2025 Photonics Global Conference (PGC 2025)

December 5-8, 2025

Crowne Plaza Sanya Bay Resort, Sanya, China

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Welcome to 2025 Photonics Global Conference

It is a great pleasure to invite you to participate in the 2025 Photonics Global Conference (PGC2025) and share the latest news in photonics science, technology and innovations from leading universities, research laboratories and companies throughout the world. PGC has a distinguished history since its inception in Singapore in 2008. It has been hosted at various locations around the world. The conference primarily focuses on cutting-edge topics in photonics and optics, bringing together leading experts, researchers, industry practitioners and students.

PGC2025 is technically sponsored by IEEE and co-organized by IEEE Photonics Society, Hainan University, Hainan Insititute of Zhejiang University, Tianjin University of Technology, Sourthern University fo Science and Technology, and Guangdong University fo Technonolgy. Accepted full papers will be submitted for inclusion into IEEE Xplore and indexed by **EI Compendex**.

PGC2025 features plenary, keynote, invited, and contributed talks by leading international researchers from academia and industry. It addresses the following topics: Optical fiber and waveguide technologies; Optical communications and networks; Optical sensors and measurement; Optoelectronic integration and devices; Advanced lasers and applications; Light-matter interactions; Light field manipulation and applications; Ultrafast and nonlinear optics; Optical signal processing and microwave photonics; Plasmonics and metamaterials; Optical materials; Optical imaging, display and storage; Biophotonics and optofluidics; Quantum optics; AI and photonics.

PGC2025 have totally 285 presentations scheduled, including 3 plenary speeches and 188 keynote &invited talks given by many of the world's most prominent researchers from academia and industry. We thank all the contributors and authors for making PGC2025 a truly unique, outstanding global event. There will be one plenary session, 45 regular technical sessions including 1 post-deadline paper sessions. The plenary session is scheduled on the morning of Saturday, 6th December. Three distinguished speakers will give presentations: Prof. Lars Samuelson from SUSTech, China; Lund University and Hexagem AB, Sweden will present on Novel approaches towards sub-μm scale InGaN microLEDs for AR-applications. Prof. Kristiaan Neyts from The Hong Kong University of Science and Technology will talk on Liquid crystal flat optical components for efficient first order diffraction. Prof. Qiong-Hua Wang from Beihang University will report on Light field 3D display based on integral imaging.

Young Scientist Awards will be given to 5 young researchers with doctor degrees and with the age no more than 35 by the conference date who make outstanding contributions and present on our conference. In addition, 10 Best Student Paper Awards will be selected by the Technical Committee or expert panel during the conference.

We have also prepared a rich social program to facilitate meeting and networking with colleagues from so many universities and cities. On the evening of Sunday, 07 December, the Banquet and Awards Ceremony will be held for all conference registrants. The awards will be presented during the Award Ceremony.

It is an enormous task to organize a conference and it is impossible to succeed without the dedicated efforts of many supporters and volunteers. We are indebted to the entire Technical Program Committee and the local organizing committee who have worked persistently throughout the whole year to invite speakers, solicit and review papers, organize the technical sessions which results in the excellent technical program. We thank the staff and volunteers from Hainan Univ., Zhejiang University, Tianjin Univ. of Technolgy and Guangdong Univ. of Technology. We also thank the IEEE Photonics Society, IEEE Guangzhou Section, IEEE Photonics Society Guangdong Chapter for sponsoring the event.

Yours Sincerely,

Ping Shum
Southern Univ. Sci. Tech.
General Chair

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General Information

Conference Venue: Crowne Plaza Sanya Bay Resort
会议地点：三亚湾皇冠假日度假酒店

Address: No. 228, Sanya Bay Road, Sanya, China
地址：海南省三亚市三亚湾路 228 号

Accessbility

Crowne Plaza Sanya Bay Resort (5 star) is located in the beautiful Sanya Bay. The unique European Baroque style has become a beautiful embellishment of the Coconut Dream Corridor. The hotel covers an area of 55,000 square meters and has a first-line Seaview. The 2,000-square-meter spacious lobby and 380 luxurious rooms and suites allow you to enjoy a luxurious experience.

Registration

Location: Crowne Plaza Sanya Bay Resort, Sanya

Hours:

14: 00-20: 00	Friday, 5 December
08: 30-18: 00	Saturday, 6 December
08: 30-18: 00	Sunday, 7 December
08: 30-12: 00	Monday, 8 December

Speaker Preparation

All oral presenters should check in at the corresponding session room at least ten minutes prior to their scheduled talk to upload and check their presentation. **No shows of the oral presentation will be reported to Conference management and these papers will not be published.**

Poster Preparation

Authors should prepare their poster before the poster session starts. The poster must not exceed the boundaries of the poster board and **A0 (0.9m Width * 1.2m Height)** size is recommended. Authors are required to be standing by their poster for the duration of their allocated session to answer questions and further discuss their work with attendees. **No shows will be reports to Conference management and these papers will not be published.**

*Poster Board Size – 1m (Width) * 2m (Height)*
Location: B1, Crowne Plaza Sanya Bay Resort, Sanya

Poster Session 1	10:00-10:30, 7 December
Poster Session 2	15:30-16:00, 7 December

Exhibition

The PGC2025 Exhibition is open to all attendees.
Location: *B1, Crowne Plaza Sanya Bay Resort,* Sanya

Hours:

08: 30-18: 00	Saturday, 6 December
08: 30-18: 00	Sunday, 7 December
08: 30-12: 00	Monday, 8 December

Conference Materials

PGC2025 Technical Digest will be provided in a USB drive and not available in print form. The PGC2025 Technical Digest material is composed of the 3-page summaries of invited and accepted contributed papers. The Technical Digest material is included with a technical conference registration and can be found in your registration bag. The Digest will be available on IEEE Xplore Digital Library (http://www.ieee.org/web/publications/xplore/) after the conference. IEEE Xplore Digital Library is archived and indexed by INSPECR and EI Compendex, where it will be available to the international technical community.

Lunches & Dinners

Four buffet lunches and dinners (December 5-8) in Crowne Plaza Sanya Bay Resort are included in the registration fee for all registered delegates. And lunch & dinner tickets are provided within the badge.

Location: *Star Café (B1), Crowne Plaza Sanya Bay Resort*

18:00-20:30	Friday, 5 December
11:45-13:30	Saturday, 6 December
18:30-20:30	Saturday, 6 December
12:00-13:30	Sunday, 7 December

Tea & Coffee Breaks

15:30-16:00	Saturday, 6 December
10:00-10:30	Sunday, 7 December
15:30-16:00	Sunday, 7 December

Social Events

Welcome reception

All participants are cordially invited to the Welcome Reception. It will be a great opportunity to develop a broad, deep and diverse network of personal connections with participants from all over the world. Complimentary food and beverages will be offered by Organizing Committee of PGC2025. It is free to all the registered participants.

Location: *Star Café (B1)*
Time: 18:00-20:30, Friday, 5 December

Conference Banquet and Awards Ceremony

All participants are cordially invited to the banquet. We will announce the winners of Young Scientist Awards, Best Student Paper Award and Best Poster Award. The winners will receive their certificates and awards at the ceremony. Participate in our Lucky Draw during the banquet, you may be one of the lucky winners! At the same time, you will enjoy delicacies foods. It will be an unforgettable Banquet that you will always remember with a smile.

The Banquet is included in the registration fee for all register delegates. The ticket is provided within the badge.

Location: *Mingren Hall (1F)*
Time: 18:30-21:00, Sunday, 7 December

Poolside BBQ

Dive in, cool off, and enjoy a fun poolside BBQ with friends and colleagues!
Location: *Poolside*
Time: 19:00, Saturday, 6 December

Morning Beach Run

Start your day with a refreshing run by the sea! Join the PGC morning run to recharge, connect with fellow participants, and take in the stunning coastal views.
Location: *Beachside track*
Time: Meet in the lobby at 7:00 AM, 6&8 Dec.

Conference Highlights

Plenary Presentations

Time: 09:30-11:45, Sunday, 6 December
Venue: *Mingren Hall, Crowne Plaza Sanya Bay Resort*

Novel approaches towards sub-µm scale InGaN microLEDs for AR-applications

09:30-10:15, Saturday, 6 Dec.

Prof. Lars Samuelson

SUSTech, China; Lund University and Hexagem AB, Sweden

Biography: Lars Samuelson received his PhD in Physics in Lund, 1977, followed by a Post-doc at IBM Research Centre, California. In 1986 Professor in Physics, Gothenburg and in 1988 Professor at Physics Department in Lund. In 1988 he initiated a Nanoscience Centre, NanoLund, today with more than 400 researchers. Since 2021, he is Chair Professor at Southern University of Science and Technology (SUSTech), in Shenzhen, China, and Director of the Institute of Nanoscience and Applications (INA). He is a member of the Royal Swedish Academy of Sciences, of the Royal Swedish Academy of Engineering Sciences and Foreign Member of the Chinese Academy of Sciences, CAS. Lars Samuelson is the founder and chief scientist of four start-ups working on the commercialization of nanowire and nanomaterial technologies, in QuNano AB, GLO AB, Sol Voltaics AB and Hexagem AB. Samuelson is the author of well over 700 articles with h-index 92 at Web-of-Science (h-index 112 by Google Scholar) and listed among the 1% most highly cited researchers by Web-of-Science.

Liquid crystal flat optical components for efficient first order diffraction

10:15-11:00, Sunday, 6 Dec.

Prof. Kristiaan Neyts

The Hong Kong University of Science and Technology, China

Biography: Kristiaan Neyts received his M.S. and Ph.D. degrees at Ghent University in Belgium in 1987 and 1992. After pos-docs at UGent and UC Berkeley, he became assistant professor in 2000 and full senior professor in 2012 at Ghent University in the Electronics and Information Systems Department, Faculty of Engineering, Since September 2023 he is professor at the Hong Kong University of Science and Technology (HKUST) in the Department of Electronic and Computer Engineering (ECE) and Director of the State Key Laboratory of Advanced Displays and Optoelectronics Technologies (SKLADT). Kristiaan Neyts is co-author of over 300 scientific papers in international journals and promoter or co-promoter of 34 completed PhDs. His research is in the field of liquid crystals (photoalignment, gratings, diffractive optics and displays), organic LEDs (outcoupling), electrophoresis (displays, smart windows and particle trapping) and color science.

Light field 3D display based on integral imaging

11:00-11:45, Sunday, 6 Dec.

Qiong-Hua Wang

Beihang University, China

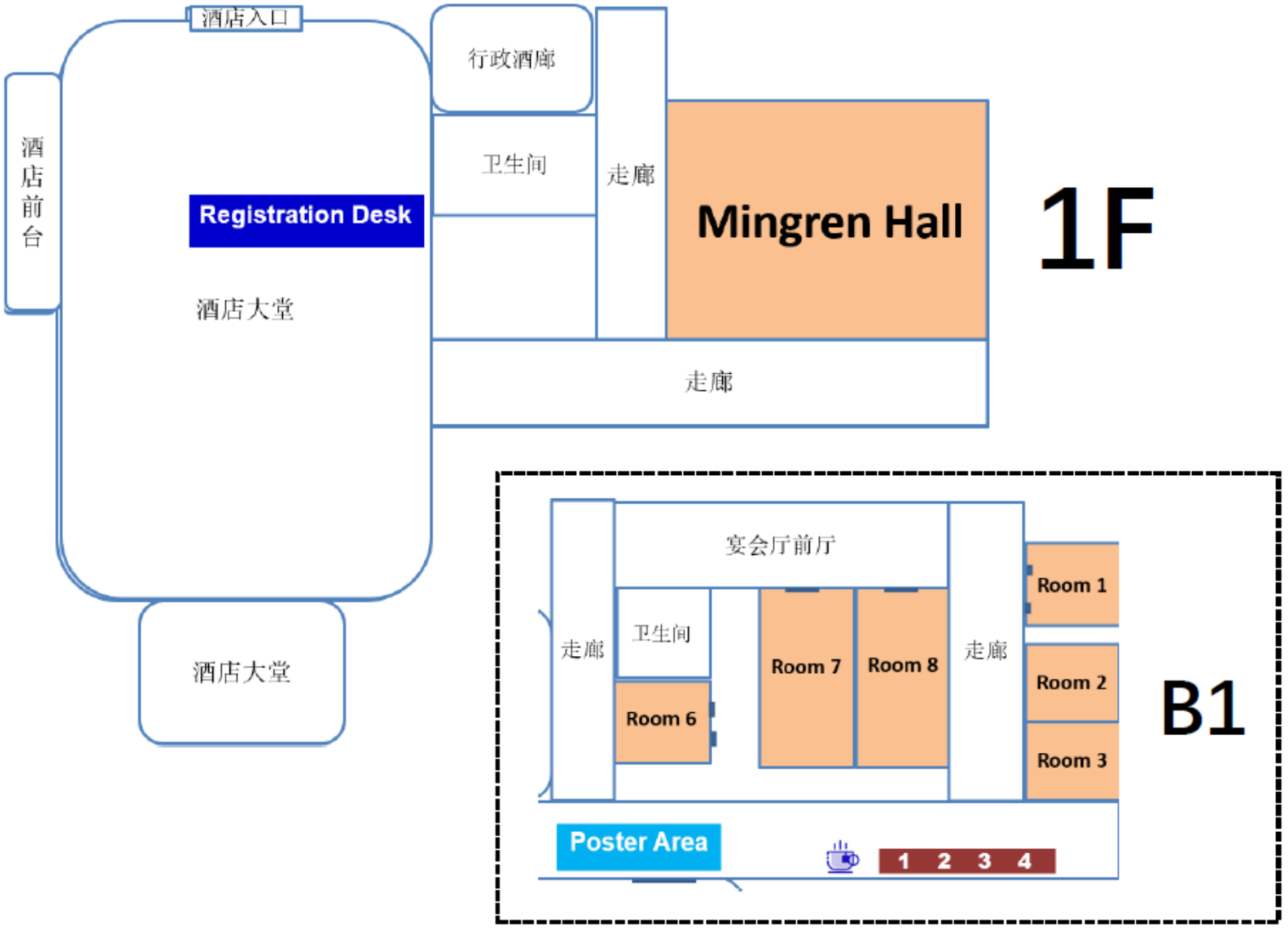
Biography: Qiong-Hua Wang is a professor of optics at Beihang University. She was a professor at Sichuan University from 2004 to 2018. She was a research scientist at the School of Optics/CREOL at the University of Central Florida from 2001 to 2004. She was a faculty at the University of Electronic Science and Technology of China (UESTC) from 1995 to 2001. She received B. S., M. S. and Ph. D. degrees from UESTC in 1992, 1995 and 2001, respectively. She published about 400 papers cited by science citation index and authored 3 books. She holds about 200 U. S. and Chinese patents. She is fellow of SID, OPTICA, SPIE, COS and CSOE. Her research interests include display and imaging technologies.

