireless photometric probe to capture calcium activities during hippocampal seizures in freely moving mice**

Wenxin Zhao, Xing Sheng, Tsinghua Univ. (China)

13 October 2025 • 09:20 - 09:35 | Room 307

13721-16

### **Fully automated fluorescence microscopy with high-accuracy autofocus for subcellular features screening**

Yuetong Jia, Edward N. Ward, Francesca W. van Tartwijk, Clemens F. Kaminski, Univ. of Cambridge (United Kingdom)

13 October 2025 • 09:35 - 09:50 | Room 307

13721-17

### **Repurposing the clinical approved photosensitizer hematoporphyrin for in vivo fluorescence endomicroscopy**

Yiming Bi, Yizhou Tan, Jiakang Shao, Chinese PLA General Hospital (China); Yongtai Chen, Tingting Yu, Daqian Wang, Jiawei Song, Ji Qi, Zhejiang Lab. (China); Ying Gu, Chinese PLA General Hospital (China)

13 October 2025 • 09:50 - 10:05 | Room 307

Tea/Coffee Break 10:05 - 10:35

## SESSION 4: NOVEL MICROSCOPY II

13 October 2025 • 10:35 - 11:55 | Room 307

Session Chair: **Wei Zheng**, Shenzhen Institute of Advanced Technology, CAS (China)

13721-18

### **Tissue optical clearing for cortical imaging** *(Invited Paper)*

Dan Zhu, Huazhong Univ. of Science and Technology (China)

13 October 2025 • 10:35 - 11:00 | Room 307

13721-19

### **Fluorescence lifetime imaging using endogenous fluorophores: the prospects for tumor diagnosis and prognosis** *(Invited Paper)*

Marina V. Shirmanova, Anastasia D. Komarova, Snezhana D. Sinyushkina, Elena B. Kiseleva, Daria A. Sachkova, Ilia D. Shchekhin, Anton A. Plekhanov, Konstantin S. Yashin, Privolzhsky Research Medical Univ. (Russian Federation); Alexey Y. Vorontsov, Nizhny Novgorod Regional Oncologic Hospital (Russian Federation); Evgeny A. Shirshin, M. V. Lomonosov Moscow State Univ. (Russian Federation); Vladislav I. Shcheslavskiy, Privolzhsky Research Medical Univ. (Russian Federation)

13 October 2025 • 11:00 - 11:25 | Room 307

# Conference 13721

13721-21

## Neural network-assisted third harmonic generation ultra-deep bioimaging

Mubin He, Zhejiang Univ. (China), Dongguan Univ. of Technology (China); Zheng Zheng, Hefei Univ. of Technology (China); Yifei Li, Jun Qian, Zhejiang Univ. (China)

13 October 2025 • 11:25 - 11:40 | Room 307

13721-22

## Metasurface-enabled stereoscopic optical palpation for breast cancer detection

Qi Fang, Harry Perkins Institute of Medical Research (Australia), The Univ. of Western Australia (Australia); Haoyi Yu, Monash Univ. (Australia); Rhys Jones, The Univ. of Western Australia (Australia); Chi Li, Monash Univ. (Australia); Renate Zilkens, Brendan Kennedy, The Univ. of Western Australia (Australia); Haoran Ren, Monash Univ. (Australia); Christobel Saunders, The Univ. of Melbourne (Australia)

13 October 2025 • 11:40 - 11:55 | Room 307

Lunch Break 11:55 - 13:30

### POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 - 13:00**

View poster presentation guidelines and set-up instructions at

<http://spie.org/PA/poster-presentation-guidelines>

13721-44

## Methods of endoscopic image quality assessment

Anna Mudrich, Kseniia Ezhova, Shan Gao, ITMO Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-61

## Quantitative evaluation of optical clearing agent performance based on multilayer Monte Carlo and diffusion modeling

Lu Fu, Hangzhou Dianzi Univ. (China); Changlun Hou, Hangzhou Dianzi University (China); Dongbiao Zhang, Hangzhou Photographic Machinery Research Institute (China); Zhen Shi, Jufeng Zhao, Guangmang Cui, Hangzhou Dianzi Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-62

## Optical coherence tomography angiography quantitatively detecting the relationship between port wine stain lesion structure and vascular photodynamic therapy efficacy

Yidi Liu, Chinese PLA General Hospital (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-63

## Robotic-assisted high-precision 3D OCT reconstruction for post-anastomosis vascular evaluation

Meng Li, Yong Huang, Beijing Institute of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-64

## Research on EEG emotion recognition based on convolutional neural network with attention mechanism combined with swim transformer

Yicheng Tang, Chongqing University of Posts and Telecommunications (China); Zhangfang Hu, Yulong Wang, Chongqing Univ. of Posts and Telecommunications (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-65

## Label-free sub-cellular segmentation via deep learning-based hyperspectral stimulated Raman microscopy

Xinyan Zhang, Han Zhang, Xun Chen, Beihang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-66

## Photobiomodulation attenuates neuroinflammation in primary astrocytes identified by transcriptome analysis

Wenjing Chen, Xiaotong Gu, Hainan Univ. (China); Feifan Zhou, Hainan Univ (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-67

## Metasurface-based long working-distance OCT fiber-optic probe for high-resolution intraocular imaging

Yingxiong Xie, Yong Huang, Beijing Institute of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-68

## Multifunctional handheld optical coherence tomography imaging of oral tissues

Weihao Ye, Fan Fan, Chongyang Wang, Beijing Information Science & Technology Univ. (China); Jiang Zhu, Beijing Information Sci & Tech University (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-69

## Measurement of longitudinal shear waves using optical coherence elastography with dual acoustic radiation force excitation

Bojun Zheng, Fan Fan, Jiawei Ma, Jiang Zhu, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-70

## A hybrid ConvNet-Transformer network for phase unwrapping in Doppler OCT

Zijia Zhang, Zongqing Ma, Junyu Huang, Jiang Zhu, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-71

## in vivo blood flow imaging of small vessels using an improved laser speckle contrast method

Qinglong Yang, Guang Han, Rui Zeng, Haitong Wang, Shiyuan Liu, Siyu Liu, Tiangong Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-72

## Differentiation of collagen types in tendon tissue enhanced by Muller matrix imaging

Meixuan Hu, Nan Zeng, Tsinghua Univ. Shenzhen International Graduate School (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-73

## **A compact swept confocally-aligned planar excitation microscopy probe for intraoperative tumor margin discrimination**

Haiyan Huang, Yuanhao Zhang, Cheng Zhang, Hanxiao Chen, Wenxuan Liang, Univ. of Science and Technology of China (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-74

## **prediction of pedicle screw stability at the tapping stage using vibration via laser ablation process**

Shogo Hashimoto, Katsuhiro Mikami, Tetsuya Matsuyama, Kindai Univ. (Japan); Takuto Hatakeyama, Takeo Nagura, Daisuke Nakashima, Keio Univ. (Japan)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-75

## **OCT angiography image translation from an OCT image using Dynamic Gating Swin-UMamba**

Weijie Zhang, Zongqing Ma, Zheng Zong, Jiang Zhu, Beijing Information Science & Technology Univ. (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-76

## **Optical coherence elastography using a distal rotary scanning endoscopic probe**

Huiyi Fang, Xiaochen Meng, Chongyang Wang, Jiang Zhu, Beijing Information Science & Technology Univ. (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-77

## **Photobiomodulation for brain drainage and cognitive enhancement: age-related limitations**

Arina Evsiukova, Saratov State Univ. (Russian Federation); Egor Iliukov, Wuhan National Lab. for Optoelectronics, Huazhong Univ. of Science and Technology (China); Alexander Shirokov, Saratov State Univ. (Russian Federation), Institute of Biochemistry and Physiology of Plants and Microorganisms (Russian Federation)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-78

## **Forward-scanning endoscopic optical coherence elastography for elasticity measurements**

Pengbo Wang, Xiaocheng Meng, Chongyang Wang, Weihao Ye, Jiang Zhu, Beijing Information Science & Technology Univ. (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-79

## **Three-dimensional whole-body mouse photoacoustic imaging using a linear transducer array with translate-rotate scanning geometry**

Jiacheng Man, Pengwei Han, Yipin Lv, Shaoduo Fu, Jiayue Wang, Bingxue Zhang, Kun Wang, Zhanxiu Cai, Jiao Li, Tianjin Univ. (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-80

## **Sleep serves as a therapeutic gateway for photostimulating the drainage of the aging brain**

Andrey Terskov, Inna Blokhina, Daria Zlatogorskaya, Viktoria Adushkina, Ivan Fedosov, Saratov State Univ. (Russian Federation); Nikita Navolokin, Saratov State Medical Univ. (Russian Federation)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-81

## **Recovery of normal sleep patterns in TBI through photobiomodulation therapy**

Sergey Popov, Saratov State Univ. (Russian Federation)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-82

## **Demonstration of cancer diagnosis by elastography with photo-acoustic spectroscopy**

Katsuhiro Mikami, Kindai Univ. (Japan); Tasuku Furube, Takuto Hatakeyama, Satoru Matsuda, Daisuke Nakashima, Keio Univ. (Japan)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-83

## **Multimodal microscopic imaging platform for precision oncology: integrating five modalities to enhance tumor delineation, therapy assessment, and multi-parametric biomarker analysis**

Hongqing Wang, Zhejiang Lab. (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-84

## **Electrophoresis- and AIE-based rapid whole-brain staining and imaging of $\beta$ -amyloid (A $\beta$ ) plaques in 5xFAD mice without delipidation**

Shihao Fan, Yaoyuan Jiang, Zejun Li, Xiaoyan Li, Chi Xiao, Xiaoquan Yang, Yalong Wang, Xiaojun Wang, Hainan Univ. (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-85

## **Thermal effects of soft tissue illuminated by short-pulse CO<sub>2</sub> lasers**

Jiatao Deng, Hangzhou Dianzi Univ. (China), Univ. of Yamanashi (Japan); Changlun Hou, Hangzhou Dianzi Univ. (China); Kazuyuki Uno, Univ. of Yamanashi (Japan)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-86

## **Study on two-stage calibration for biomedical hyperspectral imaging systems: laboratory and virtual-in-situ calibration**

Zhe Peng, Yuanrui Dong, Wende Liu, Nan Xu, Yulin Qi, Yikang Gong, Haiyong Gan, National Institute of Metrology (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-87

## **Transcranial photobiomodulation wavelength validation using a 3D-printed multilayer cranial phantom**

Da Han, Zengyong Li, Jingsha Zhang, National Research Ctr. for Rehabilitation Technical Aids (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-88

## **Optical coherence tomography in digestive diseases: advances and clinical applications**

Yunqi Li, Ying Gu, Chinese PLA General Hospital (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-89

## **Photothermal nanomedicine-mediated modulation of mitochondrial oxidative respiration in breast cancer**

Yingshu Cui, Xiaosong Li, Chinese PLA General Hospital (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-90

## **Comparison of flat and microsphere fiber tip geometries for optical sensing of viral RNA fragments**

Maria Babinska, Gdansk University of Technology (Poland); Patryk Sokolowski, Karolina Rychert, Gdansk Univ. of Technology (Poland); Wiktoria Brzezińska, Medical Univ. of Gdansk (Poland); Pawel Wityk, Medical Univ. of Gdansk (Poland), Univ. of Illinois (United States); Qingyang Zhu, H. Y. Fu, Tsinghua Univ. (China); Malgorzata Szczerska, Gdansk Univ. of Technology (Poland), Medical Univ. of Gdansk (Poland)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

# Conference 13721

13721-91

## **PEI/CTS-modified PVDF-based paper SERS sensor for sensitive detection of methamphetamine via immunocompetitive strategy**

Xinxin Cai, Shangyuan Feng, Fujian Normal Univ. (China); Xiaoping Lin, Fujian Police College (China); Yu Chen, Fujian Normal Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-92

## **Detection of viral RNA using functionalized optical fibers**

Patryk Sokolowski, Gdańsk University of Technology (Poland); Maria Babińska, Gdansk Univ. of Technology (Poland); Pawel Wityk, Medical Univ. of Gdansk (Poland), Beckman Institute for Advanced Science and Technology (United States); Joanna Raczak-Gutknecht, Wiktoria Brzezińska, Medical Univ. of Gdansk (Poland); Michał Sobaszek, Gdansk Univ. of Technology (Poland); Malgorzata Szczerska, Medical Univ. of Gdansk (Poland), Gdansk Univ. of Technology (Poland)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-93

## **From data to restoration: deep learning-based descattering in cortical optical imaging in vivo**

Yuwei Du, Dongyu Li, Zhengwu Hu, Shaojun Liu, Jianyi Xu, Tingting Yu, Dan Zhu, Wuhan National Lab. for Optoelectronics, Huazhong Univ. of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-94

## **Optical clearing imaging for evaluating cumulative effects of DM duration on post-stroke vascular structure/function and urokinase (UK) thrombolysis Efficacy**

Shaojun Liu, Jiawei Huang, Yuwei Du, Qihang Yang, Wuhan National Lab. for Optoelectronics, Huazhong Univ. of Science and Technology (China); Valery V. Tuchin, Institute of Physics and Science Medical Ctr., Saratov State Univ. (Russian Federation), National Research Tomsk State Univ. (Russian Federation), Institute of Precision Mechanics and Control, Saratov Scientific Ctr. (Russian Federation); Dongyu Li, Wuhan National Lab. for Optoelectronics, Huazhong Univ. of Science and Technology (China); Dan Zhu, MOE Key Laboratory for Biomedical Photonics, Wuhan National Laboratory for Optoelectronics - Advanced Biomedical Imaging Facility, Huazhong University of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-95

## **QPI technology in assessing the quality of platelet concentrate for clinical purposes**

Irina Vasilenko, Vladislav Metelin, Pavel Ignatiev, Nina Shikhina, Maxim Pogorelov, A.N. Kosygin Russian State Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-96

## **Development of disposable submillimeter fiber optic Raman probe for brain biopsy**

Zhaoqin Yang, Xun Chen, Shuhua Yue, Beihang Univ. (China); Zhiwei Huang, National Univ. of Singapore (Singapore)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-97

## **a whole-brain proteome expansion method based on double-network hydrogel for enabling micro-optical sectioning**

Shihao Fan, Yaxin Luo, Wenhui Wang, Yaoyuan Jiang, Qirui Deng, Xiaoyan Li, Xiaojun Wang, Hainan Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-98

## **A multidimensional-continuous multi-path spectroscopy method for nondestructive testing of blood bag quality**

Mengqiu Zhang, Jing Liu, Shandong Univ. of Traditional Chinese Medicine (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-99

## **Optical attenuation-resistant photoacoustic tomography with isotropic contrast via polarization-demodulated magnetic orientation awareness**

Xiaoye Su, Yujiao Shi, Sihua Yang, South China Normal Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13721-100

## **Endoscopic OCT-guided responsive gas production enables multi-mechanism synergistic treatment and visual monitoring of in situ colitis**

Fengxian Du, Yueyao Lin, Junwei Xue, Huanhuan Yu, Huizhen Zhang, Yu Fu, Xun Pan, Qingliang Zhao, Xiamen Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

### **SESSION 5: NANO/BIPHOTONICS**

13 October 2025 • 14:30 - 15:55 | Room 307

*Session Chair:* **Jingjing Zhao**, Huazhong Univ. of Science and Technology (China)

13721-23

## **Waveflex biosensor for sensitive detection of Ochratoxin A for food safety applications (Invited Paper)**

Huibo Han, Liaocheng University (China); Qi Zhang, Liaocheng Univ. (China); Ragini Singh, K L Deemed to be Univ. (India); Bingyuan Zhang, Liaocheng Univ. (China); Santosh Kumar, Koneru Lakshmaiah Education Foundation (India)

13 October 2025 • 14:30 - 14:55 | Room 307

13721-24

## **Needle-shaped beam modulation for extended depth-of-field in diffractive optics**

Fangliang Cheng, Kaili Zheng, Huazhong Univ. of Science and Technology (China)

13 October 2025 • 14:55 - 15:10 | Room 307

13721-25

## **Metasurface-enhanced multifocal OCT for high-speed volumetric imaging with cellular resolution**

Kaili Zheng, Fangliang Cheng, Jingjing Zhao, Huazhong Univ. of Science and Technology (China)

13 October 2025 • 15:10 - 15:25 | Room 307

13721-26

## **Probing photothermal effect in two-dimensional materials using fiber Bragg grating technique for medical applications**

Shivananju Bannur Nanjunda, Sweta Rath, Koushik Sagi Shiva Sreenivasa Dheerendra, Indian Institute of Technology Madras (India)

13 October 2025 • 15:25 - 15:40 | Room 307

13721-27

## **MEMS-based fluorescence excitation chip and detection system for point-of-care detection: measurement of ultimate sensitivity**

Qing Shi, Jiacheng Wang, Shilun Feng, Jianlong Zhao, Shanghai Institute of Microsystem and Information Technology (China)

13 October 2025 • 15:40 - 15:55 | Room 307

**Tea/Coffee Break 15:55 - 16:10**

## SESSION 6: TRANSLATIONAL OPTICAL TECHNIQUES FOR BASIC RESEARCH AND CLINICAL MEDICINE III

13 October 2025 • 16:10 - 17:50 | Room 307  
*Session Chair: Yu Chen*, Fujian Normal Univ. (China)

13721-28

### **FLIM in personalization of cancer immunotherapy** *(Invited Paper)*

Diana V. Yuzhakova, Daria A. Sachkova, Anna V. Izosimova, Anastasiya I. Kononova, Konstantin S. Yashin, Privolzhsky Research Medical Univ. (Russian Federation); Irina Shumskaya, Sergey Gamayunov, Nizhny Novgorod Regional Clinical Oncological Dispensary (Russian Federation); Vadim Elagin, Varvara Dudenkova, Privolzhsky Research Medical Univ. (Russian Federation); Vladislav Shcheshlavskiy, Becker & Hickl GmbH (Russian Federation), Privolzhsky Research Medical Univ. (Russian Federation); Marina V. Shirmanova, Privolzhsky Research Medical Univ. (Russian Federation)