Young Scientist Awards

5 recipients

Everyone aged 35 or under and holding a doctoral degree by Dec. 7, 2025 is eligible for Young Scientist Award. The first author must register to give the oral presentation at the conference in person. The selection will be made by the TPC during the conference. Certificates will be presented to the winners in the award ceremony during the conference banquet.

Conference & Exhibition Map



Conference Schedule

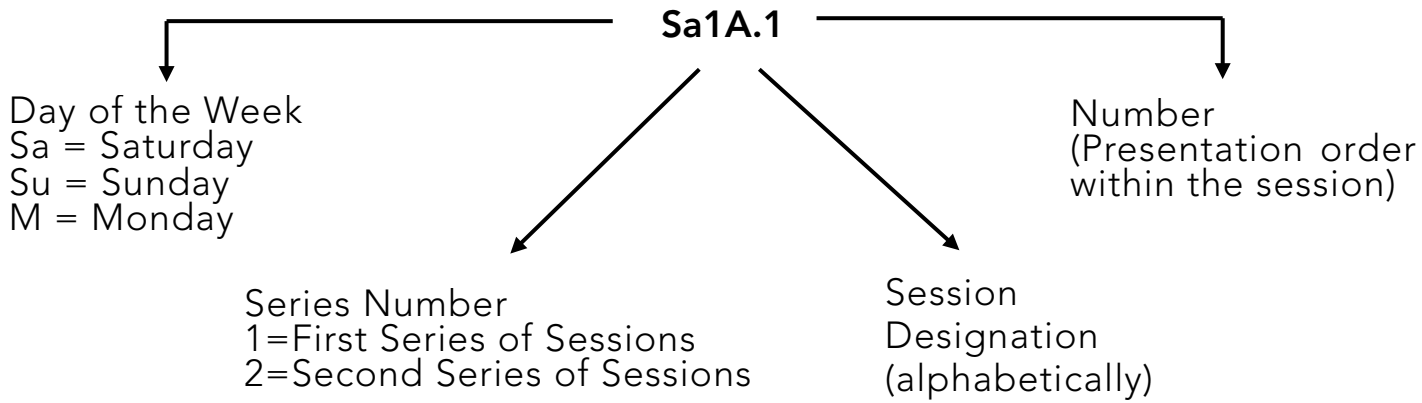
	Friday December 5	Saturday December 6	Sunday December 7	Monday December 8	Venue
Registration	14:00-20:00	08:30-18:00	08:30-18:00	08:30-12:00	Lobby, 1F
Opening Ceremony		09:00-09:30			Mingren Hall, 1F
Plenary Session		09:30-11:45			Mingren Hall, 1F
Technical Sessions		13:30-18:00	08:30-18:00	08:30-12:00	Meeting Rooms, B1
Exhibition		08:30-18:00	08:30-18:00	08:30-12:00	Publica Area, B1
Poster Sessions			10:00-10:30 15:30-16:00		Publica Area, B1
Post-Deadline Session				08:30-10:00	Room 3, B1
Banquet & Awards Ceremony			18:30-21:00		Mingren Hall, 1F

PGC 2025—Agenda of Sessions

Fri. **Dec. 05**	14:00--20:00	**Registration** (*Crowne Plaza Sanya Bay Resort*)					
	18:00-20:30	**Reception** (*Crowne Plaza Sanya Bay Resort*)					
Sat. **Dec. 06**	9:00--11:45	**Opening Ceremony & Plenary Talks** (*Ballroom, 1st floor, Crowne Plaza Sanya Bay Resort*)					
	11:45--13:30	Lunch Break					
		Room 7	Room 8	Room 1	Room 2	Room 3	Room 6
	13:30--15:30	**Biophotonics & optofluidics 1**	**Optical sensors & measurement 1**	**Optical commun & networks 1**	**Optical imaging, display & storage**	**Light field manipulation**	**Plasmonics & metamaterials 1**
	15:30--16:00	Tea Break					
	16:00--18:00	**Optical fiber & waveguide tech 1**	**Optical sensors & measurement 2**	**Optical commun & networks 2**	**Advanced lasers & applications 1**	**Optoelectronic integration 1**	**Optical materials**
	18:30-20:30	Conference Dinner					
Sun. **Dec. 07**	8:30--10:00	**Optical fiber & waveguide tech 2**	**Optical sensors & measurement 3**	**Light-matter interactions 1**	**Advanced lasers & applications 2**	**Optoelectronic integration 2**	**AI & photonics 1**
	10:00--10:30	Tea Break & Poster Session I					
	10:30--12:00	**Optical fiber & waveguide tech 3**	**Optical sensors & measurement 4**	**Light-matter interactions 2**	**Advanced lasers & applications 3**	**Optoelectronic integration 3**	**AI & photonics 2**
	12:00--13:30	Lunch Break					
	13:30--15:30	**Optical fiber & waveguide tech 4**	**Optical sensors & measurement 5**	**Optical commun & networks 3**	**Ultrafast and nonlinear optics**	**Optoelectronic integration 4**	**Microwave photonics**
	15:30--16:00	Tea Break & Poster Session II					
	16:00--18:00	**Biophotonics & optofluidics 2**	**Optical sensors & measurement 6**	**Optical commun & networks 4**	**Advanced lasers & applications 4**	**Optoelectronic integration 5**	**Quantum optics**
	18:30-21:00	Conference Banquet & AwardsCeremony					
Mon. **Dec. 08**	8:30--10:00	**Optical fiber & waveguide tech 5**	**Optical sensors & measurement 7**	**Optical commun & networks 5**	**Optical imaging, display & storage 2**	**Post-Deadline**	**Plasmonics & metamaterials 2**

(Plenary talk: 45 mins; Keynote 30 mins; Invited talk: 20 mins; Others: 15 mins)

Explanation of Session Codes



The first letter of the code designates the day of the week (Sa = Saturday, Su = Sunday, M = Monday). The second element indicates the session series in that day (for instance, 1would denote the first parallel session in that day). The third element continues alphabetically through a series of parallel sessions. The lettering then restarts with each new series. The number on the end of the code (separated from the session code with a period) signals the position of the talk within the session (first, second, third, etc.). For example, a presentation coded Sa1A.1 indicates that this paper is being presented on Saturday (Sa) in the first series of sessions (1), and is the first parallel session (A) in that series and the first paper (1) presented in that session.

Plenaries are noted with Plenary

Keynotes are noted with Keynote

Invited papers are noted with Invited

Post-deadline papers are noted with ☆

Young Scientists Award are noted with ◇

Best poster paper award are noted with ☀

Best student paper award are noted with ★

09:00-09:30 Opening Ceremony, *Mingren Hall, 1F*

09:30-11:45, Plenary Session, *Mingren Hall, 1F*

Presider: ***Perry Ping Shum****, Southern University of Science and Technology, China*

Sa1A.1 • 09:30 Plenary

Novel approaches towards sub-µm scale InGaN microLEDs for AR-applications, Lars Samuelson[1,2]; [1]*Southern University of Science and Technology, China;* [2]*Lund University and Hexagem AB, Sweden.* For miniLEDs and large-sized microLEDs, Blue and Green is made from III-Nitrides, while Red is made from AlGaInP/GaAs. For pixel sizes approaching 10 µm, and below, top-down processing of AlGaInP wafers lead to un-acceptable defects killing the efficiencies. Although the III-Nitrides are less prone to defects and carrier diffusion, efficient Red is still extremely hard to achieve, due to large lattice-mismatch between InGaN and the GaN substrate. I will here present a survey of approaches to enable all RGB-colors by III-Nitrides also for extemely small-pixel microLEDs. I will describe how we replace the GaN substrate with relaxed InGaN, thus reducing the lattice mismatch. By the use of bottom-up crystal growth, from seeding of GaN nanowires, we create extended platelets of InGaN, freely separated from the GaN substrate and the growth mask. On top of these platelets, we form the entire micro/nanoLED structure having IQE-values typically 60%, also for device sizes below 1 µm, i.e., pixel-sizes as required for advanced AR (Augmented Reality) applications.

Sa1A.2 • 10:15 Plenary

Liquid crystal flat optical components for efficient first order diffraction, Kristiaan Neyts; The Hong Kong University of Science and Technology, China. Diffractive flat optical components can achieve complex optical functionalities while using only a minimal volume. Metasurfaces based on high index materials can be used to achieve efficient diffractive devices, but the high resolution and the complexity of fabrication is often a hindrance. Liquid crystal is an anisotropic transparent material that is already widely used in large area displays, smart windows, switchable optical components and augmented reality. Diffractive components can be realized by periodic patterning of the liquid crystal alignment at the surfaces. Photoalignment can be realized with azo-dye molecules, because they align perpendicular to the polarization direction of linearly polarized blue or UV light. Complex high-resolution illumination patterns are realized by interferometry or by projection with a spatial light modulator. With this approach liquid crystal devices can be designed as diffraction gratings or holographic optical elements. Different applications will be discussed.

Sa1A.3 • 11:00 Plenary

Light field 3D display based on integral imaging, Qiong-Hua Wang; *Beihang University, China.* Light field 3D display is an important 3D display. This talk will give an overview of light field 3D display technology, and introduce in detail a desktop light field 3D display and a high-resolution light field 3D display based on integral imaging developed by our team. The former achieves good 3D display effect with 360° horizontal view angle, and the latter achieves good 3D display effect with high resolution. The structure, principle and performance of the light field 3D displays will be elucidated. Finally, the development trend of the light field 3D display will be discussed.

Room 7, Track 15

13:30-15:30
Sa2A. Biophotonics & Optofluidics I
*Presider: **Baojun Li**, Jinan University, China*

Sa2A.1 • 13:30 Keynote

Optical manipulation using photonic probes, Baojun Li; *Jinan Univ., China*. In this talk, the author will present photonic probes for optical manipulation. By using the probes, both micro- and nano-objects can be trapped and manipulated, localized fluorescent signals from the surfaces of single cell can be detected, and real-time optical imaging of intracellular microstructures can be observed.

Sa2A.2 • 14:00 Keynote

Spatio-temporal optical imaging through shortwave infrared lasers (SWIRLs), Kenneth Kin-Yip Wong; *The University of Hong Kong, Hong Kong.*

Room 8, Track 3

13:30-15:30
Sa2B. Optical Sensors & Measurement I
*Presider: **Xinyu Fan**, Shanghai Jiao Tong University, China*

Sa2B.1 • 13:30 Keynote

Ultralong optical fiber lasers and sensors based on high-order random laser amplification, Yunjiang Rao; *Univ. of Electron. Sci. and Tech. of China, China.* Recent advances in ultralong optical fiber lasers and sensors based on high-order random laser amplification are reviewed. The longest fiber laser (400 km) and FBG sensor (235 km), reported to date, are demonstrated, respectively.

Sa2B.2 • 14:00 Keynote

Draw-Tower Grating Technologies and its Applications, Minghong Yang; *Wuhan Univ. of Tech., China.*

Room 1, Track 2

13:30-15:30
Sa2C. Optical Communications & Networks I
*Presider: **Tianwai Bo**, Beijing Institute of Technology, China*

Sa2C.1 • 13:30 Keynote

Photonic Integrated Sensing and Communications, Lianshan Yan; *Southwest Jiaotong Univ., China.*

Sa2C.2 • 14:00 Keynote

OpticsGPT: a vertical large language model for optics research, Lilin Yi; *Shanghai Jiao Tong Univ., China.*

Room 2, Track 13

13:30-15:30
Sa2D. Optical Imaging, Display & Storage I
Presider: ***Nan Zeng,*** *Tsinghua University, China*

Sa2D.1 • 13:30 Kevnote

High-speed single-pixel machine vision using deep learning, Guohai Situ; *Shanghai Inst. of Optics and Fine Mechanics, China*. Here, we propose SpinVision, a task-adaptive single-pixel machine vision framework that employs a high-speed spinning mask for light modulation and a single-pixel detector for photon detection, followed by a computational decoding module for either object recognition or image reconstruction.

Sa2D.2 • 14:00 Kevnote

Computational phase imaging for label-free 3D microscopy：noninterferometic phase retrieval and intensity diffraction tomography, Chao Zuo; *Nanjing Univ. of Sci. and Tech., China*. In this talk, we will present some of our research progress in "noninterferometic" intensity diffraction tomography, including: quantitative phase imaging and diffraction tomography based on transport of intensity and Fourier ptychography.

Room 3, Track 8

13:30-15:30
Sa2E. Light Field Manipulation
Presider: ***Xinrui Lei,*** *University of Shanghai for Science and Technology, China*

Sa2E.1 • 13:30 Kevnote

Atomic-scale light confinement, Limin Tong; *Zhejiang Univ., China*. Here we introduce our recent progresses on confining light down to atomic spatial scale (sub-1-nm), and the possibility of converting such a field to a deep-sub-cycle ultrafast pulse on an atomic temporal scale.