13 October 2025 • 16:10 - 16:35 | Room 307

13721-29

### **High-sensitive biosensor for urea detection in urine via hydrogel whispering-gallery mode microresonators**

Yumeng Lu, Tianjin Univ. (China), Yili Normal University (China); Yaoxin Fu, Ziyihui Wang, Junfeng Jiang, Tianhua Xu, Tianjin Univ (China); Jing Wang, Unit 31693 of the Chinese People's Liberation Army (China); Tiegeng Liu, Tianjin Univ (China)

13 October 2025 • 16:35 - 16:50 | Room 307

13721-30

### **Endovascular fibre-optic sensor for in vivo hemodynamic monitoring**

Bozhen Zhang, Tsinghua University (China); Xing Sheng, Tsinghua Univ. (China)

13 October 2025 • 16:50 - 17:05 | Room 307

13721-31

### **A deep brain oxymeter based on implantable fiber systems**

Jiazheng Chen, Tsinghua Univ. (China)

13 October 2025 • 17:05 - 17:20 | Room 307

13721-33

### **The development of a novel Raman probe for accurate and rapid endometrial carcinoma detection**

Xun Chen, Beihang Univ. (China)

13 October 2025 • 17:20 - 17:35 | Room 307

13721-34

### **High-resolution 3D surface topography imaging via phase-based OCM**

Hongxiang Zhong, Cheng Zhong, Zhifang Li, Hui Li, Shulian Wu, Fujian Normal Univ. (China)

13 October 2025 • 17:35 - 17:50 | Room 307

## SESSION 7: SPECTROSCOPY

14 October 2025 • 08:30 - 10:10 | Room 307  
*Session Chair: Oxana V. Semyachkina-Glushkovskaya*, Saratov State Univ. (Russian Federation)

13721-35

### **The investigation of the activation dynamics of human platelets probed by Raman tweezers spectroscopy** *(Invited Paper)*

Santhosh Chidangil, Mithun Nelliat, Manipal Academy of Higher Education (India)

14 October 2025 • 08:30 - 08:55 | Room 307

13721-36

### **In vivo stimulated Raman scattering flow cytometry**

keyu Pan, Nana Wang, Beihang Univ. (China); Sihan Dong, Peking Univ. (China); Jianlin Liu, Xun Chen, Pu Wang, Beihang Univ. (China); Kai Pang, Beijing Information Science & Technology Univ. (China); Xunbin Wei, Peking Univ. (China); Shuhua Yue, Beihang Univ. (China)

14 October 2025 • 08:55 - 09:10 | Room 307

13721-37

### **Quantitative label-free 3D stimulated Raman scattering imaging of lipid remodeling in aging mouse oocytes**

Zhengyan Wu, Hyeon Jeong Lee, Zhejiang Univ. (China)

14 October 2025 • 09:10 - 09:25 | Room 307

13721-38

### **Non-invasive label-free monitoring of blood Na<sup>+</sup> in vivo by water-muting terahertz optoacoustic signals**

Kun Wang, Yixin Yao, Kepei Du, Fuyang Cui, Jiao Li, Zhen Tian, Tianjin Univ. (China)

14 October 2025 • 09:25 - 09:40 | Room 307

13721-39

### **Compact affinity quantification platform based a multi-resonant optical fiber**

Pin Xu, The Hong Kong Polytechnic Univ. (Hong Kong, China); Lin L. Wang, The Univ. of Hong Kong (Hong Kong, China); Yujian Li, Changyuan Yu, The Hong Kong Polytechnic Univ. (China)

14 October 2025 • 09:40 - 09:55 | Room 307

13721-40

### **Deep learning enhanced vibrational spectroscopy for quantitative DNA fragment profiling**

Rashad Fatayer, University of Southampton, Optoelectronics Research Centre (United Kingdom); Stephen J. Sammut, The Institute of Cancer Research (United Kingdom); Senthil M. Ganapathy, Optoelectronics Research Ctr., Univ. of Southampton (United Kingdom)

14 October 2025 • 09:55 - 10:10 | Room 307

**Tea/Coffee Break 10:10 - 10:30**

# Conference 13721

## SESSION 8: MULTIMODAL BIOMEDICAL IMAGING

14 October 2025 • 10:30 - 11:55 | Room 307

Session Chair: **Feifan Zhou**, Hainan Univ. (China)

13721-101

### **Monitoring circulating melanoma cells by in vivo photoacoustic flow cytometry** (*Invited Paper*)

Xunbin Wei, Peking Univ. Health Science Ctr. (China)

14 October 2025 • 10:30 - 10:55 | Room 307

13721-41

### **The application of multi-wavelength photoacoustic microscopic imaging technology in the study of the three-dimensional structure and dynamic drainage of the lymphatic system**

Feifan Zhou, Ting Sun, Hainan Univ. (China)

14 October 2025 • 10:55 - 11:10 | Room 307

13721-42

### **The research on the contrast-selective optimal imaging method of laser speckle based on transmission-reflection dual-mode**

Rui Zeng, Tiangong University (China)

14 October 2025 • 11:10 - 11:25 | Room 307

13721-43

### **Application of photoacoustic-high frequency ultrasound dual-modal high-speed imaging system in skin aging feature analysis**

Rui Wang, Wangbiao Li, Zhengjun Tang, Zhifang Li, Shulian Wu, Fujian Normal Univ. (China); Hui Li, Fuyao Univ. of Science and Technology (China)

14 October 2025 • 11:25 - 11:40 | Room 307

13721-45

### **Phase velocity measurements in fiber optic Sagnac interferometer biological tissue mechanical property characterization**

Jinjun Xia, Lawrence Technological Univ. (United States); Suxuan (Sue) Xu, Wayne State Univ. (United States)

14 October 2025 • 11:40 - 11:55 | Room 307

Lunch Break 11:55 - 13:15

## SESSION 9: PHOTON THERAPEUTICS

14 October 2025 • 13:15 - 15:50 | Room 307

Session Chair: **Haixia Qiu**, Chinese PLA General Hospital (China)

13721-46

### **Lymphotonics opens a new era in neurotheranostics** (*Invited Paper*)

Oxana V. Semyachkina-Glushkovskaya, Saratov State Univ. (Russian Federation)

14 October 2025 • 13:15 - 13:40 | Room 307

13721-47

### **Flexible nanocomposite PDMS waveguides for controlled light delivery in biophotonics applications**

Moqaddaseh Afzali, UNSW Sydney (Australia); Amr Al Abed, Danyang Wang, Nigel Lovell, Dorna Esrafilzadeh, The Univ. of New South Wales (Australia)

14 October 2025 • 13:40 - 13:55 | Room 307

13721-49

### **Interventional effects of non-invasive phototherapy on inflammatory blood-brain barrier in vitro models**

Yi Li, Yizhou Tan, Ying Wang, Haixia Qiu, Chinese PLA General Hospital (China); Hongyou Zhao, Defu Chen, Beijing Institute of Technology (China); Jing Zeng, Ying Gu, Chinese PLA General Hospital (China)

14 October 2025 • 13:55 - 14:10 | Room 307

13721-50

### **Study on the dose-effect relationship of 297 nm narrowband light-emitting diode noninvasive phototherapy in regulating the vitamin D nutritional status in rats**

Yu Qiao, Yizhou Tan, Dongya Chen, Haixia Qiu, Ying Wang, Chinese PLA General Hospital (China); Defu Chen, Hongyou Zhao, Beijing Institute of Technology (China); Biao Chang, Yidi Liu, Jing Zeng, Ying Gu, Chinese PLA General Hospital (China)

14 October 2025 • 14:10 - 14:25 | Room 307

13721-51

### **Safety evaluation of 297 nm Narrow-band LED irradiation at extremely low light intensity of microwatt on the cornea of infancy rabbits**

Dongya Chen, Yu Qiao, Ying Gu, Ying Wang, Haixia Qiu, Jing Zeng, Yizhou Tan, Chinese PLA General Hospital (China)

14 October 2025 • 14:25 - 14:40 | Room 307

13721-52

### **Photo monitoring and modulation of meningeal lymphatic vessels** (*Invited Paper*)

Feifan Zhou, Hainan Univ. (China)

14 October 2025 • 14:40 - 15:05 | Room 307

13721-53

### **Spatial-temporal change of spontaneous hemodynamic responses induced by variable prefrontal photobiomodulation**

Sha Zheng, Haijing Niu, Beijing Normal Univ. (China)

14 October 2025 • 15:05 - 15:20 | Room 307

13721-54

### **Validation of a simultaneous singlet oxygen luminescence and fluorescence detection system**

Shengdong Cui, Zhe Wei, Sen Wang, Xianzeng Zhang, Fujian Normal Univ. (China); Timothy C. Zhu, Univ. of Pennsylvania (United States); Zheng Huang, Fujian Normal Univ. (China)

14 October 2025 • 15:20 - 15:35 | Room 307

13721-48

### **Photophysical properties of proporphyrin IX upon binding to serum albumin**

Irina V. Semenova, Andrey Belashov, Ioanna Gorbunova, Anna Zhikhoreva, Dina Beltukova, Maxim Sasin, Ioffe Institute (Russian Federation); Maxim Belashov, ITMO Univ. (Russian Federation); Oleg Vasyutinskii, Ioffe Institute (Russian Federation)

14 October 2025 • 15:35 - 15:50 | Room 307

Tea/Coffee Break 15:50 - 16:10

**SESSION 10: AI IN BIOMEDICAL  
IMAGING AND DIAGNOSTICS**

14 October 2025 • 16:10 - 17:40 | Room 307

*Session Chair:* **Wei Chen**, Huazhong Univ. of Science and  
Technology (China)

13721-55

**Three-dimensional reconstruction and circulatory  
analysis of acupuncture efficacy based on infrared  
thermography**

Dongxue Yan, Shuwang Chen, Caixin Wang, Hebei Univ. of Science  
and Technology (China)

14 October 2025 • 16:10 - 16:25 | Room 307

13721-56

**Low-light OCT imaging enhancement using a GAN-  
based approach**

Zheng Zong, Zongqing Ma, Yiming Wang, Jiang Zhu, Beijing  
Information Science & Technology Univ. (China)

14 October 2025 • 16:25 - 16:40 | Room 307

13721-57

**Deep learning for high-resolution reconstruction of  
dynamic OCT**

Siyao Zhuo, Univ. of Science and Technology of China (China),  
ShanghaiTech Univ. (China); Ziqi Gao, Univ. of Science and  
Technology of China (China); Yuyao Zhang, ShanghaiTech Univ.  
(China); Kaiyan Li, S. Kevin Zhou, Univ. of Science and Technology  
of China (China)

14 October 2025 • 16:40 - 16:55 | Room 307

13721-59

**An attention-based and task-informed image  
denoising and enhancement framework for two-photon  
autofluorescence image segmentation**

Zhengyuan Pan, Bobo Gu, Shanghai Jiao Tong Univ. (China)

14 October 2025 • 16:55 - 17:10 | Room 307

13721-58

**Revealing tissue macro-structures by clustering of  
SAM-obtained foundational meso-segments from OCT  
attenuation maps**

Daniil Mikhailenko, Denis Nikoshin, Institute of Applied Physics  
(Russian Federation), HSE Univ. (Russian Federation); Nataliya  
N. Matveeva, HSE Univ. (Russian Federation), Institute of Applied  
Physics (Russian Federation); Alexander A. Sovetsky, Peter A.  
Chizhov, Alexander L. Matveyev, Vladimir Y. Zaitsev, Lev A. Matveev,  
Institute of Applied Physics (Russian Federation)

14 October 2025 • 17:10 - 17:25 | Room 307

13721-60

**Agent-driven realistic scatterer distribution in tissue-  
mimicking digital phantoms for physics-informed  
optical coherence tomography scans simulation**

Denis A. Nikoshin, Institute of Applied Physics RAS (Russian  
Federation), HSE University (Russian Federation); Daniil S.  
Mikhailenko, Institute of Applied Physics (Russian Federation),  
HSE Univ. (Russian Federation); Alexander A. Sovetsky, Institute  
of Applied Physics (Russian Federation); Alexander L. Matveyev,  
Institute of Applied Physics RAS (Russian Federation); Vladimir  
Y. Zaitsev, Lev A. Matveev, Institute of Applied Physics (Russian  
Federation)

14 October 2025 • 17:25 - 17:40 | Room 307

# Conference 13722

## Advanced Sensor Systems and Applications XV

12 - 13 October 2025 | Room 311B

**Conference Chairs:** **Xinyu Fan**, Shanghai Jiao Tong Univ. (China); **Chang-Seok Kim**, Pusan National Univ. (Republic of Korea); **Jianzhong Zhang**, Harbin Engineering Univ. (China); **Minghong Yang**, Wuhan Univ. of Technology (China)

**Program Committee:** **Gilberto Brambilla**, Univ. of Southampton (United Kingdom); **Kevin P. Chen**, Univ. of Pittsburgh (United States); **Kin-Seng Chiang**, City Univ. of Hong Kong (Hong Kong, China); **Bai-Ou Guan**, Jinan Univ. (China); **Tuan Guo**, Jinan Univ. (China); **Zuyuan He**, Shanghai Jiao Tong Univ. (China); **Huizhu Hu**, Zhejiang Univ. (China); **Shibin Jiang**, AdValue Photonics, Inc. (United States); **Wei Jin**, Shenzhen Research Institute (China); **Jianqing Li**, Macau Univ. of Science and Technology (Macao, China); **Zhengying Li**, Wuhan Univ. of Technology (China); **Deming Liu**, Huazhong Univ. of Science and Technology (China); **Qingwen Liu**, Shanghai Jiao Tong Univ. (China); **Tiegen Liu**, Tianjin Univ. (China); **Huilian Ma**, Zhejiang Univ. (China); **Yosuke Mizuno**, Yokohama National Univ. (Japan); **Li Pei**, Beijing Jiaotong Univ. (China); **Gang-Ding Peng**, The Univ. of New South Wales (Australia); **Xueguang Qiao**, Northwest Univ. (China); **Yunjiang Rao**, Univ. of Electronic Science and Technology of China (China); **Anuj K. Sharma II**, National Institute of Technology, Delhi (India); **Tingyun Wang**, Shanghai Univ. (China); **Hai Xiao**, Clemson Univ. (United States); **X. Steve Yao**, NuVision Photonics, Inc. (United States); **Shizhuo Yin**, The Pennsylvania State Univ. (United States); **Libo Yuan**, Harbin Engineering Univ. (China)

### OPENING CEREMONY AND PLENARY SESSION

12 October 2025 • 08:30 - 12:00 | Convention Hall 2, Level 2

*View Full Details:* [spie.org/photonics-asia-plenary](https://spie.org/photonics-asia-plenary)

08:30 - 08:50

#### Opening Ceremony, Awards and Recognition

13715-501

#### Photonics and electronics convergence: oscillation, computing, and interconnection (*Plenary Presentation*)

Ming Li, Institute of Semiconductors, Chinese Academy of Sciences (China)

12 October 2025 • 08:50 - 09:30 | Convention Hall 2, Level 2

13722-502

#### When metasurfaces meet photodetectors (*Plenary Presentation*)

Cheng-Wei Qiu, College of Design and Engineering, National Univ. of Singapore (Singapore)

12 October 2025 • 09:30 - 10:10 | Convention Hall 2, Level 2

#### Tea/Coffee Break 10:10 - 10:40

13717-503

#### Super-resolution in ultra-thin lumens (*Plenary Presentation*)

Qing Yang, Zhejiang Univ. (China), ZJU-Hangzhou Global Scientific and Technological Innovation Ctr. (China), Shanxi Univ. (China)

12 October 2025 • 10:40 - 11:20 | Convention Hall 2, Level 2

13720-504

#### Much ado about nothing: Light fields with phase singularities for precision measurement (*Plenary Presentation*)

Kishan Dholakia, School of Biological Sciences, The Univ. of Adelaide (Australia), Ctr. of Light for Life, The Univ. of Adelaide (Australia)

12 October 2025 • 11:20 - 12:00 | Convention Hall 2, Level 2

#### Lunch Break 12:00 - 13:30

### SESSION 1: REFLECTOMETRY AND ACOUSTIC SENSING

12 October 2025 • 13:30 - 15:10 | Room 311B

*Session Chair:* **Minghong Yang**, Wuhan Univ. of Technology (China)

13722-1

#### Low thermal drift and high acoustic sensitivity fiber acoustic sensors enabled by hollow core fibers (*Invited Paper*)

Meng Ding, Univ. of Southampton (United Kingdom)

12 October 2025 • 13:30 - 14:00 | Room 311B

13722-2

#### Doppler-induced frequency domain distortion and its impact on the performance of phase-sensitive optical frequency domain reflectometry based distributed fiber-optic sensing (*Invited Paper*)

Weilin Xie, Qiang Yang, Congfan Wang, Bowen Li, Xiang Zheng, Jun Xue, Sijing Yang, Wei Wei, Yi Dong, Beijing Institute of Technology (China)

12 October 2025 • 14:00 - 14:30 | Room 311B

13722-3

#### Sensitivity analysis of distributed refractive index sensing using tapered fiber in optical frequency domain reflectometry

Haohan Guo, Tianjin University (China); Kun Liu, Ji Liu, Huafang Wang, Jinqi Deng, Junfeng Jiang, Tiegeng Liu, Zhenyang Ding, Tianjin Univ. (China)

12 October 2025 • 14:30 - 14:50 | Room 311B

13722-4

#### Miniaturized sound source localization system based on optical Fabry-Perot binaural acoustic sensors

Xueping Li, Shuang Wang, Junfeng Jiang, Kun Liu, Tiegeng Liu, Tianjin Univ. (China)

12 October 2025 • 14:50 - 15:10 | Room 311B

#### Tea/Coffee Break 15:10 - 15:40

### SESSION 2: ADVANCED SENSING SYSTEMS

12 October 2025 • 15:40 - 17:50 | Room 311B

*Session Chair:* **Jianzhong Zhang**, Harbin Engineering Univ. (China)

13722-6

#### Performance analysis of Brillouin optical time domain reflectometry (*Invited Paper*)

Zhisheng Yang, Beijing Univ. of Posts and Telecommunications (China)

12 October 2025 • 15:40 - 16:10 | Room 311B

13722-7

## Extended ranging of optical interferometric sensor in with 4x4 coupler and dual reference

Yeongbin Jeon, Won Tae Choe, Jaeheung Kim, Hwidon Lee, Chang-Seok Kim, Pusan National Univ. (Republic of Korea)

12 October 2025 • 16:10 - 16:30 | Room 311B

13722-8

## Enhanced high-accuracy positioning using phase-modulation for ultra-long-range asymmetric interferometer vibration sensor

Xinxin Hu, Kun Liu, Jianying Jing, Kang Xue, Junfeng Jiang, Tiegeng Liu, Tianjin Univ. (China)

12 October 2025 • 16:30 - 16:50 | Room 311B

13722-9

## Direct laser writing of 2D diffraction gratings for on-chip optical sensing

Jing Qian, Yekaterina Tskhe, School of Chemistry & AMBER, Trinity College Dublin (Ireland); Francisco Soares, A. Louise Bradley, School of Physics & AMBER, Trinity College Dublin (Ireland); Larisa Florea, Colm Delaney, School of Chemistry & AMBER, Trinity College Dublin (Ireland)

12 October 2025 • 16:50 - 17:10 | Room 311B

13722-10

## Simultaneous dual-wave number detection with coherent anti-Stokes Raman scattering (CARS) microspectroscopy

Jinchao Dou, Tong Wang, Junfeng Jiang, Kun Liu, Shuang Wang, Tianjin Univ. (China); Jinying Ma, Tianjin Univ. of Technology and Education (China); Xiaoshuang Dai, Tianjin Univ. (China); JinDe Yin, Shenzhen Univ. (China); Tiegeng Liu, Tianjin Univ. (China)

12 October 2025 • 17:10 - 17:30 | Room 311B

13722-11

## A high-efficiency endpoint detection algorithm for asymmetric dual Mach-Zehnder interferometer vibration sensing system

Kang Xue, Kun Liu, Junfeng Jiang, Shuang Wang, Jianying Jing, Ziyihui Wang, Xinxin Hu, Tiegeng Liu, Tianjin Univ. (China)

12 October 2025 • 17:30 - 17:50 | Room 311B

### SESSION 3: PRECISION MEASUREMENT

13 October 2025 • 08:00 - 10:10 | Room 311B

*Session Chair:* **Chang-Seok Kim**,  
Pusan National Univ. (Republic of Korea)

13722-12

## Multi-dimensional optical imaging with polarization sensitivity (*Invited Paper*)

Tae Joong Eom, Pusan National Univ. (Republic of Korea)

13 October 2025 • 08:00 - 08:30 | Room 311B

13722-13

## A dual-sensor fusion-based dual-feedback method for deformable mirror surface control

Chenyue Wang, Xuemin Cheng, Jindong Wang, Tsinghua Univ. (China)

13 October 2025 • 08:30 - 08:50 | Room 311B

13722-14

## Simultaneous measurement of glycerol concentration in aqueous solution and temperature using fiber-optic SMSM structure and Fourier transform

Aleksandr A. Markvart, Liubov D. Zavalishina, Artur E. Zaripov, Leonid B. Liokumovich, Nikolai A. Ushakov, Peter the Great Saint-Petersburg Polytechnic Univ. (Russian Federation)

13 October 2025 • 08:50 - 09:10 | Room 311B

13722-15

## Carbon dioxide concentration detection using wavelet-based denoising and LSTM regression in tunable diode laser absorption spectroscopy

Chengwei Zhao, Kun Liu, Xinpeng Li, Tiegeng Liu, Tianjin Univ. (China), Key Lab. of Opto-electronics Information Technology, Tianjin Univ., Ministry of Education (China), Institute of Optical Fiber Sensing, Tianjin Univ. (China)

13 October 2025 • 09:10 - 09:30 | Room 311B

13722-16

## High-temperature performance characterization of sapphire fiber microcavity sensors in convective thermal environments

Xin Chen, Tianjin Univ. (China); Jiande Zhang, Shandong Institute of Space Electronic Technology (China); Junfeng Jiang, Shuang Wang, Kun Liu, Tiegeng Liu, Tianjin Univ. (China)

13 October 2025 • 09:30 - 09:50 | Room 311B

13722-17

## All-dielectric metasurfaces enabling surface-enhanced overtone absorption

Haiou Lu, Min Zhang, Qian Zhou, Xiaohao Wang, Tsinghua Univ. (China)

13 October 2025 • 09:50 - 10:10 | Room 311B

Tea/Coffee Break 10:10 - 10:40

### SESSION 4: BIOPHOTONICS AND MEDICAL SENSING

13 October 2025 • 10:40 - 12:00 | Room 311B

*Session Chair:* **Xinyu Fan**, Shanghai Jiao Tong Univ. (China)

13722-18

## Hydrogel whispering-gallery mode microresonators for toxic heavy metals analysis in Chinese herbals

Ruijie Wu, Tianjin Univ (China), Shanxi Jinshuo Biomedical Technology Co., Ltd. (China); Yumeng Lu, Ziyihui Wang, Jianying Jing, Kun Liu, Junfeng Jiang, Tianjin Univ (China); Yu-Cheng Chen, Nanyang Technological University (Singapore); Jing Wang, Unit 31693 of the Chinese People's Liberation Army (China); Tiegeng Liu, Tianjin Univ (China)

13 October 2025 • 10:40 - 11:00 | Room 311B

13722-19

## Active WGM-FRET microlaser sensor for real-time DNA hybridization tracking

Yiqian Fu, Beijing Univ. of Technology (China); Xiuhong Wang, Institute of Laser Engineering, Beijing Univ. of Technology (China)

13 October 2025 • 11:00 - 11:20 | Room 311B

13722-20

## AI-assisted fiber optic sensing technology for non-contact blood pressure estimation

Zhengyu ZHANG, The Hong Kong Polytechnic University (Hong Kong, China); Mingyu Luo, Changyuan Yu, The Hong Kong Polytechnic Univ. (Hong Kong, China)

13 October 2025 • 11:20 - 11:40 | Room 311B

13722-21

## Optical fiber pH and salinity dual-parameter sensing system based on conical optical fibers

Zongjie Zhang, Hongxia Zhang, Chunran Cao, Wenjing Li, Kaijin Zhang, Qingyang Meng, Dagong Jia, Tiegeng Liu, Tianjin Univ. (China)

13 October 2025 • 11:40 - 12:00 | Room 311B

Lunch Break 12:00 - 13:30

# Conference 13722

## POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 - 13:00

View poster presentation guidelines and set-up instructions at <http://spie.org/PA/poster-presentation-guidelines>

13722-22

### Photoacoustic spectroscopy sensor with sub-nanometer resolution based on light intensity differential grating interferometer cavity

Jianzhen Peng, Changlun Hou, Hangzhou Dianzi Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13722-23

### Compact broadband hydrocarbon gas sensor based on a tightly-coiled low-volume 25m antiresonant hollow-core fiber and mid-IR frequency comb source

Piotr Jaworski, Piotr Bojęś, Wrocław Univ. of Science and Technology (Poland); Dakun Wu, Hangzhou Institute for Advanced Study, UCAS (China); Karol Krzempek, Grzegorz Soboń, Wrocław Univ. of Science and Technology (Poland); Fei Yu, Key Lab. of Materials for High Power Laser, Shanghai Institute of Optics and Fine Mechanics (China), Hangzhou Institute for Advanced Study, UCAS (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13722-24

### Research on high-speed demodulation method of FBG vibration sensor based on adaptive threshold centroid algorithm

Kun Li, Mingli Dong, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13722-25

### Research on dynamic stray radiation suppression method based on imaging spectroscopy

Wanyu Liu, Yi Tang, Beijing Institute of Technology (China); Ziyu Bian, Beijing Institute of Technology (China), Longrays Photoelectric Technology in Suzhou Co., Ltd. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13722-26

### Temperature compensation of FBG measurement on different steel surfaces under cryogenic environments

Jiacheng Yu, Xiaolong Fan, Ruling Zhou, Yutang Dai, Wuhan Univ. of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13722-28

### Chip-based 532nm band fluorescence excitation-detection sensing system

Jiacheng Wang, Univ. of Shanghai for Science and Technology (China), Shanghai Institute of Microsystem and Information Technology (China); Qing Shi, Jianlong Zhao, Shilun Feng, Shanghai Institute of Microsystem and Information Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13722-29

### Fast phase-noise-compensated optical frequency domain reflectometry realized using field programmable gate array

Xiangyang Liu, Xinyu Fan, Zuyuan He, Shanghai Jiao Tong Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13722-30

### Monitoring of lycium barbarum gall mites based on multi-sensor data fusion of hyperspectral reflectance and chlorophyll fluorescence kinetics

Chunyan Zhou, North Minzu Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

# Conference 13723

## Nano-optoelectronics and Micro/ Nano-photonics XI

13 - 14 October 2025 | Room 311C

*Conference Chairs:* **Zhiping Zhou**, Aijie Optoelectronic Technology (China); **Kazumi Wada**, Massachusetts Institute of Technology (United States); **Shaoliang Yu**, Zhejiang Lab. (China)

*Program Committee:* **Min Gu**, Univ. of Shanghai for Science and Technology (China); **Xiaoyong Hu**, Peking Univ. (China); **Jianjun Liu**, Hunan Univ. (China); **Jinsheng Lu**, Harvard Univ. (United States); **Haisheng Rong**, Intel Corp. (United States); **Takasumi Tanabe**, Keio Univ. (Japan); **Limin Tong**, Zhejiang Univ. (China); **Yating Wan**, King Abdullah Univ. of Science and Technology (Saudi Arabia); **Cheng Wang**, City Univ. of Hong Kong (Hong Kong, China); **Ying Xue**; **Koji Yamada**, National Institute of Advanced Industrial Science and Technology (Japan); **Qing Yang**, Zhejiang Univ. (China); **Nan Zhang**, Beijing Institute of Technology (China)

### OPENING CEREMONY AND PLENARY SESSION

12 October 2025 • 08:30 - 12:00 | Convention Hall 2, Level 2

*View Full Details:* [spie.org/photonics-asia-plenary](https://spie.org/photonics-asia-plenary)

08:30 - 08:50

#### Opening Ceremony, Awards and Recognition

13715-501

#### Photonics and electronics convergence: oscillation, computing, and interconnection (*Plenary Presentation*)

Ming Li, Institute of Semiconductors, Chinese Academy of Sciences (China)

12 October 2025 • 08:50 - 09:30 | Convention Hall 2, Level 2

13722-502

#### When metasurfaces meet photodetectors (*Plenary Presentation*)

Cheng-Wei Qiu, College of Design and Engineering, National Univ. of Singapore (Singapore)

12 October 2025 • 09:30 - 10:10 | Convention Hall 2, Level 2

Tea/Coffee Break 10:10 - 10:40

13717-503

#### Super-resolution in ultra-thin lumens (*Plenary Presentation*)

Qing Yang, Zhejiang Univ. (China), ZJU-Hangzhou Global Scientific and Technological Innovation Ctr. (China), Shanxi Univ. (China)

12 October 2025 • 10:40 - 11:20 | Convention Hall 2, Level 2

13720-504

#### Much ado about nothing: Light fields with phase singularities for precision measurement (*Plenary Presentation*)

Kishan Dholakia, School of Biological Sciences, The Univ. of Adelaide (Australia), Ctr. of Light for Life, The Univ. of Adelaide (Australia)

12 October 2025 • 11:20 - 12:00 | Convention Hall 2, Level 2

### SESSION 1: NANOPHOTONICS AND MATERIALS I

13 October 2025 • 08:30 - 10:10 | Room 311C

*Session Chair:* **Yong-Chun Liu**, Tsinghua Univ. (China)

13723-1

#### Polarization manipulation and multiplexing based on optical metasurfaces (*Invited Paper*)

Ruwen Peng, Mu Wang, Nanjing Univ. (China)

13 October 2025 • 08:30 - 09:00 | Room 311C

13723-2

#### Three-layer heterostructure topological photonic crystal system for high-performance laser emission (*Invited Paper*)

Yongquan Zeng, Wuhan Univ. (China)

13 October 2025 • 09:00 - 09:30 | Room 311C

13723-3

#### Research on high-saturation wide-gamut structural color modulation in all-dielectric metasurface

Xueqiong Bai, Beijing Institute of Technology (China); Ziyang Wang, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 09:30 - 09:50 | Room 311C

13723-4

#### PEEM based near-field imaging of plasmonic topological nanochains

Qiuchen Yan, Boheng Zhao, Xiaoyong Hu, Peking Univ. (China)

13 October 2025 • 09:50 - 10:10 | Room 311C

Tea/Coffee Break 10:10 - 10:30

### SESSION 2: NANOPHOTONICS AND MATERIALS II

13 October 2025 • 10:30 - 12:10 | Room 311C

*Session Chair:* **Ruwen Peng**, Nanjing Univ. (China)

13723-5

#### High-sensitivity optomechanical magnetometry (*Invited Paper*)

Yong-Chun Liu, Tsinghua Univ. (China)

13 October 2025 • 10:30 - 11:00 | Room 311C

13723-6

#### Finite barrier bound states (*Invited Paper*)

Meng Xiao, Wuhan Univ. (China)

13 October 2025 • 11:00 - 11:30 | Room 311C

# Conference 13723

13723-7

## **Dielectric metasurface-enabled single-shot full-Stokes near-infrared polarimetry**

Xinran Qian, Beijing University of Posts and Telecommunications (China); Lili Gui, Yiyuan Xu, Hailun Xie, Hao Chen, Kun Xu, Beijing Univ. of Posts and Telecommunications (China)

13 October 2025 • 11:30 - 11:50 | Room 311C

13723-8

## **Whispering-gallery modes in functionalized polystyrene microspheres for photonics**

Anton A. Starovoytov, Evgeniia Soloveva, Daler Dadadzhanov, ITMO Univ. (Russian Federation); Nikita Toropov, Univ. of Southampton (United Kingdom)

13 October 2025 • 11:50 - 12:10 | Room 311C

**Lunch Break 12:10 - 13:30**

### POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 – 13:00**

View poster presentation guidelines and set-up instructions at <http://spie.org/PA/poster-presentation-guidelines>

13723-31

## **Terahertz transmission modulator using photonic crystal with electrically tunable graphene particle array**

Sergey G. Moiseev, Kotelnikov Institute of Radio Engineering and Electronics (Russian Federation); Igor Glukhov, Ulyanovsk State Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13723-32

## **Engineered disordered metasurfaces and their applications in wavefront control**

Kexin Wang, Xin Li, Yongtian Wang, Lingling Huang, Beijing Institute of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13723-33

## **Discoveries in mesotronics and high energy physics: a tribute to the jubilee of professors Igor V. Minin and Oleg V. Minin**

Huan Tang, Renxian Li, Xidian Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13723-34

## **Experimental confirmation of the generation of strong magnetic fields in a dielectric sphere with a high refractive index**

Renxian Li, Xidian Univ. (China); Igor V. Minin, Technological Design Institute of Applied Microelectronics (Russian Federation); Oleg V. Minin, National Natural Sciences Foundation of China (Russian Federation); Huan Tang, Li Xiao, Xidian Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13723-35

## **Inverse design of cloaking for cylinder with arbitrary cross section based on physics-informed neural networks**

Renxian Li, Li Xiao, Huan Tang, Yuexiao Jiao, Zhe Wang, Bing Wei, Shuhong Gong, Xidian Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13723-36

## **Metasurface-assisted generation and manipulation of vectorial optical fields**

Peng Zhou, Lei Chen, Beijing Univ. of Posts and Telecommunications (China); Xinyu Wen, Univ. of Chinese Academy of Sciences (China); Ye Han, Yumin Liu, Beijing Univ. of Posts and Telecommunications (China); Shikai Deng, Shanghai Institute of Microsystem and Information Technology (China), Univ. of Chinese Academy of Sciences (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13723-37

## **High-sensitive hydrogel microresonators for temperature detection**

Hua Huang, Guangbao Shan, CHN Energy Heilongjiang New Energy Co., Ltd (China); Yumeng Lu, Tianjin Univ (China); Yongwei Ji, CHN Energy Heilongjiang New Energy Co., Ltd (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13723-38

## **Hybrid SERS sensor using Ag nanoparticles on laser-induced graphene for detection of prohibited additives for aquaculture**

Guanwei Tao, Jiajun Li, Xinping Zhang, Beijing Univ. of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13723-42

## **Optical frequency comb generation in phase-locked random lasers**

Qin Zhang, Xinping Zhang, Yuxin Zhang, Yulan Fu, Yiwei Zhang, Jia Shi, Beijing Univ. of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

### SESSION 3: TOPOLOGICAL PHOTONICS AND PHOTONIC CRYSTALS

13 October 2025 • 14:40 - 16:50 | Room 311C

*Session Chair: Jianjun Liu, Hunan Univ. (China)*

13723-9

## **On-chip topological nanophotonic devices (*Invited Paper*)**

Cuicui Lu, Beijing Institute of Technology (China)

13 October 2025 • 14:40 - 15:10 | Room 311C

13723-10

## **Light-emitting devices enabled by van der Waals heterostructure metasurfaces (*Invited Paper*)**

Xingwang Zhang, Suzhou Institute of Nano-Tech and Nano-Bionics (China)

13 October 2025 • 15:10 - 15:40 | Room 311C

13723-11

## **Twisted nano-optics: Steering the flow of electromagnetic energy at will at the nanoscale (*Invited Paper*)**

Jiahua Duan, Beijing Institute of Technology (China)