Sa2E.2 • 14:00 Invited

Scalable OAM (De)multiplexers for OAM-Carrying Multi-Ring-Core Fibers: Achieving 798 Mode Channels, Yujie Chen; *Sun Yat-sen Univ., China*. We report scalable OAM (de)multiplexers evolving from single-core to multi-ring-core fibers (7/19/38 cores). Using spiral transformation enhanced by inverse design, our device achieves 798 multiplexed modes with low crosstalk for ultra-high-capacity communications.

Room 6, Track 11

13:30-15:30
Sa2F. Plasmonics & Metamaterials I
Presider: ***Yong-Qiang Liu,*** *National Key Laboratory of Scattering and Radiation, China*

Sa2F.1 • 13:30 Kevnote

Photonic Time Crystals and the Dawn of Timetronics, Nikolay Zheludev; *Univ. of Southampton, UK*. Timetrons, continuous time crystals on a metamaterial nano-mechanical platform can play a pivotal role in bringing time crystals to the domain of optical "timetronics" – a new low energy information and data processing technology.

Sa2F.2 • 14:00 Kevnote

From Hotspots to Universal Laws: Bridging Local and Nonlocal Plasmonics, Din Ping Tsai; *City Univ. of Hong Kong, HK*. We unveil a universal geometric scaling law transforming plasmonic systems from lossy localized hotspots intolow-loss nonlocal states. This redefines loss control, establishing a design paradigm for ultrahigh-Q nanophotonics, advancing sensing, nano-lasing, and quantum technologies.

Room 7, Track 15

Sa2A.3 • 14:30 Invited

Imaging through optical fibers, Lipei Song; *Nankai Univ., China*. This talk introduces our work on developing a bending resistant ultrathin endoscope imaging system by transferring the image through optical fibers.

Sa2A.4 • 14:50 Invited

Enhanced fiber-optic biochemical sensing technology and application based on interfacial evanescent field modulation, Hongtao Li; *Anhui Univ., China*. This report focuses on the ultra-sensitive detection of various biochemical and environmental markers by using lab-in/on-fibers with different structures on the basis of interfacial evanescent-field 2D materials coupled with LSPR enhancement technology

Sa2A.5 • 15:10 Invited

Miniaturized Photoacoustic image based on fiber laser sensor, Yizhi Liang; *Jinan Univ., China*. We have developed a fiber laser ultrasonic sensor that features high sensitivity, omnidirectional and broadband, making miniaturized high-performance photoacoustic imaging possible. Provide high-contrast functional images of the animals and humans.

Room 8, Track 3

Sa2B.3 • 14:30 Invited

Flammable volatile organic compounds sensing using cholesteric liquid crystal film–integrated fiber-optic sensors with a broadband wavelength-swept laser, Min Yong Jeon; *Chungnam National Univ., South Korea*. We report a compact, all-fiber VOC sensor using a porous cholesteric liquid crystal film and wavelength-swept laser.

Sa2B.4 • 14:50 Invited

Multi-mechanism distributed fiber-optic sensing: integrating Rayleigh, Brillouin, and Raman backscattering, Xinyu Fan; *Shanghai Jiao Tong Univ., China*. A hybrid φ-OTDR/BOTDA/ROTDR system uses pulse pairs with Brillouin-frequency spacing to amplify Rayleigh signals via SBS, enabling simultaneous dynamic-static sensing and temperature-strain separation through coded Raman detection.

Sa2B.5 • 15:10 Invited

Multi-Vibration Source Detection and Identification for Urban Security Monitoring using DAS, Huijuan Wu; *Univ. of Electron. Sci. and Tech. of China, China*. This report summarizes a series of DAS-based method for multi-vibration source detection, separation, and localization, designed to address key challenges in urban security monitoring.

Room 1, Track 2

Sa2C.3 • 14:30 Invited

Technique architecture and test trial for broadband real-time few-mode fiber transmission, Juhao Li; *Peking Univ., China*. We introduce recent progress in technique architecture and test trial for broadband real-time few-mode fiber transmission,

Sa2C.4 • 14:50 Invited

Acoustic-Optical Hybrid Routing for Underwater Wireless Sensor Networks, Yang Qiu; *Southwest Minzu Univ., China*. The majority of current routing algorithms utilize either acoustic or optical waves, which can hardly utilize the the distinct characteristics of bothmedia. This report primarily discusses the routing algorithms, especially the acoustic-optical hybrid for UWSNS.

Sa2C.5 • 15:10 Invited

High-quality Optical SSB Signal Generation by Adaptive Pre-compensation for D-EML Transmitters, Tianwai Bo; *Beijing Inst. of Tech., China*. We will present our recent progress on the adaptive pre-compensation of the required channel responses and the nonlinear inter-modulation distortions to improve the signal quality for the DEML-based optical SSB transmitters.

15:30-16:00 Tea Break

Room 2, Track 13

Sa2D.3 • 14:30 Invited

AI-driven lensless fiber endomicroscopy towards biomedical applications, Jiawei Sun; *Suzhou Inst. of Biomedical Eng. and Tech., CAS, China.*

Sa2D.4 • 14:50 Invited

Pushing the performance of structured-light 3D imaging beyond its intrinsic hardware limitations, Shijie Feng; *Nanjing Univ. of Sci. and Tech., China*. We present strategies to surpass device limits, achieving a 16× temporal resolution impromen t via multiplexed fringe modulation and a 3× pixel resolution enhancement using deep learning, enabling high-resolution 3D imaging at 100,000 Hz.

Sa2D.5 • 15:10 Invited

Full polarization analysis of single cells, Nan Zeng; *Tsinghua Univ., China*. The presentation introduces a dual angle Miller matrix polarization (DMMP) measurement system for label free classification and characterization of single cells. DMMP can obtain the Mueller matrix of light scattering of a single particle at two scattering angles of 60 ° and 120 °.

Room 3, Track 8

Sa2E.3 • 14:20 Invited

Thermo-Optic Waveguide Lens (TOWL) Technology for Optical Switches and Beam Steering Devices, Tao Chen; *Westlake Univ., China*. We proposed the thermo-optic waveguide lens (TOWL) technology, which facilitates flexible tuning of the refractive index in multimode waveguides. Leveraging the TOWL technology, we have successfully developed high-performance optical switches and 360° continuous beam steerers.

Sa2E.4 • 14:40 Invited

Flexible control of light via pseudomagnetic fields in photonic crystals, Lu Sun; *Shanghai Jiao Tong Univ., China*. A universal design method of pseudomagnetic fields is proposed for the flexible control of the flow of light in photonic crystals.

Sa2E.5 • 15:00 Invited

Topologic diagram of photonic skyrmions, Xinrui Lei; *Univ. of Shanghai for Sci. and Tech., China*. In this talk, we will present the topologic diagram of photonic skyrmions generated through spin-orbit coupling-enabled structured light, and discuss the resulting emergent topological structures.

Room 6, Track 11

Sa2F.3 • 14:30 Invited

Design of ultra-broadband high-efficiency metalens based ona single-layer plasmonic metasurface with hybrid dispersion, Yong-Qiang Liu; *National Key Laboratory of Scattering and Radiation, China*. Here, we design an ultra-broadband microwave metalens basedon a single-layer plasmonic metasurface working at reflective regime.

Sa2F.4 • 14:50 Invited

Realization of a topological one-way photonic crystal fiber, Zhen Gao; *Southern Univ. of Sci. and Tech., China*. Here, we report the first experimental realization of a topological one-way photonic crystal fiber by inducing a screw dislocation defect in a 3D magnetic photonic crystal.

Sa2F.5 • 15:10 0416

Strongly Localized Flatband Bound States in the Continuum and the Enhancement of Light-Matter Interactions, Zhuo Wang; *South China Normal Univ., China*. The bottleneck of exciting high-Q resonances with tightly focused light, caused by angular dispersion, is overcome by utilizing flatband bound states in the continuum (BICs). We construct high-Q flatband plasmonic quasi-BICs, enabling enhanced light-matter interactions.

15:30-16:00 Tea Break

Room 7, Track 1

16:00-18:00
Sa3A. Optical Fiber & Waveguide Tech I
*Presider: **Yanhua Luo**, Shanghai University, China*

Sa3A.1 • 16:00 Keynote

All-fiber multifunction-integrated devices, Fei Xu; *Nanjing Univ., China*. Here we will show some all-fiber multifunction-integrated devices developed in our labs and their applications in imaging, laser and sensing will also be discussed.

Sa3A.2 • 16:30 Invited

Mid-infrared supercontinuum laser source based on fluorotellurite fibers, Guanshi Qin; *Jilin Univ., China*.

Sa3A.3 • 16:50 Invited

Replica symmetry breaking in Raman random fiber laser, Zinan Wang; *Univ. of Electronic Sci. and Tech. of China, China*. By developing the Rayleigh-scattering phase-variation model for Raman random fiber laser (RRFL), we demonstrate that RRFL provides a quantifiable and reversibly controllable platform for the study of Replica symmetry breaking.

Room 8, Track 3

16:00-18:00
Sa3B. Optical Sensors & Measurement II
*Presider: **Guofeng Yan**, Zhejiang Lab, China*

Sa3B.1 • 16:00 Keynote

Aerospace intelligent infrared detection, Weida Hu; *Shanghai Inst. of Technical Physics, China*.

Sa3B.2 • 16:30 Keynote

Research on Key Technologies for Integrated Information Sensing and Processing, Li Pei; *Beijing Jiaotong Univ., China*. Our research team focuses on channel equalization for large-capacity optical communication systems and high-performance silicon photonic computing chips and their applications, aiming to provide new insights for the development of 5G/6G optical networks.

Room 1, Track 2

16:00-18:00
Sa3C. Optical Communications & Networks II
*Presider: **Xiaodan Pang**, Zhejiang University, China*

Sa3C.1 • 16:00 Keynote

Frequency-synchronous optical network, William Shieh; *Westlake Univ., China*. To overcome the cost and power barriers of conventional coherent detection, we propose a quasi frequency-synchronous optical network (FSON). This talk will detail a novel optical phase-locked loop for carrier recovery and demonstrate the world-first, all-optical polarization and phase demultiplexing of DP-QPSK signals—entirely without electronic DSP.

Sa3C.2 • 16:30 Keynote

Shaping light on chip: fundamentals and applications, Jian Wang; *Huazhong Univ. of Sci. and Tech., China*. I will talk about fundamentals and applications of shaping light on chip. Following a brief introduction, I will present recent advances in multi-dimensional on-chip light shaping, including complex amplitude, frequency, time, polarization, and space.

Room 2, Track 5

16:00-18:00
Sa3D. Advanced Lasers & Applications I
*Presider: **Jiang Wu**, University of Electronic Science and Technology of China, China*

Sa3D.1 • 16:00 Keynote

From Bright to Dark: The Physics Behind Inverse Pulse Dynamics, Sulaiman Wadi Harun; *Univ. of Malaya, Malaysia*. This study demonstrates a compact, low-cost single-mode–multimode–single-mode fiber structure as an artificial saturable absorber for generating stable ultrashort pulses in erbium-doped fiber lasers, achieving high-order dark–bright harmonic pulse generation.

Sa3D.2 • 16:30 Invited

Carbon nanotube mode-locked ultrafast fiber lasers and applications, Chengbo Mou; *Shanghai Univ., China*. We show that carbon nanotubes can be efficient mode-locker for Er-doped ultrafast fiber lasers. We also demonstrate that these lasers can be useful for supercontinuum generation and combs.

Room 3, Track 4

16:00-18:00
Sa3E. Optoelectronic Integration I
*Presider: **Ang Li**, Nanjing University of Aeronautics and Astronautics, China*

Sa3E.1 • 16:00 Invited

Type II InAs/GaSb Superlattice Mid-Wave Avalanche Photodiode, Wenquan Ma; *Inst. of Semiconductors, CAS, China*. We report on a mid-wave type II InAs/GaSb superlattice avalanche photodiode (APD) device with a separate absorption and multiplication structure. Significant gain has been observed for the APD.

Sa3E.2 • 16:20 Invited

Joint Optoelectronic Control for Infrared Detection, Fang Wang; *Shanghai Institute of Technical Physics, CAS, China*. This report proposes a photoelectric co-modulation strategy for infrared detection, which significantly enhances detector performance and paves the way for next-generation high-performance detectors.

Sa3E.3 • 16:40 Invited

Single-frequency III-V/SOI Hybrid Lasers Enabled by Micro-Transfer Printing, Hua Yang; *Inst. of Semiconductors, CAS, China*. We demonstrate single-frequency III-V/SOI hybrid lasers using micro-transfer printing. The devices show >40 dB SMSR and 11% wall plug efficiency. This wafer-scale integration approach enables high-performance III-V lasers on silicon photonic circuits for optical interconnects and co-packaged optics.

Room 6, Track 12

16:00-18:00
Sa3F. Optical Materials
*Presider: **Xiao Lin**, Zhejiang University, China*

Sa3F.1 • 16:00 Invited

Cross-linked protein crystals as novel luminescent biomaterials, Tymish Y. Ohulchanskyy; *Shenzhen Univ., China*. We develop protein crystals as a nanoplatform for phototheranostics. Importantly, the cross-linked crystals were found to manifest photoluminescence throughout visible range. The talk will introduce protein crystals as nonconventional luminescent functional materials for biomedical applications.

Sa3F.2 • 16:20 Invited

Photonic glass and fiber for radiation detection, Shichao Lv; *South China Univ. of Tech., China*.

Sa3F.3 • 16:40 Invited

Colloidal quantum dots for display, Lei Jin; *Southern Univ. of Sci. and Tech., China*. This presentation reviews recent advances in colloidal quantum dot (QD) displays, highlighting their exceptional color performance and the material/device innovations driving their commercialization.

Room 7, Track 1

Sa3A.4 • 17:10 Invited

Suspended nanomembrane silicon waveguides for gas sensing, Zhenzhou Cheng; *Tianjin Univ., China*. I present our recent advances in developing novel suspended nanomembrane silicon waveguide devices, namely, subwavelength grating couplers, micro-rings, and micro-disks, for on-chip gas sensing, opening a new avenue in the development of gas sensing photonic chips.

Sa3A.5 • 17:30 Invited

Beam shaping using 3D-printed micro-optical structures integrated on optical fibers, Sławomir Ertman; *Warsaw Univ. of Tech., Poland*. We present a compact beam-shaping approach using 3D-printed micro-optical structures directly on fiber facets. It enables customizable beam and mode profiles for miniaturized photonic applications.

Sa3A.6 • 17:50 Invited

Next-Generation Specialty Optical Fibres by 3D Printing Technology and Their Sensing Applications, Yanhua Luo; *Shanghai Univ., China*. 3D printing has successfully enabled fabrication of optical fibres based on polymer, soft glass and silica. 3D printed fibres have demonstrated great potential for sensing applications. It will bring change to specialty optical fibre manufacturing.

Room 8, Track 3

Sa3B.3 • 17:00 Invited

In-fiber WGM resonator sensor, Xiaobei Zhang; *Shanghai Univ., China*. Recent progress of in-fiber WGM microsphere resonators will be presented, which involves in-fiber couplers based on conventional fibers, capillaries and micro-structure hollow fibers, passive/active microspheres, and novel mechanisms.

Sa3B.4 • 17:20 Invited

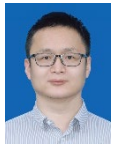
Single-photon dual-comb ghost imaging spectroscopy, Guofeng Yan; *Zhejiang Lab, China*. We propose single-photon dual-comb ghost imaging spectroscopy (DC-GIS), which utilizes a mode-resolved dual-comb matrix to interrogate the sample and directly calculates the high-resolution spectrum from photon-counting signals in milliseconds through ghost imaging method.

Sa3B.5 • 17:40 Invited

Integrated Additive and Subtractive Manufacturing of Glass Photonics Sensors for Harsh Environment Applications, Qi Zhang; *Shanghai Univ., China*. In this presentation, we report our recent work on advanced photonic sensors for harsh environment applications, mainly including three parts: 1) Integrated Additive and Subtractive Manufacturing method for sensor fabrication, 2) Information integrated glass module for high temperature environment, 3) advanced acoustic sensor for additive manufacturing process monitoring.

Room 1, Track 2

Sa3C.3 • 17:00 Invited



A Way to Practical Implementation of Underwater Wireless Optical Communication, Jing Xu; *Zhejiang Univ., China*. The talk introduces the basic concepts and essential features of UWOC, as well as an overview of work being conducted in this field. Research challenges, arising from the characteristics of underwater channels, and possible roadmaps are discussed.

Sa3C.4 • 17:20 Invited

VCSEL Enabled Optical Wireless Integrated Sensing and Communication Systems, Hongyan Fu; *Tsinghua Univ., China*. We demonstrate how VCSEL technology contributes to increasing the efficiency, resolution, and reliability of optical systems. This talk explains why VCSEL technology is becoming a cornerstone for future developments in short-reach high-speed communication and precise optical sensing.

Sa3C.5 • 17:40 Invited

Free space optical communications in the mid-infrared for next-generation ICT infrastructure, Xiaodan Pang; *Zhejiang Univ., China*. This talk summarizes the current research status on mid-infrared free space optical communications, and discuss the key challenges and opportunities for their use in next-generation ICT infrastructure.

18:30-20:30 Conference Dinner

Room 2, Track 5

Sa3D.3 • 16:50 Invited

Phase modulation and demodulation for high power narrow linewidth fiber lasers, Yan Feng; *Hangzhou Inst. for Advanced Study, UCAS, China*.

Sa3D.4 • 17:10 Invited

Narrow linewidth VCSEL lasers enabled by internal-cavity engineering, Jiang Wu; *Univ. of Electron. Sci. & Tech. of China, China*. Here, we present an internal-cavity engineering approach to narrow the VCSEL linewidth without introducing additional optical loss.

Sa3D.5 • 17:30 Invited

Sub-phonon lifetime pulse compression by quasi-steady-state stimulated Brillouin scattering, Zhaohong Liu; *Hebei Univ. of Tech., China*. Here, we demonstrated a new approach to practically realize sub-phonon lifetime compression with high conversion efficiency based on quasi-steady-state SBS compression. A compression output of 0.12τB with an energy efficiency above 40% is achieved.

Room 3, Track 4

Sa3E.4 • 17:00 Invited

Miniaturized Spectral Imager, Haiding Sun; *Univ. of Sci. and Tech. of China, China*. A miniaturized GaN spectral imager achieves ultrafast and broadband optical sensing. Integrating bias-tunable photodiodes with neural reconstruction, it enables chip-scale, intelligent spectroscopy with nanosecond response and high spectral fidelity.

Sa3E.5 • 17:20 Invited

Silicon optoelectronic computing for image compression and reconstruction, Ang Li; *Nanjing Univ.of Aero. and Astro., China*.

Sa3E.6 • 17:40 Invited

A dual function optical 90-degree hybrid using 8 × 8 multi-mode interferometer, Bing Wang; *Sun Yat-Sen Univ., China*. An optical 90-degree hybrid using 8 × 8 multi-mode interferometer was demonstrated on SOI platform. The 8 output ports formed two symmetric 90-degree hybrids with phase errors below 9.5 degree and CMRRs exceeding 10 dB.

Room 6, Track 12

Sa3F.4 • 17:00 Invited

Achromatic interfacial Cherenkov radiation, Xiao Lin; *Zhejiang Univ., China*.

Sa3F.5 • 17:20 ★ 2871

Eigenmodes of light propagating in Cholesteric Liquid Crystal, Ke Xu, Pouya Nosratkhah, Le Zhou and Kristiaan Neyts; *Hong Kong Univ. of Sci. and Tech., HK*. We employ the Floquet theorem to analyze the optical properties of bulk modes in CLC. This approach allows us to explore the band gap, polarization of propagating modes and how they outcouple into the air.

Sa3F.6 • 17:35 5736

A DNN-Based Digital Predistortion for Harmonically-Driven Radio-over-Fiber Systems, Mohammad Hossein Khazani[1], Mohamed Helaoui[1], Wenhua Chen[2] and Fadhel Ghannouchi[1]; [1]*Univ. of Calgary, Canada;* [2]*Tsinghua Univ., China*. An application of harmonic DNN-DPD to dual-band RoF (1.8/3.6 GHz) achieves -39.70 dB NMSE, -49.97 dBc ACPR, outperforming convolutional networks by 3 dB with fewer parameters.

18:30-20:30 Conference Dinner

Room 7, Track 1

08:30-10:00
Su1A. Optical Fiber & Waveguide Tech II
*Presider: **Xunsi Wang,** Ningbo University, China*

Su1A.1 • 08:30 Invited

Rare earth doped fluorotellurite glass fibers for broaband optical amplifiers, Zhixu Jia; *Jilin Univ., China.*

Su1A.2 • 08:50 Invited

Advanced Mid-IR Soft- Glass Fibers: From Fabrication to Laser Applications, Haitao Guo; *Xi'an Inst. of Optics and Precision Mechanics, CAS, China.*

Su1A.3 • 09:10 Invited

High-Performance Mid-Infrared Chalcogenide Glass Fibers and Integration Technologies, Xunsi Wang; *Ningbo Univ., China.* This study tackles key challenges in mid-infrared chalcogenide GRIN fibers, proposing advanced fabrication and bonding techniques to improve transmission, laser beam, and integration-paving the way for next-generation infrared photonic systems.

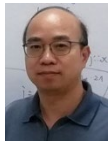
Room 8, Track 3

08:30-10:00
Su1B. Optical Sensors & Measurement III
*Presider: **Ping Lu,** Huazhong University of Science and Technology, China*

Su1B.1 • 08:30 Invited

Research on Photo-induced Sound Recognition Technology for Biofouling on Marine Equipment, Weihong Bi; *Changchun Univ. of Sci. and Tech., China.* This paper proposes the development of an in-situ sensor and instrument for detecting the thickness of attachments working underwater at sea based on photothermal acoustic characteristics.

Su1B.2 • 08:50 Invited



Sensitivity Enhancement and Anti-ambiguous Detection of Optical Interferometer Based on Characterized Vernier Effect, Xiaopeng Dong; *Xiamen Univ., China.* We propose a novel method to construct a new spectrum by superposition of the spectra obtained from the interferometric sensor and an virtual reference spectrum, respectively.

Su1B.3 • 09:10 Invited

Micro-nano Optical Sensors and Their Applications, Ping Lu; *Huazhong Univ. of Sci. and Tech., China.* A brief introduction to its key technologies, including the sensing mechanism based on the coupling effect between micro-nano structures and the physical quantity to be measured, micro-nano fabrication technologies, and the extraction and identification of weak signals.

Room 1, Track 7

08:30-10:00
Su1C. Light-matter Interactions I
*Presider: **Wei Ji,** National University of Singapore, Singapore*

Su1C.1 • 08:30 Keynote

Weaving Coherence Carpets with Diffraction Gratings, Taco Dirk Visser; *Shandong Normal Univ., China.* We report a new kind of pattern that can be produced by a grating: coherence carpets. These are woven when the incident beam is spatially partially coherent, and are formed by non-diffracting coherence strands.

Su1C.2 • 09:00 Invited

Strong Polariton Interaction in 2D Layered Metal–Organic Framework Microplates, Wei Ji; *National Univ. of Singapore, Singapore.* Here, we report that, at room temperature, a very large polariton interaction strength of ≈ 128 μeV μm^2, is observed in a 2D nanolayered metal–organic framework (MOF), and a polariton lasing at an extremely low pump fluence of ≈ 0.01 μJ /cm^2 is realized.

Su1C.3 • 09:20 ★ 3170

Nonreciprocal Coupling Induced by Nonlocal Loss Engineering, Yekai Shen and Shuhang Chen; *Univ. of Sci. and Tech. of China, China.* Our study proposes a nonreciprocal coupling strategy using nonlocal loss engineering, creating a system whose response to signals faithfully emulates an ideal nonreciprocal coupling process with robust, continuously tunable, giant-contrast and power-independent performance.

Room 2, Track 5

08:30-10:00
Su1D. Advanced Lasers & Applications II
*Presider: **Junqing Zhao,** Shenzhen Technology University, China*

Su1D.1 • 08:30 Invited

Advances in all-fiber lasers and ocean applications, Bo Guo; *Harbin Eng. Univ., China*. This report will briefly introduce the latest progress of our research group in the field of all-fiber lasers and ocean applications.

Su1D.2 • 08:50 Invited

Advanced All-Polarization-Maintaining Fiber Lasers and Their Applications in On-Chip Nonlinear Photonics for Sensing and OCT, Qian Li; *Peking Univ. Shenzhen Graduate School, China*. This presentation will detail our systematic efforts in developing a versatile platform of all-polarization-maintaining (PM) linear-cavity ultrafast fiber lasers and applications in on-chip nonlinear photonics for sensing and OCT.

Su1D.3 • 09:10 Invited

High power and high efficiency mid-infrared optical parametric sources, Junqing Zhao; *Shenzhen Tech. Univ., China*. Our group's Recent progress on high power near infrared laser sources as well as their further efficient mid-infrared parametric conversion will be presented.

Room 3, Track 4

08:30-10:00
Su1E. Optoelectronic Integration II
*Presider: **Zhang Luo,** National University of Defense Technology, China*

Su1E.1 • 08:30 Invited

Broadband and flat-top integrated electro-optic frequency combs on thin-film lithium niobate platform, Lei Shi; *Huazhong Univ. of Sci. and Tech., China*.

Su1E.2 • 08:50 Invited

High performance photodetectors and intelligent sensing based on 2D materials, Linjun Li; *Zhejiang Univ., China*. 2D materials are one of the promissing optoelectronic materials in the post moore era. we will show that high performance broadband photodetection based on 2D materials with collective electron behavior.

Su1E.3 • 09:10 Invited

Optoelectronic Integration Enchanced Interconnects in Intelligent Computing System, Zhang Luo; *National Univ. of Defense Tech., China*. Optoelectronic integration demonstrates systematic potential to overcome the key constraints of the bandwidth wall and communication latency through deep co-integration at the physical layer, thereby efficiently harnessing the potential of large-scale distributed computing power.

Room 6, Track 18

08:30-10:00
Su1F. AI & Photonics I
*Presider: **Alex Yi,** University of Wisconsin, USA*

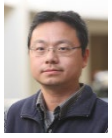
Su1F.1 • 08:30 Invited

AI algorithm assistanted demodulation of optical fiber sensors, Guanjun Wang; *Hainan Univ., China*. The performance and effectiveness of using artificial intelligence algorithms and array waveguide grating structure to demodulate fiber optic sensors is analyzed.

Su1F.2 • 08:50 Invited

Deep learning assisted real-time interrogation of optical fiber sensors using convolutional neural networks, Zhengyong Liu; *Sun Yat-sen Univ., China*. In this paper, I will give a talk about our recent research progress on the real-time interrogation and system development of optical fiber sensors using convolutional neural networks.

Su1F.3 • 09:10 Invited



Integrated 3D photonics with artificial intelligence applications, Alex Yi; *Univ. of Wisconsin, USA*. This talk will introduce this emerging field with several examples of my lab's representative research projects.

Room 7 Track 1

Su1A.4 • 09:30 ◇ 8320

Optical Time Domain Reflectometry for Ultra-long Length Hollow-Core Fiber Characterization, Xuhao Wei[1], Igor Khrushchev[2], Shahab Bakhtiari Gorajoobi[3] and Radan Slavík[1]; [1]*University of Southampton, UK;* [2]*Ikeos Research Ltd, UK;* [3]*Microsoft Azure Fiber, UK.* A custom, pre-shaped OTDR source is used to achieve a 58 dB (29 dB one-way) dynamic range for hollow-core fibers, the highest reported for a system with comparable spatial resolution.