13 October 2025 • 15:40 - 16:10 | Room 311C

13723-40

## **Giant optical chirality in large-area perovskite metamaterials**

Yuyi Feng, Beijing Institute of Technology (China); Yuxuan Dong, Yifan Zeng, Hao Wang, Xin Bi, North China Electric Power Univ. (China); Xianwen Liu, Zhinong Yu, Beijing Institute of Technology (China); Jiajun Luo, Huazhong Univ. of Science and Technology (China); Meicheng Li, North China Electric Power Univ. (China)

13 October 2025 • 16:10 - 16:30 | Room 311C

13723-41

## Generation and applications of structured quantum light

Ady Arie, Tel Aviv Univ. (Israel)

13 October 2025 • 16:30 - 16:50 | Room 311C

### SESSION 4: OPTICAL MANIPULATION AND MICRO/NANO OPTICS I

14 October 2025 • 08:30 - 10:00 | Room 311C

Session Chair: **Wenjun Hou**, TCL Holdings Co. Ltd. (China)

13723-15

## Flexible stretchable on-chip optical tweezers for high-throughput bioparticle manipulation (*Invited Paper*)

Hongbao Xin, Jinan Univ. (China)

14 October 2025 • 08:30 - 09:00 | Room 311C

13723-16

## Microfluidic-based preparation of optical Janus rotors with varied component ratios

Yulu Chen, Chunguang Hu, Zhongyuan Su, Tianjin Univ. (China)

14 October 2025 • 09:00 - 09:20 | Room 311C

13723-17

## Ultrafast all-optical logic gates in quasi-2D perovskites

Yulan Fu, Beijing Univ. of Technology (China)

14 October 2025 • 09:20 - 09:40 | Room 311C

13723-18

## Inverse design of optical devices for generating photonic hooks based on physics-informed neural networks

Renxian Li, Huan Tang, Li Xiao, Yuexiao Jiao, Zhe Wang, Bing Wei, Shuhong Gong, Xidian Univ. (China); Igor V. Minin, Oleg V. Minin, Novosibirsk Branch of Rzhanov Institute of Semiconductor Physics (Russian Federation)

14 October 2025 • 09:40 - 10:00 | Room 311C

Tea/Coffee Break 10:00 - 10:30

### SESSION 5: OPTICAL MANIPULATION AND MICRO/NANO OPTICS II

14 October 2025 • 10:30 - 12:00 | Room 311C

Session Chair: **Hongbao Xin**, Jinan Univ. (China)

13723-19

## Research progress and key challenges in printed QLED technology (*Invited Paper*)

Wenjun Hou, TCL Holdings Co. Ltd. (China)

14 October 2025 • 10:30 - 11:00 | Room 311C

13723-20

## Scattering characteristics of a perfect electromagnetic conductor cylinder in a lossy dielectric medium

Renxian Li, Fengbei Liu, Huan Tang, Li Xiao, Yuexiao Jiao, Zhe Wang, Bing Wei, Shuhong Gong, Xidian Univ. (China); Farid G. Mitri, Schlumberger-Doll Research Ctr. (United States)

14 October 2025 • 11:00 - 11:20 | Room 311C

13723-21

## Bessel beam scattering by an infinitely long elliptical cylinder based on the method of lines

Renxian Li, Zhe Wang, Huan Tang, Li Xiao, Yuexiao Jiao, Fengbei Liu, Xidian Univ. (China)

14 October 2025 • 11:20 - 11:40 | Room 311C

13723-22

## Resist-free nanopatterning of OLEDs via nanostencil lithography

Shuangshuang Zeng, Huazhong University of Science and Technology (China); Hao Li, Huazhong Univ. of Science and Technology (China); Jiwoo Oh, Tommaso Marcato, Chih-Jen Shih, ETH Zurich (Switzerland)

14 October 2025 • 11:40 - 12:00 | Room 311C

Lunch Break 12:00 - 13:20

### SESSION 6: PHOTONIC DEVICES AND INTEGRATION I

14 October 2025 • 13:20 - 15:00 | Room 311C

Session Chair: **Lijia Song**, Zhejiang Univ. (China)

13723-23

## Meta-optics for Optical Computing and AI (*Invited Paper*)

Yurui Qu, ShanghaiTech University (China)

14 October 2025 • 13:20 - 13:50 | Room 311C

13723-24

## Chalcogenide glass heterogeneously integrated silicon photonics for sensing (*Invited Paper*)

Qingyang Du, Zhejiang Lab. (China)

14 October 2025 • 13:50 - 14:20 | Room 311C

13723-25

## SOH modulators enable ultra-low power consumption and high bandwidth scaling in silicon photonics

Yu Taicherng, Chi-Wai Chow, Hao-Chung Kuo, National Yang Ming Chiao Tung Univ. (Taiwan, China)

14 October 2025 • 14:20 - 14:40 | Room 311C

13723-26

## Self-stabilized all-optical nonlinear unit for photonic computing

Ravi Pradip, Akhil Varri, Frank Brückerkhoff-Plückelmann, Wolfram Pernice, Ruprecht-Karls-Univ. Heidelberg (Germany)

14 October 2025 • 14:40 - 15:00 | Room 311C

Tea/Coffee Break 15:00 - 15:30

### SESSION 7: PHOTONIC DEVICES AND INTEGRATION II

14 October 2025 • 15:30 - 17:00 | Room 311C

Session Chair: **Qingyang Du**, Zhejiang Lab. (China)

13723-27

## High-performance Mach-Zehnder interferometers (*Invited Paper*)

Lijia Song, Huan Li, Daoxin Dai, Zhejiang Univ. (China)

14 October 2025 • 15:30 - 16:00 | Room 311C

13723-28

## Monolithic hetero-integrated on-chip photonic computing system

Kun Liao, Xiaoyong Hu, Peking Univ. (China)

14 October 2025 • 16:00 - 16:20 | Room 311C

# Conference 13723

13723-29

## **Dynamic modulation and recent advancements in tunable terahertz metasurfaces**

Xinru Zhang, Bolin Huang, Jie Zhou, Zhiyao Wang, Beijing Information Science & Technology University (China); Xinyi Wu, Beijing Information Science & Technology University (China); Chenyu Yu, Yingyu Feng, Zelin He, Hongkang Zhang, Qingyang Zheng, Yandong Gong, Beijing Information Science & Technology University (China)

14 October 2025 • 16:20 - 16:40 | Room 311C

13723-30

## **Sub-volt sub-micron POH modulators for ultrafast optical communication**

Yu Taicheng, Chi-Wai Chow, Hao-Chung Kuo, National Yang Ming Chiao Tung Univ. (Taiwan, China)

14 October 2025 • 16:40 - 17:00 | Room 311C

# Conference 13724

## Plasmonics IX

12 - 14 October 2025 | Room 310

*Conference Chairs:* **Hong Wei**, Institute of Physics, Chinese Academy of Sciences (China); **Takuo Tanaka**, RIKEN (Japan)

*Program Committee:* **Zheyu Fang**, Peking Univ. (China); **F. Javier García de Abajo**, ICFO - Institut de Ciències Fotòniques (Spain); **Zhipeng Li**, Capital Normal Univ. (China); **Peter Nordlander**, Rice Univ. (United States); **Ruwen Peng**, Nanjing Univ. (China); **Atsushi Taguchi**, Hokkaido Univ. (Japan); **Din Ping Tsai**, City Univ. of Hong Kong (Hong Kong, China); **Hongxing Xu**, Wuhan Univ. (China); **Xiulai Xu**, Peking Univ. (China); **Lei Zhou**, Fudan Univ. (China)

### OPENING CEREMONY AND PLENARY SESSION

12 October 2025 • 08:30 - 12:00 | Convention Hall 2, Level 2

*View Full Details:* [spie.org/photonics-asia-pleinary](https://spie.org/photonics-asia-pleinary)

08:30 - 08:50

#### Opening Ceremony, Awards and Recognition

13715-501

#### Photonics and electronics convergence: oscillation, computing, and interconnection (*Plenary Presentation*)

Ming Li, Institute of Semiconductors, Chinese Academy of Sciences (China)

12 October 2025 • 08:50 - 09:30 | Convention Hall 2, Level 2

13722-502

#### When metasurfaces meet photodetectors (*Plenary Presentation*)

Cheng-Wei Qiu, College of Design and Engineering, National Univ. of Singapore (Singapore)

12 October 2025 • 09:30 - 10:10 | Convention Hall 2, Level 2

Tea/Coffee Break 10:10 - 10:40

13717-503

#### Super-resolution in ultra-thin lumens (*Plenary Presentation*)

Qing Yang, Zhejiang Univ. (China), ZJU-Hangzhou Global Scientific and Technological Innovation Ctr. (China), Shanxi Univ. (China)

12 October 2025 • 10:40 - 11:20 | Convention Hall 2, Level 2

13720-504

#### Much ado about nothing: Light fields with phase singularities for precision measurement (*Plenary Presentation*)

Kishan Dholakia, School of Biological Sciences, The Univ. of Adelaide (Australia), Ctr. of Light for Life, The Univ. of Adelaide (Australia)

12 October 2025 • 11:20 - 12:00 | Convention Hall 2, Level 2

Lunch Break 12:00 - 13:45

### SESSION 1: PLASMON-ENHANCED SPECTROSCOPY

12 October 2025 • 13:45 - 15:00 | Room 310

*Session Chair:* **Hong Wei**, Institute of Physics, Chinese Academy of Sciences (China)

13724-1

#### Subnanometer resolved single-molecule optical spectromicroscopy (*Invited Paper*)

Zhen-Chao Dong, Univ. of Science and Technology of China (China)

12 October 2025 • 13:45 - 14:10 | Room 310

13724-2

#### Impact of plasmonic effect on the RE-doped luminescence particles (*Invited Paper*)

Hairong Zheng, Chengyun Zhang, Huan Chen, Zhengkun Fu, Zhenglou Zhang, Shaanxi Normal Univ. (China)

12 October 2025 • 14:10 - 14:35 | Room 310

13724-3

#### Poisson distribution SERS and quantitation at single-molecule level (*Invited Paper*)

Zhipeng Li, Capital Normal Univ. (China)

12 October 2025 • 14:35 - 15:00 | Room 310

Tea/Coffee Break 15:00 - 15:30

### SESSION 2: QUANTUM PLASMONICS

12 October 2025 • 15:30 - 16:50 | Room 310

*Session Chair:* **Zhen-Chao Dong**, Univ. of Science and Technology of China (China)

13724-7

#### Photon-exciton strong and weak coupling in hybrid micro-nano structures (*Invited Paper*)

Ying Gu, Peking Univ. (China)

12 October 2025 • 15:30 - 15:55 | Room 310

13724-8

#### Quantum photonic sources based on 2D materials (*Invited Paper*)

Xifeng Ren, Univ. of Science and Technology of China (China)

12 October 2025 • 15:55 - 16:20 | Room 310

13724-9

#### Nonlinear optics and quantum tunneling in plasmonic nanocavities

Dangyuan Lei, Xueling Xu, City Univ. of Hong Kong (Hong Kong, China)

12 October 2025 • 16:20 - 16:35 | Room 310

13724-10

#### CMOS-compatible square ring resonator-based plasmonic sensor for temperature sensing

Rahul Pandey, Malaviya National Institute of Technology, Jaipur (India), University of Petroleum and Energy Studies, Dehradun (India); Huibo Han, School of Physics Science and Information Technology, Liaocheng University (China); Kamal Kishor Choure, University of Petroleum and Energy Studies, Dehradun (India); Santosh Kumar, Koneru Lakshmaiah Education Foundation (India); Rajendra Mitharwal, Ghanshyam Singh, Malaviya National Institute of Technology Jaipur (India)

12 October 2025 • 16:35 - 16:50 | Room 310

# Conference 13724

## SESSION 3: CHIRAL PLASMONICS

13 October 2025 • 09:00 - 11:55 | Room 310

*Session Chair: Jianfang Wang*, The Chinese Univ. of Hong Kong (Hong Kong, China)

13724-11

### Shaping optical chirality at the nanoscale using topology-designed 3D nanostructures *(Invited Paper)*

Atsushi Taguchi, Hokkaido Univ. (Japan)

13 October 2025 • 09:00 - 09:25 | Room 310

13724-12

### Plasmonic chirality nanosensors for recognizing molecular enantiomers *(Invited Paper)*

Xin Xu, Xiaoyun Ma, Rong-Yao Wang, Beijing Institute of Technology (China)

13 October 2025 • 09:25 - 09:50 | Room 310

13724-13

### Chiral plasmonic nanocavities: from chiral sensing to chiral photoluminescence *(Invited Paper)*

Tao Ding, Wuhan Univ. (China)

13 October 2025 • 09:50 - 10:15 | Room 310

Tea/Coffee Break 10:15 - 10:45

13724-14

### Chiroptics in hybrid nanostructures: the interplay between coupling effects and symmetry breaking *(Invited Paper)*

Wei Zhang, Institute of Applied Physics and Computational Mathematics (China)

13 October 2025 • 10:45 - 11:10 | Room 310

13724-15

### Controlled fabrication of chiral Au metastructures for applications in sensing and circularly polarized luminescence

Xiaolin Lu, Wuhan Univ. (China)

13 October 2025 • 11:10 - 11:25 | Room 310

13724-16

### WSe<sub>2</sub>@AuNSs-enhanced plug-and-play optical fiber SPR immunosensor for the detection of the alpha-fetoprotein

Jianying Jing, Tianjin university (China); Kun Liu, Tianjin University (China); Junfeng Jiang, Tianjin university (China); Tianhua Xu, University of Warwick (United Kingdom); Fengtong Zhu, Yiyang Xiong, Jinchang Liu, Tiegeng Liu, Tianjin university (China)

13 October 2025 • 11:25 - 11:40 | Room 310

13724-17

### “Hot” electrons in plasmon-assisted catalysis: do they matter?

Yonatan Sivan, Ben-Gurion Univ. of the Negev (Israel); Ieng-Wai Un, South China Normal Univ. (China); Yonatan Dubi, Ben-Gurion Univ. of the Negev (Israel)

13 October 2025 • 11:40 - 11:55 | Room 310

Lunch Break 11:55 - 13:30

## POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 – 13:00**

View poster presentation guidelines and set-up instructions at <http://spie.org/PA/poster-presentation-guidelines>

13724-32

### Investigation of a D-shaped optical fiber SPR sensor integrated with metallic nanograting for refractive index sensing

Yiyang Xiong, Kun Liu, Jianying Jing, Fengtong Zhu, Jinchang Liu, Junfeng Jiang, Tianhua Xu, Shuang Wang, Tiegeng Liu, Tianjin Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13724-33

### Ultrasensitive quantitative detection of trace-level drug molecules via SERS

Yue Wei, Capital Normal Univ. (China); Meng-chan Xia, National Narcotics Lab. Beijing Regional Ctr. (China); Zhipeng Li, Capital Normal University (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13724-34

### Precision spectral measurement of the level Rabi splitting for single-molecule strong coupling with plasmons

Shihao Feng, Renming Liu, Henan Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13724-35

### Enhancing long-range dipole-dipole interactions with matched plasmonic nanoantenna pairs

Bowen kang, Shaanxi Normal Univ. (China); Huatian Hu, Center for Biomolecular Nanotechnologies (Italy); Huan Chen, Zhenglong Zhang, Hairong Zheng, Shaanxi Normal Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13724-36

### Plasmon driven nanocrystal transformation by aluminum nano-islands with an alumina layer

Xilin Zhou, Huan Chen, Zhengkun Fu, Zhenglong Zhang, Hairong Zheng, Shaanxi Normal Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13724-37

### Strong coupling between plasmonic nanobowtie and monolayer transition metal dichalcogenide

Yichen Zhang, Hong Wei, Institute of Physics, Chinese Academy of Sciences (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13724-38

### Surface models for optical nonlocality in polar dielectrics

Runzhi Zou, Qiang Zhou, Pu Zhang, Xue-Wen Chen, Huazhong Univ. of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13724-39

## **Influence of conjugated structure for tunable molecular plasmons in peropyrene and its derivatives**

Haoran Liu, Dalian University of Technology (China); Nan Gao, Yurui Fang, Dalian Univ. of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13724-40

## **Dispersion characteristics of surface plasmon polaritons in a multi-walled carbon nanotube array**

Sergey A. Afanas'ev, Victor A. Zaytsev, Dmitry G. Sannikov, Ulyanovsk State Univ. (Russian Federation); Sergey G. Moiseev, Kotelnikov Institute of Radio Engineering and Electronics (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13724-41

## **Resonant interaction of drift current with surface plasmon polaritons in a planar array of carbon nanotubes**

Sergey A. Afanas'ev, Victor A. Zaytsev, Ulyanovsk State Univ. (Russian Federation); Sergey G. Moiseev, Kotelnikov Institute of Radio Engineering and Electronics (Russian Federation); Dmitry G. Sannikov, Ulyanovsk State Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13724-42

## **Inverse design of nanorod dimer structures based on bidirectional multiscale feature fusion networks**

jiayi feng, Dalian University of Technology (China); Xin Hong, Dalian Univ. of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13724-43

## **Plasmon-assisted self-encrypted all-optical memory by $Y_2O_3$ -Eu-Au luminescent nanocrystals**

Min Zhang, Chengyun Zhang, Zhengkun Fu, Zhenglong Zhang, Hairong Zheng, Shaanxi Normal Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13724-44

## **Tip-enhanced upconversion luminescence of single sub-10nm rare-earth ion-doped nanoparticle**

Chengxiang Gou, Bowen Kang, Yue Dou, Jinyu Li, Sihan Wang, Huan Chen, Zhengkun Fu, Zhenglong Zhang, Hairong Zheng, Shaanxi Normal Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

### **SESSION 4: PLASMON-EXCITON COUPLING**

13 October 2025 • 14:30 - 16:50 | Room 310

*Session Chair:* **Wei Zhang**, Institute of Applied Physics and Computational Mathematics (China)