Su1A.5 • 09:45 ◇ 4561

High-efficiency multi-channel optical photonic integrated circuit for telecommunication wavelength range, Sergey Avdeev[1], Aleksandr Baburin[1], Evgeny Sergeev[1], Alexey Kramarenko[2], Kirill Buzaverov[1], Sergey Bukatin[2], Evgeny Lotkov[1], Ilya Ryzhikov[2] and Ilya Rodionov[2]; [1]*VNIIA, Russia;* [2]*BMSTU, Russia.* We demonstrate fabrication and packaging technology for high-efficiency multi-channel photonic integrated circuits in the telecommunication range, enabling universal single-fiber and FAU coupling with 0.5 dB assembly loss, while ensuring reliable operation under cryogenic temperatures.

Room 8, Track 3

Su1B.4 • 09:30 ★ 7986

Prototype Learning-Based DAS for Open Environments Pipeline Intrusion Detection, Nong Tian[1], Shanfan Lu[1], Yuanhang Zhuo[1], Jingming Zhang[1], Peide Zhang[2], Xiaobing Shi[1] and Li-yang Shao[1]; [1]*Southern Univ. of Sci. and Tech., China;* [2]*The Hong Kong Polytechnic Univ., HK.* We propose a few-shot learning framework, Prototype Assembly Network (PAN), for open-environment DAS monitoring, achieving 99.5% accuracy in closed and 86.03% in open settings, distinguishing unknown events and reducing false alarms for real-world edge deployments.

Su1B.5 • 09:45 ★ 0541

Closed-Loop Feedback for Thermal Drift Compensation of Phase Modulator Half-Wave Voltage, Peng Xiang[1], Junchang Huang[2] and Li Xia[1]; [1]*Huazhong Univ. of Sci. and Tech., China;* [2]*Xizang Yangbajing High-Altitude ESEE National Field Station, China.* FOCS accuracy declines at high altitudes due to temperature. Our feedback algorithm stabilizes the modulator's half-wave voltage, maintaining 4.1V (±0.003V) from -20°C to 20°C and enhancing system stability.

Room 1, Track 7

Su1C.4 • 09:35 ★ 9509

Efficient Ablation of Tissue Using a WavelengthTunable Picosecond Laser in the 3 µm Band, Junjie Jiang[1], Kun Liu[1] and Xia Yu[1]; [1]*Beihang Univ., China;* [2]*North China Research Inst. of Electro-Optics, China.* We demonstrate efficient tissue ablation with hundred-micrometer incision depths using a wavelength-tunable picosecond laser in the 3–3.6 µm band. The efficacy and morphology of the ablated tissue are wavelength-dependent due to synergistic chromophore absorption.

Su1C.5 • 09:50 ★ 2410

Compensating Chromatic Dispersion in Passive Q-Plates Using Multilayer Liquid Crystal Photoalignment, Pouya Nosratkhah, Ke Xu, Giorgio Manzoni, Tao Zhou, Le Zhou and Kristiaan Neyts; *Hong Kong Univ. of Sci. and Tech., HK.* We demonstrate a passive Q-plate fabricated with three photoaligned liquid crystal layers, to compensate chromatic dispersion. The conversion of the topological charge of a Laguerre–Gaussian beams has great potential in optical communication.

10:00-10:30 Poster Session 1 & Tea Break

Room 2, Track 5

Su1D.4 • 09:30 ◇ 3307
Dynamic coherence of optical frequency combs based on high-coherence frequency-swept laser, Laiyang Dang, Wenhao Zhu, Jie Xu, Wei Wu and Dongmei Huang; *Hong Kong Polytechnic Univ., HK*. We propose a novel coherence characterization method based on a swept laser, enabling comb dynamics measurement, which overcomes limitations of conventional techniques, such as high noise, system complexity, and trade-offs between sampling time and resolution.

Su1D.5 • 09:45 ★ 6899
Comprehensive Parameterization of Multi-Mode VCSELs Based on the Spin-Flip Model, Wenjie Rao[1], Jilong Li[1], Shaochi Pan[1], Xianglai Zeng[1], Jian Feng[1], Chuyu Zhong[1], Shupeng Deng[1], Hui Li[1], Jianan Duan[2] and Shihao Ding[1]; [1]*Shenzhen Tech. Univ., China;* [2]*Harbin Inst. of Tech. Shenzhen, China*. We propose a multi-mode spin-flip VCSEL model that overcomes conventional limits. Incorporating spatial hole burning and four-wave mixing, it predicts mode competition, spatial distributions, and noise, guiding next-generation high-speed laser design.

Room 3, Track 4

Su1E.4 • 09:30 ◇ 4912
Gate-Integrated GaN Diodes for High-Speed Optical Communication, Muhammad Hunain Memon, Yang Kang, Alireza Hosseini, Zhixiang Gao and Haiding Sun; *Univ.of Sci. and Tech. of China, China*. Gate-integrated GaN dual-functional light-emitting and detecting diodes achieve high-speed optical communication across visible and solar-blind spectra through electrostatic carrier control, enabling compact, energy-adaptive, and bias-circuit-free optoelectronic integration for next-generation photonic systems.

Su1E.5 • 09:45 ★ 9306
Design of a Polarization-Independent Broadband Integrated Optical Isolator on Silicon Nitride, Weihan Long, Di Wu, Zixuan Wei, Tianchi Zhang, Junxian Wang, Zhenyuan Ren, Jun Qin and Lei Bi; *Univ. of Electron. Sci. and Tech. of China, China*. We present a broadband, polarization-independent optical isolator on silicon nitride. By equalizing nonreciprocal phase shifts, it achieves >20 dB isolation with wide near-infrared bandwidths of 239 nm (TE) and 295 nm (TM).

Room 6, Track 18

Su1F.4 • 09:30 ◇ 4537
Machine Learning-Driven Time-Domain Sagnac Interferometer for Temperature Sensing, Weihao Lin[1], Junjie Bai[1], Qianchao Wang[1], Zihan Huang[1], Keyu Cai[1], Junkai Bai[2] and Li-yang Shao[3]; [1]*Higher Educational Key Lab. for Flexible Mfg. Equipment Integration of Fujian Prov., China;* [2]*Fuzhou Univ., China;* [3]*SUSTech, China*. We present a Sagnac interferometer temperature sensor using a side-hole fiber. It employs time-stretch for 50 MHz interrogation, and a Transformer network optimizes demodulation, slashing the MSE from 0.017614 to 0.000011 °C².

Su1F.5 • 09:45 6208
Random Forest-Driven Photonic Reservoir Computing Model for Signal Modulation Recognition, Ling Zheng, Sichen Wen, Pan Zhang, Xinrui Hu, Xingxing Guo, Yahui Zhang and Shuiying Xiang; *Xi'an Univ. of Posts and Tel., China; Xidian Univ., China*. TThis paper proposes a Random Forest-Driven Photonic Reservoir Computing (RF-RC) architecture. The physical reservoir is constructed using a VCSEL with optical feedback. Evaluations on benchmark signal modulation recognition tasks demonstrate that RF-RC outperforms representative methods.

10:00-10:30 Poster Session 1 & Tea Break

Poster Session 1 (10:00-10:30)

P1.1 1065

Multi-Objective Marine Predator Routing in MEO-LEO Cross-Layer Satellite Optical Networks, Xiaoke Sun, Haicheng Li, Yanyan Xie, Pengfei Lv, Zihao Qin, Lei Shi, Bin Liu and Ruijie Zhu; *Zhengzhou Univ., China.* We propose an improved multi-objective routing method based on marine predator algorithm in MEO-LEO cross-layer satellite optical networks.

P1.2 0145

Giant Nonlinear Response in Multimode Waveguide Integrated with Graphene for all-optical signal processing, Chaofan Wang[1], Yonghua Wang[1] and Lei Lei[2]; [1]*North Univ. of China, China;* [2]*Shenzhen Univ., China.* We propose 2.56Tb/s multimode hexadecimal addition and subtraction by exploiting four-wave mixing in a highly nonlinear slot waveguide integrated with graphene.

P1.3 1156

Distributed Cross-Domain Service Function Chains Deployment in LEO Satellite Optical Networks, Haicheng Li[1], Xiaoke Sun[1], Yixiang Zhang[1], Pengfei Lv[2], Kecai Chen[1], Yanyan Xie[1] and Ruijie Zhu[1]; [1]*Zhengzhou Univ., China;* [2]*Songshan Lab., China.* We propose a distributed cross-domain service function chains deployment algorithm for satellite optical networks.

P1.4 2713

Miniaturized Photoacoustic Spectroscopy Detector for In-Situ Rapid Analysis of Dissolved Acetylene in Oil, Shuai Guo[1], Xiaoning Song[1], Yi Zhong[2], Qiuyang Cao[1], Yijie Cheng[1] and Ping Lu[2]; *State Grid Zhejiang Electric Power Co., Ltd., China; HUST, China.* This paper proposes a MEMS-based miniaturized PAS detector (photoacoustic cell + optical acoustic-sensitive microcavity) with small-aperture oil-gas separation.

P1.5 1943

A Time-Stretch Dispersive Fourier Transform Based Liquid Level Sensor Using a Peanut Shaped Fiber, Weihao Lin[1], Junjie Bai[1], Qianchao Wang[1] and Li-Yang Shao[2]; [1]*Fujian Univ., China;* [2]*SUSTech, China.* We present a liquid level sensor that combines a peanut-shaped fiber with the time-stretch effect.

P1.6 3686

Optical scattering system for image classification based on on-chip optical waveguides, Sanmiao Wang, Hao Zhong and Yi Li; *China Jiliang Univ., China.* An integrated optical scattering system based on a silicon on insulator (SOI) chip. This system replaces traditional spatial optical scattering devices with a SOI chip.

P1.7 2903

An Edge-Aware Graph Attention and Transformer Network for LEO Satellite Optical Networks Traffic Prediction, Zihao Qin[1], Shaobo Qin[1], Pengfei Lv[2], Yajuan Qin[1], Yanyan Xie[1], Xiaoke Sun[1], Haicheng Li[1] and Ruijie Zhu[1]; [1]*Zhengzhou Univ., China;* [2]*Songshan Lab, China.* We propose a Spatio-Temporal Edge-aware Graph Attention and Transformer Network (ST-EGAT) for satellite network traffic prediction.

P1.8 1263

Service Function Chain Mapping Approaches with Resource-Sensitive Centrality in Elastic Optical Networks, Zihang Guo[1], Huiping Chi[1], Liulei Zhou[1], Hong Chen[1], Weidong Shao[1], Bowen Chen[1] and Weiguo Ju[2]; [1]*Soochow Univ., China;* [2]*China Info. Consulting & Designing Inst. CO., Ltd., China.* A resource-sensitive centrality mapping approach is proposed to optimize network resource allocation by integrating resource availability with network structural characteristics.

P1.9 3548

Integrated mode-order converter by silicon inlaid in 4H-SiCOI, Danfeng Zhu, Dingnan Deng, Junbo Chen, Shaobin Qiu and Jinming Luo; *Jiaying Univ., China.* A high-performance and ultracompact mode-order converter is proposed numerically relied on a rectangle silicon inlaid in a slab 4H-SiC waveguide.

P1.10 4035

Analysis of Water Extraction Quality in Poyang Lake Basin with Different Water Body Indices, Fangqing Liao, Ping Zhou and Zhiyang Huang; *Jiangxi Univ. of Water Resources & Electric Power., China.* This study evaluates four water indices in Poyang Lake Basin; AWEIsh/WiFisher outperform MNDWI/EWI for water extraction, aiding related remote sensing.

P1.11 3498

A Full-Chain, Interactive Digital Simulation Platform of Fiber Optical Current Transformer, Zili Xu, Jianguang Li, Changxi Yue, Jicheng Yu, Yufeng Sun, Jinfei Qin and Binbin Li; *State Grid Anhui Electric Power Co., Ltd., China.* High-fidelity FOCT digital twin enables real-time simulation with Jones matrix, reproducing measurements and faults accurately, supporting intelligent fault diagnosis development in smart grids.

P1.12 2149

Correction of lens transmittance diffraction effect and source size effect in absolute radiation temperature measurement standard device, Jing Cai, Yifan Gao, Guanjun Wang, Xi Ye and Yingcong Chen; *CIMM, China; Hainan Univ., China.* Using a high-stability integrating sphere as the light source, the source size effect and diffraction effect were measured separately, with a measurement result of 95.23% and an expanded uncertainty of 4.3X104 (k=2).

Poster Session 1 (10:00-10:30)

P1.13 4193

Deep Learning-Based Spectral Demodulation for Endotoxin Detection, Haopeng Wang; *Jinan Univ., China*. This study presents a deep learning-based spectral demodulation approach integrated into a unilateral microfiber Bragg grating (μFBG) endotoxin detection system.

P1.14 4192

Broad-Spectrum Temperature Measurement Method Based on TE/TM Mode Spacing Matching in Micro-ring Resonator, Xi Ye, Yingcong Chen, Jing Cai and Haitao Chang; *CIMM, China*. This study proposes a temperature measurement method based on the TE/TM mode spacing under broadband spectroscopy of a microring resonator.

P1.15 4545

Tunable Metasurface Unit for Retroreflection and Radar Cross-Section Control, Yibing Xiao[1], Yueyi Zhang[1], Yongqiang Liu[2] and Chaohai Du[1]; [1]*Peking Univ., China;* [2]*National Key Lab of Scattering & Radiation*. This paper presents a metasurface unit with a rotating metallic ring for precise retroreflection control. The reflection amplitude varies from 0 to 0.95, enabling adjustment of backscatter Radar Cross Section through rotation angles.

P1.16 4246

BPNN-Based TFBG Sensor for Multi-Parameter Water Quality Monitoring, Weihao Lin[1], Junjie Bai[1], Qianchao Wang[1], Zihan Huang[1], Keyu Cai[1], Junkai Bai[2] and Li-Yang Shao[3]; [1]*Xiamen Inst. of Tech., China;* [2]*Fuzhou Univ., China;* [3]*SUSTech, China*. This paper presents a tilted fiber Bragg grating sensor integrated with a backpropagation neural network for the simultaneous measurement of temperature, salinity, and turbidity.