13724-18

## **Control of two-dimensional excitons with plasmonic nanodisk-on-mirror cavities (Invited Paper)**

Jianfang Wang, The Chinese Univ. of Hong Kong (Hong Kong, China)

13 October 2025 • 14:30 - 14:55 | Room 310

13724-19

## **Strong coupling with excitons and one-dimensional photonic crystal modulated plasmonic nanocavities (Invited Paper)**

Xiulai Xu, Peking Univ. (China)

13 October 2025 • 14:55 - 15:20 | Room 310

13724-20

## **Unlocking spectral localization of single-nanoparticle plasmons through photonic substrate engineering (Invited Paper)**

Renming Liu, Shihao Feng, Xinyi Fan, Ting Luo, Henan Univ. (China)

13 October 2025 • 15:20 - 15:45 | Room 310

13724-21

## **Tip-enhanced strong coupling and nano-optical trapping spectroscopy of single quantum dots (Invited Paper)**

Kyoung-Duck Park, Pohang Univ. of Science and Technology (Republic of Korea)

13 October 2025 • 15:45 - 16:10 | Room 310

13724-22

## **Plasmon-modified photoluminescence and Raman scattering from monolayer semiconductors (Invited Paper)**

Hong Wei, Institute of Physics, Chinese Academy of Sciences (China)

13 October 2025 • 16:10 - 16:35 | Room 310

13724-23

## **Photoluminescence from metals: theory and experiments**

Yonatan Sivan, Ben-Gurion Univ. of the Negev (Israel); Ieng-Wai Un, South China Normal Univ. (China); Imon Kalyan, Ben-Gurion Univ. of the Negev (Israel)

13 October 2025 • 16:35 - 16:50 | Room 310

### **SESSION 5: PLASMONIC METAMATERIALS AND METASURFACES**

14 October 2025 • 09:00 - 10:30 | Room 310

*Session Chair:* **Zheyu Fang**, Peking Univ. (China)

13724-24

## **How to make a matte surface broadband transparent? (Invited Paper)**

Ruwen Peng, Mu Wang, Nanjing Univ. (China)

14 October 2025 • 09:00 - 09:25 | Room 310

13724-25

## **Hierarchical plasmonic metamaterials for photodetection and anti-detection (Invited Paper)**

Lin Zhou, Nanjing Univ. (China)

14 October 2025 • 09:25 - 09:50 | Room 310

13724-26

## **Plasmonic loss control and inverse-square-root law (Invited Paper)**

Yao Liang, City Univ. of Hong Kong (Hong Kong, China); Yuri Kivshar, The Australian National Univ. (Australia); Din Ping Tsai, City Univ. of Hong Kong (China)

14 October 2025 • 09:50 - 10:15 | Room 310

13724-27

## **Strong coupling between molecular vibration and plasmonic anapole mode in a mid-infrared metasurface**

Li Xing, Qiqige Wulan, Yue Liu, Zhijun Liu, Univ. of Electronic Science and Technology of China (China)

14 October 2025 • 10:15 - 10:30 | Room 310

**Tea/Coffee Break 10:30 - 10:50**

# Conference 13724

## SESSION 6: NEAR-FIELD OPTICS AND PLASMONICS

14 October 2025 • 10:50 - 12:20 | Room 310

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

13724-28

### **Nanoscale light manipulation with electron beam** *(Invited Paper)*

Zheyu Fang, Peking Univ. (China)

14 October 2025 • 10:50 - 11:15 | Room 310

13724-29

### **Topological band engineering in bound states in the continuum (BICs) and exceptional points (EPs) derived from plasmons** *(Invited Paper)*

Changzhi Gu, Yang Guo, Institute of Physics (China)

14 October 2025 • 11:15 - 11:40 | Room 310

13724-30

### **Topological insulator plasmons and enhanced light-matter interactions** *(Invited Paper)*

Hua Lu, Northwestern Polytechnical Univ. (China)

14 October 2025 • 11:40 - 12:05 | Room 310

13724-31

### **High-resolution optical fiber near-guided wave surface plasmon resonance sensor based on microfluidic technology**

Fengtong Zhu, kun liu, Jianying Jing, Jinchang Liu, Yiyang Xiong, Junfeng Jiang, Tianhua Xu, Tiegeng Liu, Tianjin University (China)

14 October 2025 • 12:05 - 12:20 | Room 310

# Conference 13725

## Quantum and Nonlinear Optics XII

12 - 14 October 2025 | Room 305C

**Conference Chairs:** **Qiongyi He**, Peking Univ. (China); **Dai-Sik Kim**, Ulsan National Institute of Science and Technology (Republic of Korea); **Chunhua Dong**, Univ. of Science and Technology of China (China)

**Program Committee:** **Fang Bo**, Nankai Univ. (China); **Osamu Hirota**, Tamagawa Univ. (Japan); **Kebin Shi**, Peking Univ. (China); **Xiaolong Su**, Shanxi Univ. (China); **Jianwei Wang**, Peking Univ. (China); **Jin-Shi Xu**, Univ. of Science and Technology of China (China)

### OPENING CEREMONY AND PLENARY SESSION

12 October 2025 • 08:30 - 12:00 | Convention Hall 2, Level 2  
*View Full Details: [spie.org/photonics-asia-pleinary](https://spie.org/photonics-asia-pleinary)*

08:30 - 08:50

#### Opening Ceremony, Awards and Recognition

13715-501

#### Photonics and electronics convergence: oscillation, computing, and interconnection (*Plenary Presentation*)

Ming Li, Institute of Semiconductors, Chinese Academy of Sciences (China)

12 October 2025 • 08:50 - 09:30 | Convention Hall 2, Level 2

13722-502

#### When metasurfaces meet photodetectors (*Plenary Presentation*)

Cheng-Wei Qiu, College of Design and Engineering, National Univ. of Singapore (Singapore)

12 October 2025 • 09:30 - 10:10 | Convention Hall 2, Level 2

Tea/Coffee Break 10:10 - 10:40

13717-503

#### Super-resolution in ultra-thin lumens (*Plenary Presentation*)

Qing Yang, Zhejiang Univ. (China), ZJU-Hangzhou Global Scientific and Technological Innovation Ctr. (China), Shanxi Univ. (China)

12 October 2025 • 10:40 - 11:20 | Convention Hall 2, Level 2

13720-504

#### Much ado about nothing: Light fields with phase singularities for precision measurement (*Plenary Presentation*)

Kishan Dholakia, School of Biological Sciences, The Univ. of Adelaide (Australia), Ctr. of Light for Life, The Univ. of Adelaide (Australia)

12 October 2025 • 11:20 - 12:00 | Convention Hall 2, Level 2

Lunch Break 12:00 - 13:30

### SESSION 1: QUANTUM AND NONLINEAR OPTICS I

12 October 2025 • 13:30 - 15:30 | Room 305C  
*Session Chair: Junfeng Wang*, Sichuan Univ. (China)

13725-1

#### High-dimensional quantum information processing (*Invited Paper*)

Xiang Cheng, Huazhong Univ. of Science and Technology (China)

12 October 2025 • 13:30 - 14:00 | Room 305C

13725-2

#### The structure of high-dimensional quantum steering (*Invited Paper*)

Pei Zhang, Xi'an Jiaotong Univ. (China)

12 October 2025 • 14:00 - 14:30 | Room 305C

13725-3

#### Observation of genuine high-dimensional multi-partite non-locality in entangled photon states (*Invited Paper*)

Xiao-Min Hu, Cen-Xiao Huang, CAS Ctr. For Excellence in Quantum Information and Quantum Physics, Univ. of Science and Technology of China (China), Hefei National Lab., Univ. of Science and Technology of China (China); Nicola d'Alessandro, Gabriele Cobucci, Lund Univ. (Sweden), NanoLund, Lund Univ. (Sweden); Chao Zhang, CAS Ctr. For Excellence in Quantum Information and Quantum Physics, Univ. of Science and Technology of China (China); Yu Guo, Yun-Feng Huang, Chuan-Feng Li, Guang-Can Guo, CAS Ctr. For Excellence in Quantum Information and Quantum Physics, Univ. of Science and Technology of China (China), Hefei National Lab., Univ. of Science and Technology of China (China); Xiaoqin Gao, Univ. of Ottawa (Canada); Marcus Huber, Vienna Ctr. for Quantum Science and Technology, Univ. Wien (Austria), Institut für Quantenoptik und Quanteninformation, Österreichische Akademie der Wissenschaften (Austria); Armin Tavakoli, Lund Univ. (Sweden); Bi-Heng Liu, CAS Ctr. For Excellence in Quantum Information and Quantum Physics, Univ. of Science and Technology of China (China), Hefei National Lab., Univ. of Science and Technology of China (China)

12 October 2025 • 14:30 - 15:00 | Room 305C

13725-4

#### Quantum entanglement source and quantum frequency conversion enabled by TFLN platform (*Invited Paper*)

Mingyang Zheng, Jinan Institute of Quantum Technology (China); Xu-Feng Jiao, Xina Wang, Univ. of Science and Technology of China (China); Bo Cao, Xiu-Ping Xie, Jinan Institute of Quantum Technology (China)

12 October 2025 • 15:00 - 15:30 | Room 305C

Tea/Coffee Break 15:30 - 16:00

### SESSION 2: QUANTUM AND NONLINEAR OPTICS II

12 October 2025 • 16:00 - 17:30 | Room 305C  
*Session Chair: Pei Zhang*, Xi'an Jiaotong Univ. (China)

13725-5

#### Quantum light sources based on III-V semiconductor quantum dots (*Invited Paper*)

Feng Liu, Zhejiang Univ. (China)

12 October 2025 • 16:00 - 16:30 | Room 305C

13725-6

#### Quantum sensing of color centers in silicon carbide and hBN (*Invited Paper*)

Junfeng Wang, Sichuan Univ. (China)

12 October 2025 • 16:30 - 17:00 | Room 305C

13725-7

#### Organic molecules for photonic quantum technologies (*Invited Paper*)

Maja Colautti, Istituto Nazionale di Ottica, CNR (Italy)

12 October 2025 • 17:00 - 17:30 | Room 305C

# Conference 13725

## SESSION 3: QUANTUM AND NONLINEAR OPTICS III

13 October 2025 • 08:00 - 10:00 | Room 305C

Session Chair: **Yun Zheng**, Peking Univ. (China)

13725-8

### **Large scale neutral atom quantum processor and quantum error correction** (*Invited Paper*)

Xudong Lv, Shanghai Institute of Optics and Fine Mechanics (China)

13 October 2025 • 08:00 - 08:30 | Room 305C

13725-9

### **Detection of multipartite entanglement through data-augmented neural networks** (*Invited Paper*)

Yu Xiang, Xi'an Jiaotong Univ. (China)

13 October 2025 • 08:30 - 09:00 | Room 305C

13725-10

### **Towards entanglement and Einstein-Podolsky-Rosen steering of microgram-mass oscillators** (*Invited Paper*)

Matteo Fadel, ETH Zurich (Switzerland)

13 October 2025 • 09:00 - 09:30 | Room 305C

13725-11

### **AI-control-enabled loss-tolerant quantum interferometry** (*Invited Paper*)

Liqing Chen, East China Normal Univ. (China)

13 October 2025 • 09:30 - 10:00 | Room 305C

Tea/Coffee Break 10:00 - 10:30

## SESSION 4: QUANTUM AND NONLINEAR OPTICS IV

13 October 2025 • 10:30 - 12:00 | Room 305C

Session Chair: **Liqing Chen**, East China Normal Univ. (China)

13725-12

### **Ultralow-loss silicon nitride integrated photonics** (*Invited Paper*)

Junqiu Liu, Shenzhen International Quantum Academy (China)

13 October 2025 • 10:30 - 11:00 | Room 305C

13725-13

### **On-chip optical memory via bound states in the continuum in a silicon/erbium-doped-crystal hybrid** (*Invited Paper*)

Yu-Hui Chen, Beijing Institute of Technology (China)

13 October 2025 • 11:00 - 11:30 | Room 305C

13725-14

### **Heterogeneous integrated photonic chips for quantum information applications** (*Invited Paper*)

Gong Zhang, Zhejiang University (China)

13 October 2025 • 11:30 - 12:00 | Room 305C

Lunch Break 12:00 - 13:30

## POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 – 13:00**

View poster presentation guidelines and set-up instructions at

<http://spie.org/PA/poster-presentation-guidelines>

13725-36

### **High-repetition-rate high-average-power mid-infrared optical parametric oscillator based on BaGa4Se7 crystal**

Yue Sun, Kai Chen, Yuantao Zhao, Zhenzuo Li, Jing Chi, Yuye Wang, Kai Zhong, Jining Li, Degang Xu, Tianjin Univ. (China); Jiyong Yao, Technical Institute of Physics and Chemistry (China); Jianquan Yao, Tianjin Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13725-37

### **Quantum sensors in solids: boron vacancy in hBN and TR12 in diamond**

Haidong Liang, National Univ. of Singapore (Singapore)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13725-38

### **Engineering phase singularity dynamics of spatiotemporal optical vortices during second harmonic generation**

Xuechen Gao, Tianjin University (China); Youjian Yi, Shanghai Institute of Optics and Fine Mechanics (China); Xinyu Yao, Shanghai Institute of Optics and Fine Mechanics (China); Wei Chen, Nanjing Univ. (China); Ping Zhu, Shanghai Institute of Optics and Fine Mechanics (China); Jintao Fan, Minglie Hu, Tianjin Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13725-39

### **Soliton dynamics of mode-locked fiber laser considering reverse saturable absorption effect**

Ijaz Ahmad, Beihang University (China); Xuechun Feng, Yihao Xiang, Congyu Zhang, Jinhong Zhang, Bo Fu, Beihang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13725-40

### **Quantum-interference induced photon blockade in cavity QED with parametric amplification**

Madan Mohan Mahana, Indian Institute of Technology Guwahati (India); Sanket Das, Okinawa Institute of Science and Technology Graduate Univ. (Japan); Tarak Nath Dey, Indian Institute of Technology Guwahati (India)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13725-42

### **Improving long-term stability of pulsed CPT atomic clocks using a modified combined error signal method**

Ivan Gromov, Daba A. Radnatarov, Novosibirsk State Univ. (Russian Federation); Maxim Y. Basalaev, Novosibirsk State Technical Univ. (Russian Federation); Sergey M. Kobtsev, Valeriy I. Yudin, Novosibirsk State Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13725-43

## A universal photonic circuit for high-dimensional quantum measurements

Wenzhe Yan, Univ. of Science and Technology of China (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13725-44

## Ultrafast formation of luminescence in negatively charged NV-centers

Evgenii Tereshchenkov, N.L. Dukhov All-Russian Scientific Research Institute of Automatics (VNIIA) (Russian Federation)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13725-45

## Coherent perfect absorption induced entanglement in anti-parity-time symmetric three-waveguide system

Yadi Niu, Xinchen Zhang, Nuo Wang, Zhaohua Tian, Ying Gu, Peking Univ. (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13725-46

## Research on bit encoding training methods for end-to-end models in optical fiber communication

Hua Huang, CHN Energy Heilongjiang New Energy Co., Ltd (China); Lin Cheng, CHN Energy Heilongjiang New Energy Co., Ltd. (China); Wenguang Li, CHN Energy Heilongjiang New Energy Co., Ltd (China); Bin Sun, Hansheng Guo, Yue Yu, Yu Ma, Dekun Qiu, Zezhong Hu, Hongmeng Lv, CHN Energy Heilongjiang New Energy Co., Ltd. (China); Chaoxiang Chen, Tianjin University (China); Yongwei Ji, CHN Energy Heilongjiang New Energy Co., Ltd. (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13725-47

## Physical interpretation of “collisionless transmission” and “nonlocal time” in light-atom excitation

Mingyu Zhao, Sichuan Univ. (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13725-48

## Coherence evolution of supercontinuum generation under multi-wavelength pumping in all-normal-dispersion fibers

Kejia Zhu, Beijing Jiaotong Univ. (China); Jian Sun, Chenyu Peng, Weiyi Meng, Yueqin Li, Jun Qin, Beijing Information Science & Technology Univ. (China); Muguang Wang, Beijing Jiaotong Univ. (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13725-49

## All-fiber photon pair source based on dual-layer high index silica glass spiral waveguides

Jingya Han, Ze Xiao, Liang Cui, Xiaoying Li, Tianjin Univ. (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13725-50

## Spectral contraction of supercontinuum generation under multi-pulse pumping in the normal dispersion regime

Weiyi Meng, Jian Sun, Chenyu Peng, Kejia Zhu, Yueqin Li, Jun Qin, Beijing Information Science & Technology Univ. (China); Muguang Wang, Beijing Jiaotong Univ. (China)  
13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

## SESSION 5: QUANTUM AND NONLINEAR OPTICS V

13 October 2025 • 14:30 - 18:00 | Room 305C

Session Chair: **Yu Xiang**, Xi'an Jiaotong Univ. (China)

13725-15

## Synthetic frequency dimension for photonic emulations in fibers and LNOI platform *(Invited Paper)*

**Luqi Yuan**, Shanghai Jiao Tong Univ. (China)  
13 October 2025 • 14:30 - 15:00 | Room 305C

13725-16

## Quantum analogy-to-digital conversion *(Invited Paper)*

Geng Chen, Univ. of Science and Technology of China (China)  
13 October 2025 • 15:00 - 15:30 | Room 305C

13725-17

## Generation of higher-order spatial mode entanglement via few mode fibers *(Invited Paper)*

Liang Cui, Shengjie Zhu, Xiaoying Li, Tianjin Univ. (China)  
13 October 2025 • 15:30 - 16:00 | Room 305C

Tea/Coffee Break 16:00 - 16:20

13725-18

## Tunable polarization entangled photon-pair source in rhombohedral boron nitride

Haidong Liang, National Univ. of Singapore (Singapore)  
13 October 2025 • 16:20 - 16:40 | Room 305C

13725-20

## High-power and broadly tunable near-infrared picosecond OPO with noncritical phase-matched LBO

Yang Lu, Jintao Fan, Minglie Hu, Tianjin Univ. (China)  
13 October 2025 • 16:40 - 17:00 | Room 305C

13725-21

## Linear and nonlinear propagation of Laguerre-Gaussian modes in graded-index multimode fiber

Mikhail D. Gervaziev, Novosibirsk State Univ. (Russian Federation), Institute of Automation and Electrometry SB RAS (Russian Federation); Alexander A. Revyakin, Novosibirsk State Univ (Russian Federation), Institute of Automation and Electrometry SB RAS (Russian Federation); Nikita Bochkarev, Denis S. Kharenko, Novosibirsk State Univ. (Russian Federation), Institute of Automation and Electrometry SB RAS (Russian Federation)  
13 October 2025 • 17:00 - 17:20 | Room 305C

13725-22

## Single cycle optical nonlinearity of transparent conducting oxides

Yonatan Sivan, Ben-Gurion Univ. of the Negev (Israel); Ieng-Wai Un, South China Normal Univ. (China); Subhajit Sarkar, Shiv Nadar Univ. Chennai (India)  
13 October 2025 • 17:20 - 17:40 | Room 305C

13725-19

## Parametric instability and hard excitation regime in optomechanical systems with strong photon-phonon coupling

Evgeny S. Andrianov, Artem R. Mukhamedyanov, Alexander A. Zyablovsky, Moscow Institute of Physics and Technology (Russian Federation), N.L. Dukhov All-Russian Scientific Research Institute of Automatics (VNIIA) (Russian Federation)  
13 October 2025 • 17:40 - 18:00 | Room 305C

# Conference 13725

## SESSION 6: QUANTUM AND NONLINEAR OPTICS VI

14 October 2025 • 08:00 - 10:00 | Room 305C

Session Chair: **Yuping Chen**, Shanghai Jiao Tong Univ. (China)

13725-23

### **Large-scale long-distance quantum communication networks with integrated photonics** *(Invited Paper)*

Yun Zheng, Jianwei Wang, Peking Univ. (China)

14 October 2025 • 08:00 - 08:30 | Room 305C

13725-24

### **The generation of microcombs in the high-Q lithium niobate microresonators** *(Invited Paper)*

Shuai Wan, Chunhua Dong, Univ. of Science and Technology of China (China); Fang Bo, Nankai Univ. (China); Pi-Yu Wang, Ming Li, Univ. of Science and Technology of China (China)

14 October 2025 • 08:30 - 09:00 | Room 305C

13725-25

### **Non-reciprocal light interactions** *(Invited Paper)*

Yi Hu, Nankai Univ. (China)

14 October 2025 • 09:00 - 09:30 | Room 305C | Room 305C

13725-26

### **Quantum optomechanics in 1D nanobeam cavity** *(Invited Paper)*

Guangwei Deng, Univ. of Electronic Science and Technology of China (China)

14 October 2025 • 09:30 - 10:00

Tea/Coffee Break 10:00 - 10:30

## SESSION 7: QUANTUM AND NONLINEAR OPTICS VII

14 October 2025 • 10:30 - 12:00

Session Chair: **Yun Zheng**, Peking Univ. (China)

13725-27

### **Intracavity integrated nonlinearity based on spontaneous quasi-phase matching and quasi-group velocity matching** *(Invited Paper)*

Yuping Chen, Zhifan F., Jiangwei Wu, Chengyu Chen, Xianfeng Chen, Shanghai Jiao Tong Univ. (China)

14 October 2025 • 10:30 - 11:00 | Room 305C

13725-28

### **Integrated nonlinear photonics based on chalcogenide glass photonic** *(Invited Paper)*

Bin Zhang, Sun Yat-Sen Univ. (China)

14 October 2025 • 11:00 - 11:30 | Room 305C

13725-29

### **Cascaded harmonic generations in periodically poled lithium niobite waveguides on a chip** *(Invited Paper)*

Xiao Wu, Li Zhang, Zhenzhong Hao, Fang Bo, Guoquan Zhang, Jingjun Xu, Nankai Univ. (China)

14 October 2025 • 11:30 - 12:00 | Room 305C

Lunch Break 12:00 - 13:30

## SESSION 8: QUANTUM AND NONLINEAR OPTICS VIII

14 October 2025 • 13:30 - 15:10

Session Chair: **Yi Li**, Peking Univ. (China)

13725-30

### **Molecule-induced surface nonlinearity for silicon integrated photonics**

Xiaoqin Shen, ShanghaiTech Univ. (China)

14 October 2025 • 13:30 - 13:50 | Room 305C

13725-32

### **Self-trapping of counterpropagating optical beams in PT-symmetric periodic structures with modulated Kerr nonlinearity**

Tatiana M. Lysak, Shenzhen MSU-BIT Univ. (China), M. V. Lomonosov Moscow State Univ. (Russian Federation); Nikolay V. Peskov, M. V. Lomonosov Moscow State Univ. (Russian Federation)

14 October 2025 • 13:50 - 14:10 | Room 305C

13725-33

### **Study of 4.79 $\mu$ m optical parametric oscillator based on a periodically pole MgO: PPLN crystal**

Yuanta Zhao, Yue Sun, Degang Xu, Kai Zhong, Yuye Wang, Kai Chen, Pingyuan Song, Boyang Fei, Tianjin Univ. (China)

14 October 2025 • 14:10 - 14:30 | Room 305C

13725-34

### **Soliton modes inherent to a generalized system of reduced Maxwell-Bloch equations**

Irina G. Zakharova, Shenzhen MSU-BIT Univ. (China); Aleksei A. Kalinovich, Sergey V. Sazonov, M. V. Lomonosov Moscow State Univ. (Russian Federation)

14 October 2025 • 14:30 - 14:50 | Room 305C

13725-31

### **Statistical properties of Raman light propagating in weakly guiding waveguide**

Ivan Panyukov, Evgeny Andrianov, N.L. Dukhov All-Russian Scientific Research Institute of Automatics (VNIIA) (Russian Federation)

14 October 2025 • 14:50 - 15:10 | Room 305C

# Conference 13726

## Infrared, Millimeter-Wave, and Terahertz Technologies XII

13 - 14 October 2025 | Room 305A

*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:* **M. Hassan Arbab**, Stony Brook Univ. (United States); **Juncheng 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**, 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); **Tae-In Jeon**, Korea Maritime and Ocean Univ. (Republic of Korea); **Biaobing Jin**, Nanjing Univ. (China); **Weiqi Jin**, Beijing Institute of Technology (China); **Olga G. Kosareva**, M. V. Lomonosov Moscow State Univ. (Russian Federation); **Rajib Kumar Mitra**, S.N. Bose National Ctr. for Basic Sciences (India); **Fengqi Liu**, Institute of Semiconductors, Chinese Academy of Sciences (China); **Weiwei Liu**, Nankai Univ. (China); **Chih Wei Luo**, National Yang Ming Chiao Tung Univ. (Taiwan, China); **Yungui Ma**, Zhejiang Univ. (China); **Hiroaki Minamide**, RIKEN (Japan); **Makoto Nakajima**, Osaka Univ. (Japan); **Chiko Otani**, RIKEN (Japan); **Hua Qin**, Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences (China); **Shengcai 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 (Republic of Korea); **Anton N. Tsyppkin**, ITMO Univ. (Russian Federation); **Masayoshi Tonouchi**, Osaka Univ. (Japan); **Withawat Withayachumnankul**, The Univ. of Adelaide (Australia); **Xiaojun Wu**, Beihang Univ. (China); **Xinlong Xu**, Northwest Univ. (China); **Yuping Yang**, Minzu Univ. of China (China); **Dongwen Zhang**, National Univ. of Defense Technology (China); **LiangLiang Zhang**, Capital Normal Univ. (China); **Yan Zhang**, Capital Normal Univ. (China); **Yaxin Zhang**, Univ. of Electronic Science and Technology of China (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)

### POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 - 13:00**

View poster presentation guidelines and set-up instructions at <http://spie.org/PA/poster-presentation-guidelines>

13726-9

#### Ibuprofen enantiomer-specific detection based on a terahertz split-ring metamaterial sensor

Yujiao Li, China Jiliang Univ. (China); Yong Du, China Jiliang University (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-10

#### Specific detection of glucose enantiomers based on open-ring terahertz metamaterial sensors

Ruichen Chao, Yong Du, China Jiliang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-20

#### Graphene-enhanced terahertz biosensor with machine learning for ultrasensitive and broad-range SARS-CoV-2 biomarker detection

hao bi, Beijing Information Science and Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-21

#### Study on the optical characteristics of brain edema and the optimal source-detection distance based on Monte Carlo simulation

Xiaolin Min, Shandong Univ. of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-22

#### Simulation and analysis of thermal properties of high-power ultrashort laser pumped photoconductive antenna

Bin Huang, Xiang Liu, Jian-Xiong Yu, Haiwei Du, Nanchang Hangkong Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-23

#### Characteristics of TE11 terahertz wave transmission through aluminum metal slit with types of subwavelength microstructures

Zhenou Zhao, Shihao Song, Kuo Meng, Beijing Information Science & Technology University (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-24

#### A tunable terahertz metamaterial absorber sensor based on a mercedes-shaped resonator

Xinli Kuang, Yong Du, China Jiliang Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-25

#### Double-split ring metasurfaces for dual-mode polarization conversion

Weiping Deng, Haijian Qin, Fengyu Gong, Yiyang Wang, Guilin Univ. of Electronic Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-26

#### GRAM: a graph reasoning and attention-enhanced Mamba model for detecting infrared small targets

Heming Qian, Beijing Information Science & Technology Univ. (China); Ting Sun, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-27

#### Temperature-dependent terahertz properties and giant magneto-optical response of the three-dimensional Dirac semimetal Cd<sub>3</sub>As<sub>2</sub>

Lei Hou, Yunnan Univ. (China); Yunkun Yang, Fudan Univ. (China); Pengcheng Ji, Yunnan Univ. (China); Wen Xu, Yunnan Univ. (China); Hefei Institutes of Physical Science (China); Faxian Xiu, Fudan Univ. (China); Lan Ding, Yunnan Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-28

#### Optical modulation of terahertz fano resonance in Co<sub>40</sub>Fe<sub>40</sub>B<sub>20</sub>/Ti heterostructures

Qiujin Wang, Yunnan Univ. (China); Yifei Wang, Lanzhou Univ. (China); Yujun Zhang, Wen Xu, Yunnan Univ. (China); Li Xu, Lanzhou Univ. (China); Lan Ding, Yunnan Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

# Conference 13726

13726-29

## **Analysis of terahertz jets with flat surfaces of cylinder structure**

Huiyu Li, Li Liao, Guangwei Chen, Guoqing Hu, Yang Cao, Zhehai Zhou, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-30

## **Organic-solvent-deposited PbS Schottky junctions for infrared photodetection**

Hao Luo, Jianbing Zhang, Huazhong Univ. of Science and Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-31

## **Dynamical properties of self-mixing interference in terahertz frequency combs based on quantum qascade lasers**

Chengliang Deng, Lei Ge, Beijing Univ. of Technology (China); Yan Xie, Tsinghua Univ (China); Ning Yang, Institute of Applied Physics and Computational Mathematics (China); Lu Rong, Beijing Univ. of Technology (China); Hang Zhao, Beijing Institute of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-32

## **Self-mixing interferometric measurement theory and simulation based on distributed feedback quantum cascade lasers**

Junhang Zha, Lu Rong, Hang Zhao, Lei Ge, Beijing Univ. of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-33

## **Theoretical modeling and simulation of self-mixing interferometric measurement using distributed feedback quantum cascade lasers**

Junhang Zha, Lu Rong, Hang Zhao, Lei Ge, Beijing Univ. of Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-34

## **Optical absorption and photoluminescence properties of few-layer black phosphorus nanosheets in dispersion**

Hong Yan, Fangning Zhang, Qiujin Wang, Wen Xu, Lan Ding, Yunnan Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-35

## **An integrated approach for cultural relics property assessment using infrared thermography and 3D scanning**

Zhenglin Xie, Jin Li, Jue Lian, Haifeng Tang, Xue Yang, Beichen Chen, Capital Normal Univ. (China); Chaoying Wang, Univ. of Oxford (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-36

## **Study on key technologies in EPHC-based beamforming networks for phased array radar**

Li Lu, Yuan Jiang, Hong-Zeng Yuan, Wei Wang, Air Force Early Warning Academy (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-37

## **Broadband polarization-conversion metasurface with bar-cut circular patches for terahertz applications**

Weiping Deng, Haijian Qin, Fengyu Gong, Yiyang Wang, Guilin Univ. of Electronic Technology (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-38

## **Encoded laser pulse simulator with nanosecond pulse delay and pulse width modulation accuracy**

Zhenzuo Li, Kai Chen, Haokun Zou, Dawei Lin, Yue Sun, Jining Li, Yuye Wang, Kai Zhong, Degang Xu, Jianquan Yao, Tianjin Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-40

## **Research on inverse modeling method of infrared radiation characteristics for ship targets**

Chao Liu, Tsinghua University (China), The Academy of Military Sciences (China); Haoxiang Zhang, Fudan University (China); Hui Sun, XiaoYang Zhang, The Academy of Military Sciences (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-41

## **Research on point cloud reconstruction technology based on water surface reflection characteristics of 3D laser scanning**

Zhipeng Zhang, China Academy of Railway Sciences Corp., Ltd. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-42

## **Machine learning-enhanced instantaneous frequency measurement based on optical power monitoring**

Yueqin Li, Beijing Information Science & Technology Univ (China); Chenyu Peng, Junde Lv, Yu Sun, Jian Sun, Jun Qin, Yanfei Gong, Zhensong Li, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-43

## **Research on the consistency of material complex refractive index using reflection and transmission terahertz time-domain spectroscopy**

Wenhui Yan, Baiqiang Sun, Jinling Li, Zhenwei Zhang, Capital Normal Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-44

## **Transmission of the self-homodyne coherent optical link with a polarization-multiplexed optical local oscillator**

Guang Chen, Beijing Information Science & Technology Univ. (China); Ruijiao Zhang, North China Univ. of Water Resources and Electric Power (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-45

## **Mesa-structured near-infrared avalanche photodiodes based on silicon-germanium alloy absorption layer**

Zhe Li, Jian Chen, Shengqiong Chen, Qiang Xu, Xin Hao, Guoling Luo, Yong Liu, Haizhi Song, Southwest Institute of Technical Physics (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13726-46

## Optimized wavelength-extended high-In component InGaAs epitaxial film with designed InAlAs transition layer structure

Wenlong Li, Lei Liu, Jian Chen, Xu Pan, Xiumin Xie, Haizhi Song, Southwest Institute of Technical Physics (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

### SESSION 1: IR SENSING, SPECTROSCOPY, AND IMAGING

14 October 2025 • 10:30 - 12:00 | Room 305A

Session Chair: **Cunlin Zhang**, Capital Normal Univ. (China)

13726-1

## Frequency multiplexed truncated-correlation tomography (FM-TCT) (Invited Paper)

Pengfei Zhu, Univ. Laval (Canada); Hai Zhang, Harbin Institute of Technology (China), Univ. Laval (Canada); Andreas Mandelis, Univ. of Toronto (Canada); Xavier Maldague, Univ. Laval (Canada)

14 October 2025 • 10:30 - 11:00 | Room 305A

13726-4

## Research on high-resolution laser heterodyne spectroscopy technology for whole layer atmospheric greenhouse gas detection

Renshi Li, Hefei Institutes of Physical Science (China), Univ. of Science and Technology (China)

14 October 2025 • 11:00 - 11:15 | Room 305A

13726-5

## Study of in vivo diagnosis of traumatic brain injury in rats based on Raman spectroscopy

Haibin Li, Yuye Wang, Tianjin Univ. (China); Ning Mu, Tunan Chen, Hua Feng, Army Medical Univ. (China); Degang Xu, Jianquan Yao, Tianjin Univ. (China)

14 October 2025 • 11:15 - 11:30 | Room 305A

13726-6

## Mechanisms of electroacupuncture effects visualized by infrared imaging

Caixin Wang, Shuwang Chen, Dongxue Yan, Hebei Univ. of Science and Technology (China)

14 October 2025 • 11:30 - 11:45 | Room 305A

13726-7

## Unsupervised thermographic clustering for ancient jade dagger assessment

Haifeng Tang, capital normal university (China); Jue Lian, Jin Li, Zhenglin Xie, Xue Yang, Beichen Chen, Guangkuo Yuan, Capital Normal Univ. (China)

14 October 2025 • 11:45 - 12:00 | Room 305A

Lunch Break 12:00 - 13:30

### SESSION 2: THZ SOURCES, DETECTORS, AND SENSORS

14 October 2025 • 13:30 - 14:30 | Room 305A

Session Chairs: **Hai Zhang**, Harbin Institute of Technology (China), **Xi-Cheng Zhang**, The Institute of Optics, Univ. of Rochester (United States)

13726-17

## Efficient polarization conversion with double-layer metal metasurface (Invited Paper)

Yan Zhang, Capital Normal Univ. (China)

14 October 2025 • 13:30 - 14:00 | Room 305A

13726-11

## High-performance detection of terahertz pulses utilizing aqueous salt solutions

Zhiyi Wang, Ruoxi Wu, Minghao Zhang, Cunlin Zhang, Captical Normal University (China); Liangliang Zhang, Captical Normal University (China), Detection Institute for Advanced Technology Longhua-Shenzhen (DIATLHSZ) (China)

14 October 2025 • 14:00 - 14:15 | Room 305A

13726-12

## Development of second-order gradient DC SQUIDs for the readout of superconducting TES detectors

Zhifa Feng, Xianfeng Zhou, Qingxiao Ma, Purple Mountain Observatory (China), University of Science and Technology of China (China); Wen Zhang, Peizhan Li, Zheng Wang, Jiaqiang Zhong, Wei Miao, Yuan Ren, Qijun Yao, Purple Mountain Observatory (China); Valery Koshelets, Lyudmila Fillppenko, Mchael Fominsky, Institute of Radio engineering and electronics (Russian Federation); Jing Li, Shengcai Shi, Purple Mountain Observatory (China)