P1.17 4706

Distributed Reconfiguration-Agnostic Scheduling for Data Center Optical Circuit Networks, Shuo Li, Yixuan Hao, Xiaoshan Yu and Huaxi Gu; *Xidian Univ., China*. We propose a reconfiguration-agnostic design and distributed-control heuristic for data center optical circuit networks.

P1.18 5242

A Nanostructure Transfer Method for van der Waals Contact, Xiangzhe Zhang; *Space Engineering Univ., China*. This work developed a universal and high-fidelity transfer approach, not only meets the pressing need for reliable nanostructure assembly but also expands the toolkit for constructing complex architectures.

P1.19 5356

Fiber Optic Endotoxin Sensor Based on Trace Limulus Amebocyte Lysate (LAL), Qingyue Ye[1], Kaisheng Liu[2] and Yang Ran[1]; [1]*Jinan Univ., China;* [2]*Shenzhen People's Hosp., China*. This work quantifies LPS by monitoring refractive index changes induced by the adsorption of unreacted LAL.

P1.20 4254

Performance Comparison of Step-Index and Graded-Index Multimode Fibers for Power-over-Fiber in Optoelectric CTs, Zhanyuan Liu[1], Ruiyi Li[1], Xiaochen Niu[1], Zhenyu Guo[2], Xueyou Zhang[2] and Huan Ma[2]; [1]*CEPRI, China*. Step-index multimode fiber is more suitable than graded-index multimode fiber for powering optoelectronic CTs.

P1.21 5934

Optimizing Imaging Performance of Scanning Fiber Endoscopes, Hao Zhong, Lei Li, Zhipeng Wu, Yutong Yan, Le Wang and Yi Li; *China Jiliang Univ., China*. Based on a scanning fiber endoscopy system, Fourier-domain filtering and interpolation were investigated.

P1.22 5565

Optical scattering system for image classification based on on-chip optical waveguides, Sanmiao Wang and Yi Li; *China Jiliang Univ., China*. This system replaces traditional spatial optical scattering devices with a SOI chip.

P1.23 7057

Electrical Domain Nonlinear Enhanced Chaotic Secure Communication System Based on Optoeletronic Feedback Loop, Guilin Zeng[1], Hongpeng Liang[1], Xing Li[1], Yuehua An[2], Xinyong Dong[1], Zhensen Gao[1] and Yuwen Qin[1]; [1]*GDUT, China;* [2]*GPNU, China*. We propose a nonlinear-enhanced chaotic system using optoelectronic feedback.

P1.24 4592

Tactile Sensor based on U-Shaped Dual-Tapered Cantilever PMMA optical fiber, Yuxin Zheng[1], Kun Xiao[2], Rui Min[2] and Binbin Luo[1]; [1]*Chongqing Univ. of Tech., China;* [2]*Beijing Normal Univ., China*. We developed a novel polymethyl methacrylate (PMMA) optical fiber tactile sensor.

P1.25 5800

Distance calculation for time-correlated single-photon detection in turbid media, Quanchun Yu, He Cai, Peidong He, Taoying Yu, Hongcheng Yin and Liangsheng Li; *NKLSR., China*. This article proposes a calculation method for the time-correlated single-photon detection distance in turbid media based on the diffusion equation.

P1.26 8855

Low-power thermo-optic phase shifter based on waveguide mode control, Huilong Huang, Zhihao Niu, Peng Chen, Shenggen Zheng, Feng Gao and Yuan-Yuan Zhao; *Shenzhen Univ., China*. We proposed an innovative TOPS architecture that effectively mitigates thermal crosstalk by widening the waveguide beneath the heater.

Room 7, Track 1

10:30-12:00
Su2A. Optical Fiber & Waveguide Tech III
*Presider: **Hao Liang,** Jinan University, China*

Su2A.1 • 10:30 Invited

Optical trapping and metrologies in hollow-core optical fibers, Shangran Xie; *Beijing Inst.of Tech., China.*

Su2A.2 • 10:50 Invited

Center-Assisted Ring-Core Fibers and their Mode Degeneracy Manipulating Characteristics, Jingjing Zheng; *Beijing Jiaotong Univ., China.* Several center-assisted ring-core fibers are proposed for the spatially degenerate mode control of LPmn mode groups, and the rules for mode spatial degeneracy control of center-assisted ring-core fiber are summarized.

Su2A.3 • 11:10 Invited

Brillouin Scattering and Lasing in Gas-filled Anti-Resonant Hollow-Core Fibers, Hao Liang; *Jinan Univ., China.* We demonstrate a kilometer-scale, splice-free, SF_6-filled anti-resonant hollow-core fiber that enables reconfigurable Brillouin photonics.

Room 8, Track 3

10:30-12:00
Su2B. Optical Sensors & Measurement IV
*Presider: **Liang Zhang,** Shanghai University, China*

Su2B.1 • 10:30 Invited

Resonance-Engineered Surface-Enhanced Raman Spectroscopy and Random Raman Lasing, Tinghui Xiao; *Zhengzhou Univ., China.* We will present our recent progress on developing synergistic optical and charge-transfer resonances to enhance Raman spectroscopy and random Raman lasing, which offers promising routes towards sensitive molecular detection and efficient nonlinear light sources.

Su2B.2 • 10:50 Invited

Fiber Optic Multi-Parameter Seismic Monitoring in a 2800-Meter-Deep Borehole, Wentao Zhang; *Inst. of Semiconductors, CAS, China.* In June 2025, we completed the first installation of a fiber optic multi-parameter seismic instrument in a 2800-meter-deep borehole, in the southern Yellow Sea and carried out an airgun experiment to test the equipment.

Su2B.3 • 11:10 Invited

Broadband Source-Driven Resonant Optical Gyroscope Using Multimode Microcavity and Multimode Detection, Huilian Ma; *Zhejiang Univ., China.* This talk introduces a closed-loop broadband source-driven resonant optic gyroscope using a multimode microcavity, significantly enhancing scale factor linearity to 50 ppm and achieving bias stability below 1°/h.

Room 1, Track 7

10:30-12:00
Su2C. Light-matter Interactions II
*Presider: **Jinwei Shi,** Beijing Normal University, China*

Su2C.1 • 10:30 Keynote

Plasmonic Nanocavity Enabled Radiative Control of Spin-forbidden Dark Excitons, Dangyuan Lei; *City Univ. of Hong Kong, Hong Kong.* In this talk, I will show how to employ plasmon-exciton coupling spectroscopy to determine the room-temperature spin splitting between the bright and dark excitons in monolayer TMDs [ACS Photonics 2019, 6(11), 411-421].

Su2C.2 • 11:00 Invited

Recent Research on Sensitivity and Stability Enhancement in Fiber-Optic Interferometric Sensors, Shun Wang; *Guangdong Univ. of Tech., China.* This report highlights FOIS advantages, stressing noise performance alongside sensitivity.

Su2C.3 • 11:20 Invited

Ultrastrong coupling between artificial surface wave and excitons, Jinwei Shi; *Beijing Normal Univ., China.* We demonstrate USC between J-aggregate excitons and TE-polarized artificial surface waves supported by a reconfigurable open-cavity metasurface. A Rabi splitting of 660–680 meV and a record-high U = 7.38 are achieved.

Room 2, Track 5

10:30-12:00
Su2D. Advanced Lasers & Applications III
*Presider: **Jianan Duan,** Harbin Institute of Technology Shenzhen, China*

Su2D.1 • 10:30 **Invited**

Highly coherent swept lasers and the applications in precise measurement and imaging, Dongmei Huang; *The Hong Kong Polytechnic Univ., HK.* This talk will introduce two kinds of highly coherent swept lasers including Fourier domain mode locked laser and time stretched swept laser, as well as the applications in precise measurement and imaging.

Su2D.2 • 10:50 **Invited**

Ultrashort Pulse Generation with Mamyshev Oscillator and Hollow-Core Fiber, Lin Xu; *Univ. of Southampton, UK.* This presentation introduces combining Mamyshev oscillator and hollow-core fiber technologies to produce low-repetition-rate, ultrashort pulses with enhanced pulse energy.

Su2D.3 • 11:10 **Invited**

Enhanced Photoacoustic Fingerprinting for Ultrasensitive VOCs Detection, Jianfeng Li; *Univ. of Electron. Sci. and Tech. of China, China.* A tunable gain-switched mid-IR fiber laser PAS system is proposed, enabling ultra-sensitive multi-VOC detection with state-of-the-art performance.

Room 3, Track 4

10:30-12:00
Su2E. Optoelectronic Integration III
*Presider: **Liangjun Lu,** Shanghai Jiao Tong University, China*

Su2E.1 • 10:30 **Invited**

TFLN/Si3N4 Heterogeneously Integrated Devices Based on Micro-Transfer Printing, Liangjun Lu; *Shanghai Jiao Tong Univ., China.* In this talk, I will review our recent advances in TFLN/Si3N4 heterogeneously integrated devices based on micro-transfer printing, including high speed optical filters, optical switches, and optical modulators.

Su2E.2 • 10:50 **Invited**

Machine learning-driven forward and inverse designs of photonic integrated circuits, Tong Lin; *Southeast Univ., China.* Combined forward and inverse designs overcome the computational challenge, enabling high-performance devices efficiently. Experimental validations of various waveguide components will be discussed.

Su2E.3 • 11:10 **Invited**

TBD, Qiang Kan; *Inst. of Semiconductor, CAS, China.*

Room 6, Track 18

10:30-12:00
Su2F. AI & Photonics II
*Presider: **Nan Qi,** Institute of Semiconductors, CAS, China*

Su2F.1 • 10:30 **Invited**

High-Precision Photonic Matrix Multipliers for Neural Network Applications, Deming Kong; *Technical Univ. of Denmark, Denmark.* We present our recent works on photonic matrix multipliers leveraging multi-dimensional encoding schemes for enhanced numerical precision. We show enhanced accuracy and promising potential in real-world inference tasks.

Su2F.2 • 10:50 **Invited**

Chiplet Optical I/O for AI Computing Interconnects, Nan Qi; *Inst. of Semiconductors, CAS, China.* The co-packaged optical I/O enables fiber attach at the xPU chip edge, achieving high bandwidth density and energy efficiency. This talk focuses on the photonic-electronic integrated chips for AI computing interconnects.

Su2F.3 • 11:10 4613

Short-Term Load Forecasting using Hybrid Temporal Convolutional Network and Photonic Reservoir Computing, Ling Zheng[1], Pan Zhang[1], Xinrui Hu[1], Xingxing Guo[2], Yahui Zhang[2] and Shuiying Xiang[2]; [1]*Xi'an Univ. of Posts & Tel., China;* [2]*Xi'dian Univ., China.* This paper proposes a hybrid temporal convolutional network and photonic reservoir computing model, and explores its application in short-term power load forecasting.

Room 7, Track 1

Su2A.4 • 11:30 ◇ 9176

Monolithic Silicon Nitride Photonic Platform with Electro-Optical Modulators and Detectors, Aleksandr Baburin[1], Sergey Avdeev[1], Aleksey Kramarenko[2], Ilya Ryzhikov[2], Kirill Buzaverov[1], Sergey Bukatin[2], Ali Amiraslanov[2], Evgeny Sergeev[1], Evgeny Lotkov[1] and Ilya Rodionov[2]; [1]*VNIIA, Russia;* [2]*BMSTU, Russia*. We report platform for photonic integrated circuits at 1550 nm with waveguide losses <2 dB/m, microresonator Q >15×10^6, fiber-to-chip coupling 0.15 dB, high frequency modulators >1 GHz and single-photon detectors tested down to 0.9 K.

Su2A.5 • 11:45 ★ 1986

Carbon nanotube mode-locked fiber laser for multi-ocative supercontinuum via nanophotonic waveguide chip, Kai Wang[1], Qiankun Li[1], Yifan Wang[1], Xueying Sun[1], Yuhang Yan[1], Lunian Zhang[1], Yongyuan Chu[1], Suwan Sun[1], Lilong Dai[1], Chaoqian Wei[1], Zhiming Shi[1], Wei Chu[2], Hairun Guo[3] and Chengbo Mou[1]; [1]*Shanghai Univ., China;* [2]*Zhangjiang Lab, China;* [3]*USST, China*. We demonstrate a highly coherent ultra-broadband supercontinuum with ~2.8 octave spanning based on silicon nitride waveguide, driven by a fully polarization-maintaining single-walled carbon nanotubes mode-locked fiber laser with high coherence performance.

Room 8, Track 3

Su2B.4 • 11:30 Invited

Forward Stimulated Brillouin Scattering in Few-Mode Optical fibers: Manipulation and Application for Temperature Sensing, Liang Zhang; *Shanghai Univ., China*. This talk will present recent advances in manipulation of forward stimulated Brillouin scattering in few-mode optical fibers as well as its application for temperature sensing.

Su2B.5 • 11:50 5187

3D Tactile Sensing with a Multimode Fiber, Zhenming Ding; *Westlake Univ., China*. We introduce a 3D tactile sensor with multimode fiber in silicone. CNN analyzes output speckles, attaining >98% accuracy for 0.5×0.5 mm position and 3 g force resolution, enabling affordable touch pads.

Room 1, Track 7

Su2C.4 • 11:40 8682

Hyperbolicity In Graphene/hBN Multilayers-Enabled Remote Quantum Interference, Jabir Hakami; *Jazan Univ., Saudi Arabia*. Hexagonal boron nitride can accommodate highly dispersive surface phonon-polariton modes. Surface plasmons in a monolayer graphene can couple with hyperbolic phonon polaritons to form hybrid polaritons that can assist photon tunneling.