14 October 2025 • 14:15 - 14:30 | Room 305A

Tea/Coffee Break 14:30 - 15:00

### SESSION 3: THZ MEASUREMENT, SPECTROSCOPY, AND IMAGING

14 October 2025 • 15:00 - 16:45 | Room 305A

Session Chairs: **Cunlin Zhang**, Capital Normal Univ. (China), **Yan Zhang**, Capital Normal Univ. (China)

13726-13

## Terahertz metamaterials based on high-temperature superconducting thin films

Huiyue Yao, Rong Guo, Lu Ji, Nankai Univ. (China); Jingbo Wu, Nanjing Univ. (China); Lu Sun, Nankai Univ. (China)

14 October 2025 • 15:00 - 15:15 | Room 305A

13726-14

## Proposal of sensitivity enhancement in terahertz time-domain spectroscopic ellipsometry for characterizing thin layer conduction on semiconductor surface

Minxia Gan, Hiroaki Hanafusa, Yutaka Kadoya, Hiroshima Univ. (Japan)

14 October 2025 • 15:15 - 15:30 | Room 305A

13726-15

## Application of 120GHz frequency-modulated continuous wave technology in non-destructive testing of hot-melt joints for polyethylene pipes

Baiqiang Sun, Wenhui Yan, Jinling Li, Zhenwei Zhang, Capital Normal Univ. (China)

14 October 2025 • 15:30 - 15:45 | Room 305A

# Conference 13726

13726-16

## **Single-pixel terahertz imaging based on space-time modulation**

Liao Li, Huiyu Li, Guangwei Chen, Guoqing Hu, Yang Cao, Zhehai Zhou, Beijing Information Science & Technology Univ. (China)

14 October 2025 • 15:45 - 16:00 | Room 305A

13726-8

## **Study of narrow-linewidth and high-repetition-rate THz parametric oscillator based on electro-optic Q-switched laser**

Bingfeng Xu, Tianjin Univ. (China)

14 October 2025 • 16:00 - 16:15 | Room 305A

13726-18

## **Multiple plane terahertz phase retrieval: summary of the practical experience**

Elizaveta G. Tsipakova, ITMO Univ. (Russian Federation); Vivek Kumar, Lorenzo Valzania, Sylvain Gigan, Lab. Kastler Brossel, Ecole Normale Supérieure, Univ. PSL, Sorbonne Univ., CNRS (France); Pitambar Mukherjee, Univ. de Bordeaux (France); Aleksey V. Chernykh, ITMO Univ. (Russian Federation); Chenxiang Liu, Harbin Institute of Technology (China); Maria G. Burdanova, Moscow Institute of Physics and Technology (Russian Federation); Dmitry V. Krasnikov, Kemerovo State Univ. (Russian Federation); Li Li, Hao Tian, Harbin Institute of Technology (China); Patrick Mounaix, Univ. de Bordeaux (France); Nikolay V. Petrov, ITMO Univ. (Russian Federation), Harbin Institute of Technology (China)

14 October 2025 • 16:15 - 16:30 | Room 305A

13726-19

## **Multi-octave and phase shift analog photonic link for microwave signal based on dual-polarization dual-parallel modulator**

Guang Chen, Beijing Univ. of Posts and Telecommunications (China), Beijing Information Science & Technology Univ. (China); Yulin Li, Senyan Chun, Beijing Information Science & Technology Univ. (China); Zhibei Gui, Beijing Tianma Intelligent Control Technology Co., Ltd. (China); Ruijiao Zhang, North China Univ. of Water Resources and Electric Power (China)

14 October 2025 • 16:30 - 16:45 | Room 305A

# Conference 13727

## Artificial Intelligence in Photonics

13 - 14 October 2025 | Room 301

**Conference Chairs:** **Liangcai Cao**, Tsinghua Univ. (China); **Partha P. Banerjee**, Univ. of Dayton (United States); **Lilin Yi**, Shanghai Jiao Tong Univ. (China); **Bo Gu**, Bos Photonics (United States)

**Program Committee:** **Amit K. Agrawal**, Univ. of Cambridge (United Kingdom); **Wei Cheng**, Wuhan Huagong Laser Engineering Co., Ltd. (China); **Peter R. Herman**, Univ. of Toronto (Canada); **Dawei Zhang**, Univ. of Shanghai for Science and Technology (China); **Xiaoshi Zhang**, Yunnan Univ. (China); **Xuping Zhang**, Nanjing Univ. (China); **Chao Zuo**, Nanjing Univ. of Science and Technology (China)

### POSTER SESSION

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

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 - 13:00**

View poster presentation guidelines and set-up instructions at <http://spie.org/PA/poster-presentation-guidelines>

13727-19

#### Recurrent neural network enabled adaptive carrier phase recovery algorithm for high-speed coherent optical transmission systems

Jie Shi, Jun Qin, Yu Sun, Lanling Chen, Junde Lu, Jianyu Shi, Jiaxin Zheng, Yang Yang, Shuo Jiang, Key Lab. of Information and Communication Systems, Ministry of Information Industry, Beijing Information Science & Technology Univ. (China), Key Lab. of the Ministry of Education for Optoelectronic Measurement Technology and Instrument (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13727-20

#### Distributed multichannel primary signal processing system with prediction used in control systems

Evgeny A. Semenishchev, Moscow State Univ of Technology "STANKIN" (Russian Federation); Viacheslav Voronin, Aleksandr Zelensky, Moscow State Univ. of Technology "STANKIN" (Russian Federation); Kirill Danilin, Moscow State Univ of Technology "STANKIN" (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13727-21

#### Morphological analysis of vector data derived from raster masks of informative regions

Evgeny A. Semenishchev, Moscow State Univ of Technology "STANKIN" (Russian Federation); Aleksandr Zelensky, Viacheslav Voronin, Kirill Danilin, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13727-22

#### Deep block-based depth map reconstruction for optical tomography using feature-level RGB-D fusion with PLIP strategy

Marina M. Zhdanova, Don State Technical Univ. (Russian Federation); Viacheslav V. Voronin, Alexander A. Zelensky, Evgeny Semenishchev, Scientific-Production Complex "Technological Ctr." (Russian Federation); Nikolay V. Gapon, Don State Technical Univ. (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13727-23

#### AI-driven hierarchical binarization and aggregation for efficient data preparation in optoelectronic imaging systems

Marina M. Zhdanova, Don State Technical Univ. (Russian Federation); Maretta Kazaryan, North Ossetian State Medical Academy (Russian Federation); Andrey Richter, Research Institute of Aerospace Monitoring "AEROCOSMOS" (Russian Federation); Mikhail Shahrmanyan, Financial Univ. under the Government of the Russian Federation (Russian Federation); Alexander A. Zelensky, Scientific-Production Complex "Technological Ctr." (Russian Federation)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13727-24

#### OptilInverse: A generative AI tool for optical device reverse design

Fengyu She, Lidan Lu, Guangpin Zhong, Senyan Chun, Yulin Li, Guang Chen, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

13727-25

#### Dynamic task transfer of optical diffractive neural networks based on optical-visual collaborative prompt framework

Fengyu She, Lidan Lu, Guangpin Zhong, Senyan Chun, Yulin Li, Guang Chen, Beijing Information Science & Technology Univ. (China)

13 October 2025 • 13:00 - 14:30 | Convention Hall 4, Level 1

### SESSION 1: AI-POWERED DEVICES AND SYSTEMS

14 October 2025 • 08:10 - 10:00 | Room 301

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

13727-1

#### Machine learning strategies for fiber optic biosensors in real-time wastewater surveillance

Kacper Cierpiak, Gdansk Univ. of Technology (Poland); Sebastian Garcia Galan, Univ. de Jaén (Spain); Malgorzata Szczerska, Gdansk Univ. of Technology (Poland)

14 October 2025 • 08:10 - 08:30 | Room 301

13727-2

#### Inverse design of silicon Mach-Zehnder modulators using genetic algorithm for multi-objective optimization in on-chip photonics computing

Guangping Zhong, Lidan Lu, Fengyu She, Beijing Information Science & Technology Univ. (China); Zhimei Gui, Beijing Teenmai Measurement and Control Technology Co., Ltd. (China); Zhanbin Hou, Beijing Smartchip Microelectronics Technology Co., Ltd. (China); Senyan Chun, Yulin Li, Guang Chen, Beijing Information Science & Technology Univ. (China)

14 October 2025 • 08:30 - 08:50 | Room 301

# Conference 13727

13727-4

## High-precision calibration of photonic neural networks via deep reinforcement learning with proximal policy optimization (*Invited Paper*)

Kangjian Di, Fuhao Yu, Jiashu Li, Silin Chen, Xuping Zhang, Yixin Zhang, Wei Jiang, Ningmu Zou, Nanjing Univ. (China)

14 October 2025 • 08:50 - 09:20 | Room 301

13727-5

## D-STAR: Diffusion-based sparse tomographic angular recovery for isotropic-resolution photoacoustic imaging

Di Kong, Haoyu Yang, Yan Luo, Tsinghua Univ. (China); Zhiqiang Chen, Bo Lei, Beijing Academy of Artificial Intelligence (China); Yi Zhong, Tsinghua Univ. (China); Mingyuan Liu, Beijing Friendship Hospital, Capital Medical Univ. (China); Yuwen Chen, Cheng Ma, Tsinghua Univ. (China)

14 October 2025 • 09:20 - 09:40 | Room 301

13727-6

## Deep-learning-based depth reconstruction from single-shot fringe patterns with physical guidance

Jinyang Jiang, Shengqi Yu, Wenwu Chen, Yutong Xiao, Yiheng Liu, Shijie Feng, Nanjing Univ. of Science and Technology (China)

14 October 2025 • 09:40 - 10:00 | Room 301

Tea/Coffee Break 10:00 - 10:30

### SESSION 2: AI IN OPTICAL COMMUNICATION AND IMAGING

14 October 2025 • 10:30 - 12:00 | Room 301  
*Session Chair: Ningmu Zou*, Nanjing Univ. (China)

13727-7

## Communication signal recognition based on multi-modal fusion (*Invited Paper*)

Junjie Wu, Yu Yan, Kaige Yang, Yulun Huang, Univ. of Shanghai for Science and Technology (China); Dongfang Wu, Jinhua Research Institute, Zhejiang Univ. (China); Shitong Meng, Lifei Shu, Kaimin Wang, Univ. of Shanghai for Science and Technology (China)

14 October 2025 • 10:30 - 11:00 | Room 301

13727-8

## OptoChat: A large language model with retrieval augmented generation for optics

Silin Chen, Nanjing Univ. (China); Xiaoqing Bao, Nanjing Univ. of Information Science & Technology (China); Hairuo Wang, NanZhi Institute of Advanced Optoelectronic Integration Technology (China); Wenjun Chen, Kangjian Di, Nanjing Univ. (China); Mengcheng Lv, NanZhi Institute of Advanced Optoelectronic Integration Technology (China); Minghui Zhao, Guohao Wang, Wenzheng Zhao, Zeta Technology (China); Ningmu Zou, Nanjing Univ. (China)

14 October 2025 • 11:00 - 11:20 | Room 301

13727-9

## Universal and light-speed focusing through a frosted glass using diffractive neural networks fabricated by two-photon nanolithography

Wei Xin, University of Shanghai for Science and Technology (China); Chao Meng, Qiming Zhang, Haoyi Yu, Min Gu, Univ. of Shanghai for Science and Technology (China)

14 October 2025 • 11:20 - 11:40 | Room 301

13727-10

## Enhancing quantitative phase imaging with physics-informed deep learning

Linpeng Lu, Shun Zhou, Yanbo Jin, Xingyu Huang, Chao Zuo, Nanjing Univ. of Science and Technology (China)

14 October 2025 • 11:40 - 12:00 | Room 301

Lunch Break 12:00 - 13:30

### SESSION 3: AI-ENABLED COMPUTATIONAL IMAGING

14 October 2025 • 13:30 - 15:00 | Room 301

*Session Chair: Linpeng Lu*, Nanjing Univ. of Science and Technology (China)

13727-11

## Deep-learning-assisted open-top light-sheet microscopy for label-free and non-destructive surgical pathology (*Invited Paper*)

Yan Zhang, Songlin Zhuang, Dawei Zhang, Univ. of Shanghai for Science and Technology (China)

14 October 2025 • 13:30 - 14:00 | Room 301

13727-12

## The logical essence of quantum entanglement: from the Paul Kwiat experiment to the foundations of photonic artificial intelligence

Mingyu Zhao, Sichuan Univ (China)

14 October 2025 • 14:00 - 14:20 | Room 301

13727-13

## Adaptive aberration-corrected quantitative phase microscopy via physics-informed deep learning

Danlin Xu, Liangcai Cao, Tsinghua Univ. (China)

14 October 2025 • 14:20 - 14:40 | Room 301

13727-14

## A multi-scale fusion network for reflective dual camera coded aperture snapshot spectral imager

Xinyu Liu, Liangcai L. Cao, Tsinghua Univ. (China)

14 October 2025 • 14:40 - 15:00 | Room 301

Tea/Coffee Break 15:00 - 15:30

### SESSION 4: AI-DRIVEN PHOTONIC MATERIALS AND DEVICES

14 October 2025 • 15:30 - 16:50 | Room 301

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

13727-17

## Metamaterials reverse design with deep data-augmented progressively trained convolutional networks based on variational auto-encoder

Guang Chen, Beijing Information Science and Technology University (China); Senyan Chun, Yulin Li, Beijing Information Science & Technology Univ. (China); Ruijiao Zhang, North China Univ. of Water Resources and Electric Power (China)

14 October 2025 • 15:30 - 15:50 | Room 301

13727-15

## AI-enhanced pulse shaping for high-power femtosecond pulse trains at terahertz repetition rates

Xin Tan, Bianli Zhao, Zhiyang Xu, Shaopan Li, Kui Li, Xiaoshi Zhang, Yunnan Univ. (China)

14 October 2025 • 15:50 - 16:10 | Room 301

13727-16

**Physics-driven wavelet-attentive synthesis for artifact-free 4K holography**

Yingjun Luo, Liangcai Cao, Tsinghua Univ. (China); Zehao He, Capital Normal Univ. (China); Kexuan Liu, Tsinghua Univ. (China)

14 October 2025 • 16:10 - 16:30 | Room 301

13727-18

**System for determining the structure and control of orientation of simple shape elements for machine vision systems**

Evgeny A. Semenishchev, Moscow State Univ of Technology "STANKIN" (Russian Federation); Viacheslav Voronin, Aleksandr Zelensky, Kirill Danilin, Moscow State Univ. of Technology

"STANKIN" (Russian Federation)

14 October 2025 • 16:30 - 16:50 | Room 301

# Onsite Services

## Onsite registration and badge pick-up hours

### Beijing International Convention Center

Saturday 11 October	13:00 - 21:00
Sunday 12 October	07:30 - 17:00
Monday 13 October	08:00 - 17:00
Tuesday 14 October	08:00 - 12:00

## SPIE/COS Photonics Asia registration

### Beijing International Convention Center - Registration Area

#### Receipt and Certificate of Participation

Preregistered International attendees who did not receive a receipt or attendees who need a Certificate of Attendance may obtain those from the SPIE Registration desk.

Attendees from Mainland China should request registration receipt at the COS registration desk.

#### Badge Corrections

Can be made at the COS Registration desk.

#### Refund information

There is a US \$50 service charge for processing refunds for international attendee registrations. Requests for international registration refunds must be received by SPIE on or before 26 September 2025; all registration fees will be forfeited after this date. SPIE Membership dues, SPIE Digital Library subscriptions, or special events purchased are not refundable. Please see the COS registration desk or contact COS directly for information about the refund policy for Mainland China attendees.

## Speaker upload and preview

All conference rooms have a computer workstation, projector, screen, lapel microphone, and laser pointer. All presenters are requested to upload and test their presentations to the computer in the conference room where they will be presenting, either before the conference begins, or during one of the session breaks.

## Poster setup instructions

### Monday 13 October

Poster Setup	10:00 - 13:00
Poster Session	13:00 - 14:30

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 and will not be published in the conference proceedings on the SPIE Digital Library.

View the Poster presentation guidelines at:

<https://spie.org/PA/poster-presentation-guidelines>

## Tea and coffee breaks

### Beijing International Convention Center

Complimentary tea and coffee will be served in the halls during the conference breaks.