12:00-13:30 Lunch Break

Room 2, Track 5

Su2D.4 • 11:30 Invited

Reflection sensitivity of Quantum Dot Optical Frequency Comb Lasers, Jianan Duan; *Harbin Inst. of Tech. Shenzhen, China.*

Su2D.5 • 11:50 2376

An Anti-Counterfeiting System Based on Laser Emission from Multi-Color Flexible Fiber, Guoxuan Sheng, Xiyu Sun, Yuhan Xia and Yu-Cheng Chen; *Nanyang Technological Univ., Singapore.* We demonstrate a polymer multi-color fiber WGM microlaser showing great flexibility, and developed a colored two-dimensional code anti-counterfeiting system using WGM lasing by designing the encoding method. The system provides great potential for flexible anti-counterfeiting.

Room 3, Track 4

Su2E.4 • 11:30 ★ 1988

Ultra-broadband mode (de)multiplexer operates from the O-band to the 2 μm wavelength band, Juncheng Zhou, Quandong Huang, Liangwen Xu, Ou Xu and Xinyong Dong; *Guangdong Univ. of Tech., China.* We propose a dual-mode (de)multiplexer based on cascaded adiabatic directional couplers, operating across the O band, C+L band, and 2 μm wavelength with a coupling ratio higher than 87%.

Su2E.5 • 11:45 6357

Reconfigurable Fano and Reverse-Fano Resonances in Nested Ring Resonators for Compact Biosensing, Pragya Mishra[1], Tushar Gaur[2] and Srinivas Talabattula[1]; [1]*Indian Inst.of Sci., India;* [2]*Synopsys (India) Pvt. Ltd., India.* We present a CMOS-compatible Nested Ring Resonator (NRR) exploiting controlled asymmetry to realize Fano and Reverse Fano resonances with Q = 7192, ER > 50dB,583.3nm/RIU sensitivity, enabling scalable multi-analyte biosensing.

Room 6, Track 18

Su2F.4 • 11:25 3159

Zeros, Negatives, and Fewer Bits: Stress-Testing a Photonic Convolutional Neural Network, Mateus Vidaletti Costa[1], Mauricio Gomes de Queiroz[1], Raphael Cardoso[1], Ian O'Connor[1] and Arnan Mitchell[2]; [1]*Ecole Centrale de Lyon, France;* [2]*RMIT, Australia.* Photonic accelerators offer high bandwidth but are vulnerable to noise and quantization. We analyze kernel structure, accuracy, and DAC resolution in a CA and PCNN, revealing robustness trends and power–accuracy tradeoffs in photonic neural networks.

Su2F.5 • 11:40 0080

Deep learning from simulated polarization optical microscopy images, Giorgio Manzoni, Kristiaan Neyts, Pouya Nosratkhah and Tao Zhou; *Hong Kong Univ. of Sci.and Tech., HK.* We create a dataset of simulated microscopy images for liquid crystal configurations to train a neural network to estimate liquid crystal properties and the 3D director field.

12:00-13:30 Lunch Break

Room 7, Track 1

13:30-15:30
Su3A. Optical Fiber & Waveguide Tech IV
*Presider: **Jiangming Xu**, National University of Defense Technology, China*

Su3A.1 • 13:30 Invited

Thermo-optical switch based on polymeric photonic integrated circuits, Xibin Wang; *Jilin Univ., China*. Optical switch is becoming more and more important as one of the key elements for optical fiber communication systems. Here, we put forward low-power andmultifunctional optical switches based on polymericphotonic integrated circuits.

Su3A.2 • 13:50 Invited

Polymer waveguide devices and applications, Quandong Huang; *Guangdong Univ. of Tech., China*.

Su3A.3 • 14:10 Invited

3D glass waveguide-based optical device using femtosecond laser direct writing technique, Lin Ma; *Shanghai Jiao Tong Univ., China*. We demonstrate ultra-compact ultra-low loss 3D glass waveguide-based optical devices such as fan-in/fan-out for multicore fiber using a femtosecond laser direct writing technique.

Room 8, Track 3

13:30-15:30
Su3B. Optical Sensors & Measurement V
*Presider: **Jian Li**, Taiyuan University of Technology, China*

Su3B.1 • 13:30 Invited

Strain measurement range enhancement technology for distributed fiber optic sensing system, Junhui Hu; *Guangxi Normal Univ., China*. In the Speech, we will demonstrate several technical solutions for enhancing strain measurement range for limitation in traditional Slope-assisted BOTDR, OFDR, and Phase Sensitive OTDR sensing systems.

Su3B.2 • 13:50 Invited

Optical frequency comb enabled distributed fiber sensing, Zhiyong Zhao; *Huazhong Univ. of Sci. and Tech., China*. In this talk, I will present our recent advances in optical frequency comb enabled distributed fiber sensing, and I will show how the optical frequency combs revolutionize the field of frequency-swept distributed fiber sensing.

Su3B.3 • 14:10 Invited

Extending the shot-to-shot measurement range of CP-ϕOTDR, Pengbai Xu; *Guangdong Univ. of Tech., China*. We proposed a novel chirp pulse pair phase-sensitive optical time-domain reflectometry technique, which can reach 6.6 nε/Hz1/2 at the 4 mHz.

Room 1, Track 2

13:30-15:30
Su3C. Optical Communications & Networks III
*Presider: **Lihua Ruan**, Pengcheng Lab, China*

Su3C.1 • 13:30 Keynote

Recent Results in Solar-Blind Ultraviolet Non-Line-of-Sight Source Localization, Julian Cheng; *Great Bay Univ., China*.

Su3C.2 • 14:00 Invited

Multi-Path Interference (MPI) and Its Mitigation in Ultrahigh-Speed IMDD Optical System, Ning Deng; *Great Bay Univ., China*. This work reviews MPI mechanisms, surveys mitigation methods, and proposes new schemes to address unresolved challenges.

Su3C.3 • 14:20 Invited

LiFi communication, sensing and power transfer for 6G, Chen Chen; *Chongqing Univ., China*. This speech will first introduce the three key functions that LiFi can offer including communication, sensing and power transfer. After that, two integrated LiFi systems including integrated sensing and communication (ISAC) and integrated communication, sensing, and power transfer (ICSPT) will be discussed.

Room 2, Track 9

13:30-15:30
Su3D. Ultrafast & Nonlinear Optics
*Presider: **Feng He,** Harbin Institute of Technology Shenzhen, China*

Su3D.1 • 13:30 Invited

Optical field characteristics of generalized breathing cosine-Gaussian solitons with complex variables and cross phase modulation under non-waist incident conditions, Zhenjun Yang; *Hebei Normal Univ., China*. This paper takes cosine-Gaussian beams as an example to discuss the effects of complex variables and cross phase on beam characteristics and the formation of breathing solitons under non-waist incidence in strongly nonlocal media.

Su3D.2 • 13:50 Invited

Free-running dual-comb spectroscopy by Raman gain modulation, Jiaqi Zhou; *Shanghai Inst. of Optics & Fine Mechanics, China*. We propose a mutually coherent dual-comb spectroscopy system by Raman gain modulation, which operates without active feedback stabilization or post-processing.

Su3D.3 • 14:10 Invited

Ultrafast Pulse Generation and its application in attosecond time-resolved electron motion in solid materials, Xiaochun Gong; *Zhejiang Univ., China*. We shortly summarize our recent progress in multipass cell post-pulse compression and the observation of pure electron and electron-phonon dynamics in broadband dielectric materials through a high-resolution attosecond interferometer.

Room 3, Track 4

13:30-15:30
Su3E. Optoelectronic Integration IV
*Presider: **Song Liang,** Institute of Semiconductors, CAS, China*

Su3E.1 • 13:30 Invited

Light Manipulation in OLEDs by Nano/Micro-structured Electrode, Yan-Gang Bi; *Jilin Univ., China*.

Su3E.2 • 13:50 Invited

High-Resolution Patterning of Fluorescent Films by Femtosecond Laser-Induced Forward Transfer, Yue-Feng Liu; *Jilin Univ., China*.

Su3E.3 • 14:10 Invited

Organic Optoelectronic Materials for Flexible Thin-Film Transistors and Their Sensing Applications, Zhigang Yin; *Chongqing Univ., China*. In this report, we will talk about our recent progress in the design of photosensitive semiconductors and dielectric materials for organic thin-film transistors (OTFTs) as well as their applications in sensing, imaging, and optoelectronic synapses.

Room 6, Track 10

13:30-15:30
Su3F. Microwave Photonics
*Presider: **Yamei Zhang,** Nanjing University of Aeronautics and Astronautics, China*

Su3F.1 • 13:30 Invited

Microwave photonic sensing, Muguang Wang; *Beijing Jiaotong Univ., China*.

Su3F.2 • 13:50 Invited

The Integrated Microwave Photonic Filter and Its Manipulation, Yuan YU; *Huazhong Univ. of Sci. and Tech., China*. Our recent research on integrated microwave photonic filters (OMPFs) are introduced. Toward practical application, the program-driven manipulation of IMPF, including tuning, reconfiguraing and stabilizing the IMPF, is also introduced.

Su3F.3 • 14:10 Invited

Dual-Fiber Excitation of a Common-Cavity PT-Symmetric Brillouin Laser for Narrow-Linewidth Microwave Signal Generation, Qing Yan; *North Univ. of China, China*. We demonstrate a dual-fiber excited parity-time symmetric Brillouin fiber laser in a common-cavity configuration for narrow-linewidth microwave generation. The system achieves single-longitudinal-mode operation with a 120 Hz microwave linewidth and 53.9 dB side-mode suppression.

Room 7, Track 1

Su3A.4 • 14:30 Invited

Optical nanofiber for ultra-long-range optical pulling, Xin Guo; *Zhejiang Univ., China*. Based on Minkowski photon-momentum engineering of the waveguide mode in an ultrathin silica nanofiber, we report highly efficient optical pulling of a microdroplet with ultra-long working distance (up to 40 cm) and high speed (~2.8 mm/s).

Su3A.5 • 14:50 Invited

Mid-infrared hollow-core fibers and their use in power delivery, Qiang Fu; *Shenzhen Univ., China*. This talk will introduce the research progress in the field of mid-infrared hollow core fiber technology. Two anti-resonant silica fibers with low loss have been successfully developed for mid-infrared laser delivery applications.

Su3A.6 • 15:10 Invited

High power random fiber laser and its spectral manipulation, Jiangming Xu; *National Univ. of Defense Tech., China*. The history and status of high-power random fiber laser (RFL) will be reviewed. Especially spectral manipulation of high-power RFL, including purity scalability, wavelength number-interval-amplitude and linewidth tuning, and low-quantum-defect achieving, will be discussed.

Room 8, Track 3

Su3B.4 • 14:30 Invited

Image-deconvoluted Random Coding BOTDR, Qing Bai; *Taiyuan Univ. of Tech., China*. This paper presents an image-deconvoluted random coding BOTDR approach to simultaneously enhance both sensing range and spatial resolution. In this method, a series of pulses modulated with random codes is employed to extend the sensing range, while the Richardson-Lucy image deconvolution algorithm is applied to refine spatial resolution

Su3B.5 • 14:50 Invited

Chaotic Raman distributied fiber sensing, Jian Li; *Taiyuan Univ. of Tech., China*.

Su3B.6 • 15:10 6157

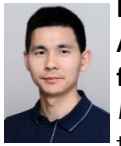
Influence of Coexistence of Coherent and Incoherent Feedback on Performance of Distributed Optical Fiber Sensing Based on Semiconductor Laser, Nian Fang and Kai Huang; *Shanghai Univ., China*. Through numerical simulation, we have demonstrated that the coexistence of coherent and incoherent feedback has an insignificant impact on the performance of the distributed optical fiber sensing system based on an optical feedback semiconductor laser.

Room 1, Track 2

Su3C.4 • 14:40 Invited

Integrated Sensing and Communication for seamless fiber-optic and free-space optical networks, Zhouyi Hu; *Beijing Jiaotong Univ., China*. Seamless fiber-optic and free-space optical networks show advantages in capacity and power consumption, yet suffer from various channel impairments. In this invited paper, we review the recent progress in optical ISAC to address this challenge.

Su3C.5 • 15:00 Invited



Enhanced Newton-Schulz Iteration Algorithm Based Frequency-Domain MIMO for Optical SDM Systems, Jinlong Wei; *Pengcheng Lab., China*. To address the technical challenge of SDM systems especially its variant with strong channel crosstalk, an efficient training sequence aided frequency domain multiple in and multiple out (TA-FD-MIMO) equalizer is introduced.

Su3C.6 • 15:20 Invited

Sensitivity of Traffic Features for Detecting Concept Drift in Optical Access Networks, Lihua Ruan; *Pengcheng Lab, China*. This invited talk discusses the sensitivity of low-layer traffic features, specifically those at physical and medium access control layers, in indicating traffic characteristic changes in optical access networks, a phenomenon termed traffic concept drift.

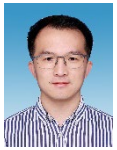
15:30-16:00 Poster Session 2 & Tea Break

Room 2, Track 9

Su3D.4 • 14:30 Invited

Large-scale timing synchronization based on linear-optics timing detectors, Ming Xin; *Tianjin Univ., China*. A novel timing synchronization technology based on linear-optics timing detectors is proposed. Each timing link can be stabilized to sub-fs precision with <1 mW optical power, therefore, the scalability of the large laser facilities can be improved.

Su3D.5 • 14:50 Invited



Harnessing Low-Dimensional Media: Nonlinear Optical Control for Next-Generation Ultrafast Photonics, Yingwei Wang; *Central South Univ., China*. Leveraging the exceptional tunable nonlinear saturable absorption properties of 2D materials, multiple proof-of-concept applications have been demonstrated, including ultrashort pulse generation, nonlinear activation for optical computing, and optical isolators.

Su3D.6 • 15:10 Invited

Mapping Material Properties Through Coherent Phonon Dynamics, Feng He; *Harbin Inst.of Tech. Shenzhen, China*. This talk will elucidate the mechanisms of coherent phonon generation via femtosecond laser excitation and their subsequent nonequilibrium dynamics, precisely tracked through ultrafast pump-probe spectroscopy.