## SPIE Conferences mobile app

Search and browse the program, special events, participants, and more. The SPIE Conferences mobile app is available for iPhone and Android phones. If you don't already have the SPIE app you can download it:

<https://spie.org/spie-conference-app>

## 关于我们 ▶▶▶

## ◀◀◀ 专注领域

**26年**  
行业经验

**100+**  
参与国家  
级实验室

**2000+**  
服务客户

**3000+**  
项目经验



光学光电    芯片半导体    精密测量    精密制造    科研发

## 自研产品 ▶▶▶

### 高精密环境控制设备

High-Precision Environmental Control Equipment

- 最高可实现温度稳定性  $\pm 0.002^{\circ}\text{C}$
- 最高可实现洁净度 ISO Class 1级
- 支持全场景个性化环境参数非标定制
- 可实现抗微振、防磁、静音等需求, 噪音  $< 45\text{dB}$
- 外观定制可拆卸, 设备可移动
- 智能数据管理, 高效运行安全



### 高精密水冷冷冻水机组

Water-Cooled High-Precision Chiller

- 采用自研高精密温控技术, 冷冻水的出水温度最高精度可达  $\pm 0.002^{\circ}\text{C}$ 。
- 采用大尺寸彩色触摸屏显示所有信息, 以曲线的形式显示实时出水温度的变化。
- 大容量历史数据存储, 配置 USB 和以太网接口, 方便导出历史数据; 支持 MODBUS TCP/IP 协议, 实时在线检测数据。
- 设备配置过载保护、液位监测、漏液检测等完善的安全保护功能, 使设备更加安全、稳定的运行。

**SINCE 1999**

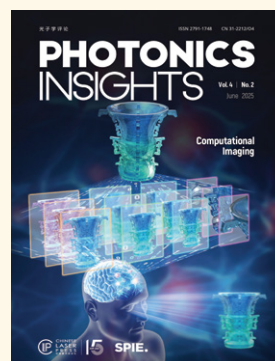
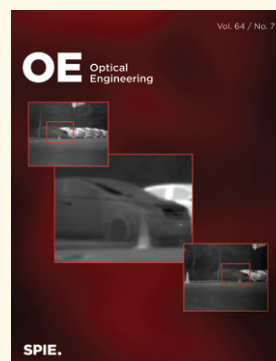
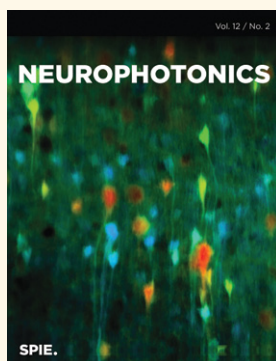
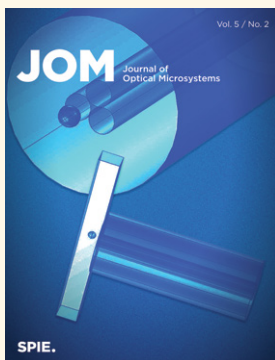
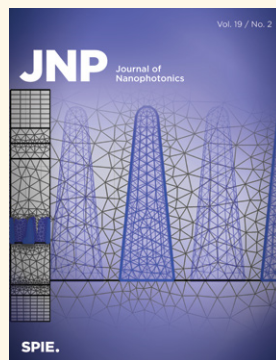
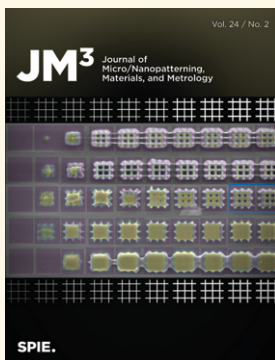
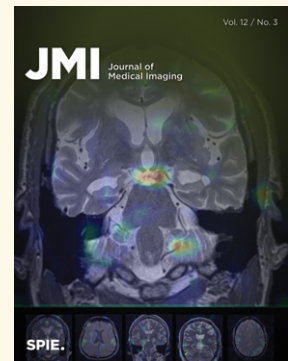
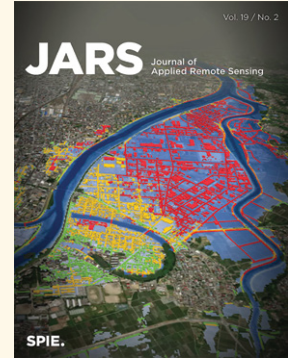
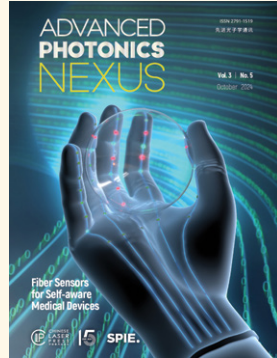
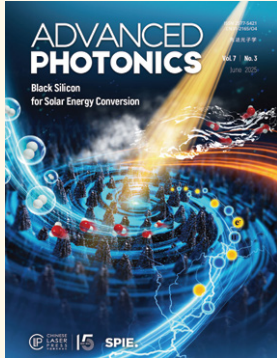


400-025-1108  
WWW.TO-SUN.COM

## 提供高精密环境控制解决方案

# SPIE Journals

Submit your next paper to an SPIE journal.  
Members get 25% off Open Access charges.



SPIE journals are part of the **SPIE Digital Library**,  
the world's largest collection of optics and photonics applied research.

[SPIDigitalLibrary.org/journals](https://SPIDigitalLibrary.org/journals)

**Products of SPECS**
[www.specs-tii.com.cn](http://www.specs-tii.com.cn)

E-mail: wang.zhen@specs.com,

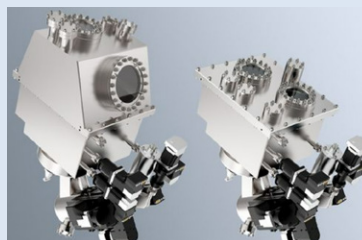
Mob: +86 185 8865 4500

E-mail: rongbin.wang@specs.com,

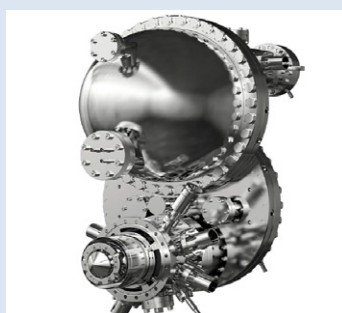
Mob: +86 151 5010 5379

**NAP-XPS**


- In-situ analysis up to 25 mbar
- Back filling or reaction cell
- PHOIBOS 150 NAP electron analyzer
- Nap laboratory X-ray and UV sources

**uFocus 450**


- Al K $\alpha$ , 1486.7 eV
- Ag L $\alpha$ , 2984.0 eV
- Cr K $\alpha$ , 5414.0 eV
- Choose 1-3 sources as required

**NanoESCA**


- Fully Modular Instrument
- High Momentum Resolution < 5 mÅ<sup>-1</sup>
- Resolution < 25 meV
- High Lateral Resolution < 35 nm
- PEEM, MM and ARPES Operation
- Optional Imaging Spin Filter

**METIS 1000**


- High efficiency, ToF
- Ideal for pulsed laser
- <15 meV resolution
- Lowest temperature < 9 K
- 2D delay line detector

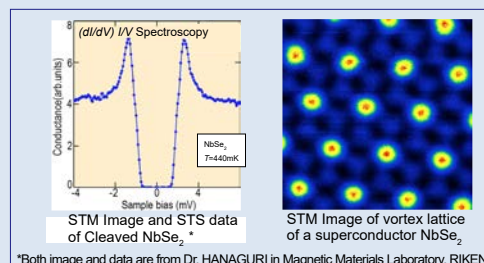
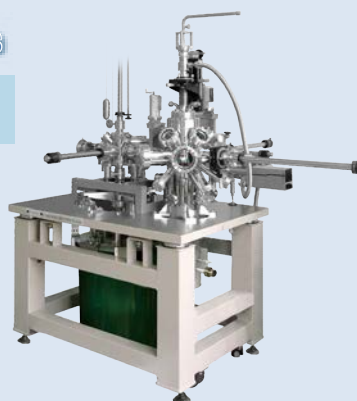
**Products of UNISOKU**
[www.unisoku.com](http://www.unisoku.com)

E-mail: liujie@unisoku.co.jp

Mob: +86 159 0117 7769

**USM1300 Series**
**Ultra Low Temperature (400mK)  
High Magnetic Field (15T)**
**Applications**

- Single-molecule IETS
- Spin polarized STM
- Spin flip spectroscopy in magnetic field
- Atom manipulation


**USM1600**
**High-end Model STM in Ultra Low Temperature and High Magnetic Field.  
Continuous Cooling by dilution refrigerator 40mK (Target 30mK)**
**Applications**

- High energy resolution IETS on single molecule
- Atom manipulation
- Spin polarized STM
- Spin resonance STM on single atom and molecule

**USM1800**
**< 6 K> Cryogen-Free Low Temperature  
UHV Scanning Probe Microscope**

The new closed-cycle USM1800 LT UHV SPM is now part of the UNISOKU SPM product family! The USM1800 provides sample temperatures below 6 K, and the **Cryogen-Free** cooling system achieves ultimate SPM performance at low temperatures while allowing without interruption.


**USM1200 Series**
**Helium holding time : > 350 hours  
Consumption of helium : < 0.8 L/day**
**Applications**

- Low thermal drift during imaging
- Low vibration level by low loss cryostat
- Temperature stability with in 100 mK over 350 hours

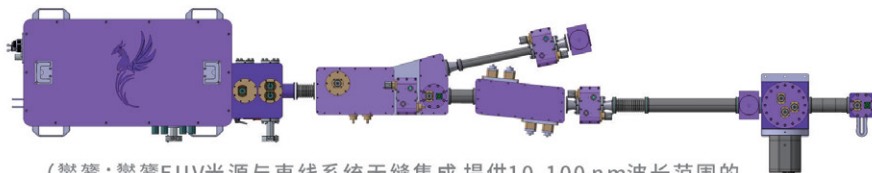

**Applications**

- Sample temperature below 6 K
- State-of-the-art SPM platform with atomic resolution imaging
- Optical access and in-situ deposition capabilities

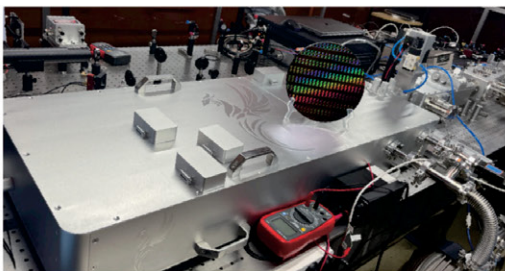
# 合肥皓宇芯光科技有限公司

## 高次谐波光源及可拓展束线系统

皓宇芯光推出的高次谐波(HHG)光源系统集群是一款高性能超短波长激光光源系列产品。能够产生并输出覆盖真空紫外(VUV)、极紫外(EUV)至软X射线(SXR)波段的激光,波长范围为1nm至200 nm,光子能量范围为5.12 eV至1240 eV,脉冲宽度范围为100 as至100 fs。该系列产品包括注册品牌**青鸾(VUV)**、**鸞鸞(EUV)**和**鸿鹄(SXR)**,是同时实现飞秒/阿秒时间分辨率和纳米空间尺度分辨率的必要工具,广泛应用于纳米成像、超快光谱、纳米材料科学、量子科技及高端半导体制造等领域,是科研和工业应用中不可或缺的光源解决方案。全球领先的紧凑型桌面化设计,实现高性能集成高传输效率。



(鸞鸞:鸞鸞EUV光源与束线系统无缝集成,提供10-100 nm波长范围的高精度光束控制和输出,支持窄谱线EUV激光输出。)



### 束线多类模块选择:

- 聚焦模块
- 单色化模块
- 滤镜轮模块
- 原位光谱仪模块
- 功率计模块
- 输入输出端口
- 极紫外/红外分光模块
- 真空泵连接模块(减震隔离)
- 成像/量检测模块等

### 产品亮点:

- 高功率、超短脉冲、超宽光谱激光
- 输出光谱单色化
- 可调谐超高空间相干性结构紧凑:桌面化设计,整套系统尺寸仅为3 mx1.5 m可定制化、模块化设计,灵活适配多应用场景,满足个性化需求长时高稳定度,满足科研及工业的高标准需求。

### 配套产品

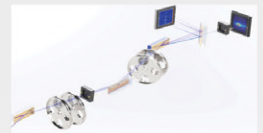


UltraField-平场光谱仪  
标定校准实测图



UltraField-平场光谱仪

- 特点:
- 全短波段覆盖: 1-350 nm
  - 多光栅切换: 支持6光栅原位切换
  - 高分辨率: 分辨率达10pm
  - 兼容任何探测器
  - 高速采集
  - 兼容任何短波光源
  - 效率标定服务
  - 通过扫谱的方式,单光栅覆盖波长范围更广



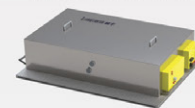
光谱单色仪

- 特点:
- 高度自动化
  - 宽光谱高分辨率
  - 高效衍射
  - 高传输效率
  - 定制化光学元件
  - 灵活光路控制



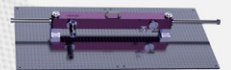
光束指向稳定系统

- 特点:
- 高调整频率,快速纠正指向偏差
  - 适配多种系统与功率场景



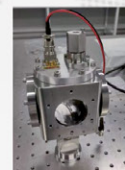
驱动激光器

- 特点:
- 高重复频率
  - 高单脉冲能量
  - 高稳定性可靠性
  - 模块化设计
  - 易维护
  - 产品寿命长
  - 优秀的光束质量与光斑圆度



脉冲压缩/整形

- 特点:
- 适用各种商业化/客户自主研发飞秒激光器
  - 适用于Ti:Sa,Yb+等各种飞秒激光器



功率计

- 特点:
- 可原位切换
  - 宽波段高精度
  - 快速响应
  - 大光斑兼容
  - 环境适应性强
  - 高灵敏度
  - 抗静电能力强



真空紫外(VUV)分光光度计

- 特点:
- 宽波段选择: 120-300nm
  - 偏振角度灵活切换
  - 多模式测量
  - 高精度测量



电话:0551-64676908



公司地址:合肥市庐阳区大数据产业园20号楼1层

# 中国真空镀膜材料服务供应商

高纯度 · 高品质 · 多规格 · 定制化

成为中国半导体蒸镀材料标杆企业之一  
持续为客户创造最具有竞争力材料与解决方案



EVAPOATION MATERIAL

## 蒸镀材料

蒸镀材料的产品范围囊括了各种单质金属、贵金属及合金、高纯稀土、氟化物、氧化物、硫化物等材料。可提供颗粒、片状、粉末、线丝以及不同纯度、不同规格的产品。



EVAPOATION MATERIAL

## 溅射靶材

公司可提供溅射系统中所使用的各种材料，各种形状的平面、旋转及其他异形靶材。经过长期的技术积累，自主研发了超过200款各类高端靶材。



EVAPOATION MATERIAL

## 镀膜元器件

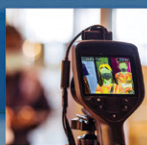
提供各种高纯材料制作的坩埚、蒸发舟、电子枪灯丝、晶振片、药丸、陶瓷片等。广泛应用于电子束蒸发、离子源和热蒸镀元器件等领域。



半导体芯片



显示面板



红外光学



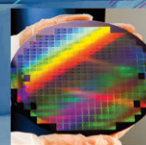
钙钛矿光伏



摄像镜头



MiniLED封装



EC电致玻璃



苏州鑫瀚源半导体材料有限公司

18913530683(黄经理)

电话: 0512-6579 7888

18912716938(袁经理)

网址: www.xhymat.com



# CABL-UH



**CRESTED** CRESTEC CORPORATION

- Vacc: 130kV Max (25-130kV, 5kV steps)
- Single-Stage Acceleration Electron Gun up to 130kV  
Minimisation of beam diameter under high current
- Micro-Discharge Free Electron Gun  
Long term stable writing
- Ultra-stable write capability  
Self-Environment control for a proper EB Lithography performance

### Major Specifications

Electron emitter	TFE (ZrO/W)
Acceleration voltage	25 - 130kV (5kV step)
Minimum beam diameter	1.6nm
Minimum line width	7nm
Beam Current Stability	±1 % / 5 hr
Beam Position Stability	± 30 nm / 5 hr
Field size	Max 1200 μm square
Position resolution	20bit
CPG Clock Frequency	100MHz
Self-Environment control system	Double magnetic shields
	Thermal regulator
	Vibration absorber

# CABL-AP

**CRESTED** CRESTEC CORPORATION

- CABL-AP series are the advanced, high-resolution point-beam Electron Beam Lithography system.
- CABL-AP series are available in two models, depending on the application. CABL-AP/RD can be used universally for R&D. CABL-AP/DFB-MP is suitable for DFB-LD mass production application.

### Major Specifications

Electron emitter	TFE (ZrO/W)
Acceleration voltage	5 - 50kV
Minimum beam diameter	RD: 2nm    DFB-MP: 4nm
Minimum line width	RD: 10nm    DFB-MP: 20nm
Beam Current Stability	±1 % / 5 hr
Beam Position Stability	± 30 nm / 5 hr
Field size	RD: Max 1000 μm square DFB-MP: Max 1500 μm square
Position resolution	20bit
CPG Clock Frequency	100MHz
Self-Environment control system	Double magnetic shields
	Thermal regulator
	Vibration absorber

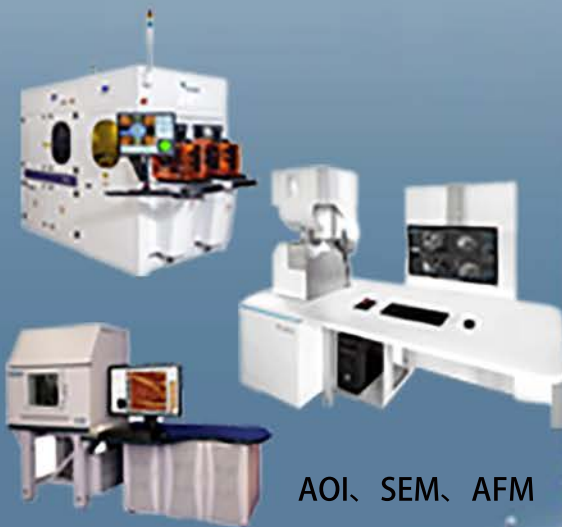
专注半导体工艺和检测设备20年、服务10+研发平台、全国四处销售服务中心  
10+专业设备合作伙伴、500+以上设备装机



**EVG Fusion Bonding for Heterogeneous Integration**  
**LTB-3D for EIC & PIC CPO**



**LPCVD for Low Stress Si<sub>3</sub>N<sub>4</sub> Film**  
**ICP Etcher for TFLNO、ICPECVD**



**AOI、SEM、AFM**



**Electron Beam Lithography**  
**i-Line Stepper and KrF Stepper**

▶ 2026 | MARK YOUR CALENDAR

# **SPIE.** | **PHOTONICS** **COS** | **ASIA**

**October 2026** | China

**An international forum for new developments  
in advanced optics and photonics technologies**

This annual symposium, held in partnership between SPIE and the Chinese Optical Society, provides an international showcase for the latest research in biomedical optics, advanced optical imaging, quantum and nonlinear optics, laser processing, plasmonics, holography, and more. Mark your calendar for October 2026.

**[www.spie.org/pa](http://www.spie.org/pa)**