Room 3, Track 4

Su3E.4 • 14:30 Invited

High speed directly modulated dual mode DFB laser, Song Liang; *Inst. of Semiconductors, CAS, China*. A novel high-speed directly modulated InGaAlAs/InP dual mode laser for THz communication systems has been developed. The two modes each having different light wavelengths are derived from the feedback from the DFB and DBR gratings of the device, respectively.

Su3E.5 • 14:50 Invited

Nonvolatile low-loss phase change materials-integrated photonics platform, Junying Li; *UCAS, China*. Our progress on phase-change materials integrated with silicon photonics encompasses electrically programmable multi-bit nonvolatile phase and intensity modulation, as well as laser written PCM-integrated photonic devices.

Room 6, Track 10

Su3F.4 • 14:30 Invited

Microwave photonics compressive sampling for multi-band signal sensing, Yamei Zhang; *Nanjing Univ. of Aero. and Astro., China*

Su3F.5 • 14:50 ★ 4343

Performance analysis of Photonic Terahertz Vector Analyzer with Optical Frequency Comb Modulation, Zhe Ding[1], Lu Zhang[1], Xiaodan Pang[1], Xianbin Yu[1] and Hongqi Zhang[2]; [1]*Zhejiang Univ., China;* [2]*China Mobile (Hangzhou) Info. Tech. Co., Ltd., China*. This paper presents a novel photonic THz vector signal analysis system and validates its accuracy and feasibility. This hybrid photonic-electronic system is anticipated to open new possibilities for advanced THz metrology.

Su3F.6 • 15:05 Invited

A Comprehensive Description of the Relativistic Behavior of Electrons, Xiaomin Ren; *Beijing Univ. of Posts and Tel., China*. Based on the previous modifications on Schrödinger equation and Dirac equation in the case of the absence of electromagnetic field, a more comprehensive description of the relativistic behavior of electrons is presented.

15:30-16:00 Poster Session 2 & Tea Break

Poster Session 2 (15:30-16:00)

P2.1 8419

Coupled GaN/AlN quantum dot structure as a single photon source, Yu Yan, Siyuan Xu and Zonghai Hu; *Beijing Univ. of Posts and Tel., China*. A coupled GaN/AlN quantum dot structure was grown by molecular beam epitaxy, exhibiting photo-luminescence between 300~360nm.

P2.2 6857

Investigation of Stratified Waveguide Filters for Visible-Light Spectrometer Applications, Xianjie Gao[1], Yunru Gao[2], Jiahao Peng[3], Shuo Wang[4], Peichuan Yin[1], Ruxue Wang[1] and Aimin Wu[1]; [1]*Shanghai Inst. of Microsystem and Info. Tech., China;* [2]*Shanghai Univ., China;* [3]*USST, China;* [4]*HIT, China*. We demonstrate a Si_3N_4 isolated stratified waveguide filter array.

P2.3 9302

A mode crosstalk suppression method based on combined phase perturbation and probabilistic shaping for direct detection MDM-PON, Hui Yang, Lu Zhang, Li Chen and Saifei Li; *Southwest Jiaotong Univ., China*. A novel combined phase perturbation and probabilistic shaping scheme is proposed to mitigate mode crosstalk in MDM-PONs.

P2.4 8967

In-Situ Hydrogen Sensing in Transformer Oil Using Functionalized Silicon Nitride Micro-ring Resonators, Shuai Guo[1], Xiaoning Song[1], Rui Zhu[2], Qiuyang Cao[1], Yijie Cheng[1] and Ping Lu[2]; [1]*State Grid Zhejiang Electric Power Co., Ltd., China;* [2]*HUST, China*. A hydrogen sensor using a functionalized microring resonator detects hydrogen in transformer oil via resonance wavelength shifts, offering high sensitivity and selectivity for online power equipment monitoring.

P2.5 9499

A Tapered Fiber Liquid Level Sensor Based on Optical Time-Stretch Effect, Weihao Lin[1], Junjie Bai[1], Qianchao Wang[1] and Li-Yang Shao[2]; [1]*Xiamen Inst.of Tech., China;* [2]*SUSTech, China*. This paper presents a tapered fiber MZI liquid level sensor utilizing the optical time-stretch effect.

P2.6 9150

QoS-Guaranteed Energy-Efficient Routing in Satellite Optical Networks, Shaobo Qin[1], Zihao Qin[1], Lilong Zhou[1], Yinghao Tong[1], Yanyan Xie[1], Haicheng Li[1], Pengfei Lv[2], Xiaoke Sun[1] and Ruijie Zhu[1]; [1]*Zhengzhou Univ., China;* [2]*Songshan Lab, China*. This paper proposes an QoS-guaranteed energy-efficient routing algorithm in LEO satellite optical networks.

P2.7 9465

Optimization of real-time software of multi-exposure interferometric diffusing wave spectroscopy system, Zhicheng Wu, Xinyu Li and Wenjun Zhou; *China Jiliang Univ., China*. We propose an optimized real-time software of MiDWS system, which can enhance the processing rate from 30 Hz to 50 Hz, and improve the SNR of real-time display results during in vivo blood flow monitoring.

P2.8 2223

Spectrum Fragment-Aware Mapping Approach in Space-Division-Multiplexing Elastic Optical Data Center Networks, Huiping Chi[1], Zihang Guo[1], Hong Chen[1], Weidong Shao[1], Liulei Zhou[1], Bowen Chen[1] and Fan Li[2]; [1]*Soochow Univ., China;* [2]*China Comservice Wangying Tech. Co., Ltd.* A virtual optical network mapping approach for spectrum fragment perception (SFP) was proposed to improve the resource availability in space-division multiplexing elastic optical data center networks (SDM-EODCNs).

P2.9 9931

Experimental Demonstration of Real-Time Optical Coherent Beam Combining for FSO under Dynamic Turbulence, Liwen Yi, Jifang Qiu, Suping Jiao, Zihan Luo, Wenjie Guo and Jian Wu; *Beijing Univ. of Posts and Tel., China*. A real-time OCBC scheme using the COBYLA algorithm for FSO is experimentally demonstrated.

P2.10 3546

A biomimetic photonic skin based on a wave-shaped optical microfiber network, Xue Zou, Kun Li, Yedong Liu and Binbin Luo; *Chongqing Univ. of Tech., China*. A biomimetic photonic skin based on a wave-shaped optical microfiber network is proposed.

P2.11 2389

Research on FSO-OFDM Communication System Based on Constellation Probabilistic Shaping, Lingxiao Liu and Xi Fang; *Beijing Electron. Sci. & Tech. Inst., China*. To solve satellite communication power limits, this paper designs a probabilistic shaping-based FSO-OFDM system, cutting 12.9% average transmit power while ensuring 20 km 16QAM stable transmission under clear weather.

P2.12 6081

Resource Allocation Based on Transparency-Aware and Traffic Engineering in Power Backbone Elastic Optical Networks, Chunying Wang[1], Zhiyuan An[1], Lijie Wu[1], Lei Sheng[1], Huifang Liu[1], Xiaohan Cui[2], Shaobo Qin[2] and Ruijie Zhu[2]; *Henan Electric Power Info. & Tel. Co., China. Zhengzhou Univ., China*. This paper proposes a transparency-aware Routing and Spectrum Allocation (RSA) algorithm and a traffic engineering-based RSA algorithm.

Poster Session 2 (15:30-16:00)

P2.13 3985
Design of a 1 x 2 multimode interferometer using vertically coupled multimode waveguides, Zhixue He, Jiayi Wang, Haifeng Chen and Bing Wang; *Sun Yat-Sen Univ., China*. A double layer 1x2 multimode interferometer was designed using vertically coupled multimode waveguides on InP/InGaAsP platform.

P2.14 7017
Performance Enhancement of LS Channel Estimation for FSO-OFDM Systems, Shun Lv and Xi Fang; *Beijing Electron. Sci. & Tech. Inst., China*. To improve noisy LS channel estimation in FSO-OFDM systems, we propose an enhanced method using frequency-domain sliding window filtering (LS-SWF).

P2.15 7073
Recent Advances in Microscopy: Automated Control, Imaging Technologies, and AI Applications, Yuanhao Wu, Yanjun Ji and Tingting Lang; *Zhejiang Univ. of Sci. and Tech., China*. This review introduces the latest microscope products on the market. It highlights automated control, advanced imaging technologies, and AI applications in microscopy.

P2.16 7700
An Enhanced Screening Methodology for Semiconductor Power Devices Based on Spatial and Structural Parameter Correlation, Jiacheng Huo, Yujie Wu and Tingting Lang; *Zhejiang Univ. of Sci. and Tech., China*. This paper enhances semiconductor screening by normalizing parameter deviations and applying Mahalanobis distance.

P2.17 8412
Design and PIC Simulation of 220 GHz High-Power Photonic Band Gap Gyrotron, Xinyin Cao, Jitao Yang, Jiaji Feng, Feng Zhang and Chaohai Du; *Peking Univ., China*. A 220-GHz photonic crystal gyrotron delivers 45 MW terahertz radiation with >12% efficiency.

P2.18 9234
Low Loss Fusion splicing for Novel Microhole Fibers, Wei Jiang, Wenzhe Xiao, Huajie Zhao, Dahao Xu, Caoyuan Wang and Limin Xiao; *Fudan Univ., China*. The low-loss SMF–MHF(microhole fiber) splicing via multi-pulse discharge fusion achieves sub-dB loss by tailored core-collapse for gas sensing and microfluidic photonics.

P2.19 1659
Research on Radical Polymer-Mediated Property Modulation of Perovskite Nanocrystals, Yang Zhao; *Space Engineering Univ., China*. Non-conjugated radical polymers PTEO and PTMA replaced oleate-oleylamine ligands on CsPbBr3 perovskite nanocrystals, enhancing their stability and charge transfer.

P2.20 6494
Construction of Image Edge Detection Algorithm in Machine Vision Detection of High-speed Steel Circular Saw Blade, Xinglei Xu, Jie Huang and Xiaojun Lv; *China Jiliang Univ., China*. Proposes improved Transformer for HSS saw blade edge detection, outperforms traditional models, verifies key modules.

P2.21 6292
Resource-Level Service Offloading with Classification and Adaptive Modulation in Cloud-Edge Data Center Optical Networks, Changyin Zhu[1], Shiqi Yang[1], Hong Chen[1], Weidong Shao[1], Xiaoling Wang[1], Bowen Chen[1] and Weiguo Ju[2]; [1]*Soochow Univ., China;* This paper proposes a resource-level classification and modulation-adaptive (RLC-MA) method to optimize latency, spectrum occupancy, and blocking probability in cloud-edge data center optical networks.

P2.22 9776
Real-Time Wafer Defect Classification Using the YOLO Object Detector, Jiali Zhu, Yuntao Chen and Tingting Lang; *Zhejiang Univ. of Sci. &Tech., China*. This study employs the YOLO model to automatically classify wafer defect types.

P2.23 0771
Comparative Study of Digital Holographic Microscopy and Diffraction Phase Microscopy for Quantitative Phase Imaging, Rongmiao Xue, Liwei Guo, Jiao Su and Chen Liu; *China Jiliang Univ., China*. Side-by-side evaluation revealed distinct phase artifacts and contrast mechanisms, providing guidelines for technique selection.

P2.24 1831
Bandwidth-Demodulated Hot-Wire Anemometer Based on Cobalt-Doped Fiber Bragg Grating, Wenchen Gao, Langzhe Du, Xinyong Dong, Quandong Huang, Sen Ma and Liangwen Xu; *GDUT., China*. A bandwidth-demodulated optic fiber hot-wire anemometer by using a laser-heated cobalt-doped fiber Bragg grating (CD-FBG) is presented.

P2.25 5864
Simultaneous Humidity and Temperature Sensing Based on Fiber Optic Microsphere Probes, Wenwen Qian, Peiran He, Zhewen Ding, Li Zhang, Zhixiang Huang and Chunliu Zhao; *Zhejiang Inst. of Medical Device Supervision & Testing, China*. Simultaneous humidity-temperature sensing based on dual fiber microsphere probes is proposed.

P2.26 4235
Intensity-Demodulated Optical Fiber Hot-wire Flowmeter based on Cobalt-Doped FBG, Yixuan Zeng, Liupeng-chen Pan, Sen Ma and Xinyong Dong; *GDUT, China*. This paper proposes a intensity-modulation hot-wire flowmeter based on cobalt-doped fiber Bragg grating.

Room 7, Track 15

16:00-18:00
Su4A. Biophotonics & Optofluidics II
*Presider: **Wenjun Zhou,** China Jiliang University, China*

Su4A.1 • 16:00 Invited

Fiber-optic biosensor for trace amount sample detection, Yang Ran; *Jinan Univ., China*. In this talk, we will report our recent progress on the miniaturized fiber-optic biosensor for the detection of markers in trace amount samples, facilitating the application of optical fiber sensor in the fields of self-energy supply materials and disease diagnostics.

Su4A.2 • 16:20 Invited

Fiber-optic photoacoustic spectroscopy and imaging for biomedical applications, Jun Ma; *Jinan Univ., China*. The fusion of fiber-optic sensing with photoacoustic effect brings new possibilities to advance the photoacoustic spectroscopy and imaging techniques, which inspires diverse promising biomedical applications including in vivo intravascular monitoring and brain cancer screening.

Su4A.3 • 16:40 Invited

Novel photosensitive coating-modified Ω-shaped fiber optic LSPR: From cell sensing, imaging to photothermal therapy, Zewei Luo; *Sichuan Univ., China*.

Room 8, Track 3

16:00-18:00
Su4B. Optical Sensors & Measurement VI
*Presider: **Xun Guan,** Tsinghua University Shenzhen International Graduate School, China*

Su4B.1 • 16:00 Invited

In-sensor computing based on reconfigurable optoelectronic devices, Bobo Tian; *East China Normal Univ., China*. This report summarizes recent progress of retinal devices that simultaneously possess functions for sensing optical signals, storing signals, and performing information preprocessing.

Su4B.2 • 16:20 Invited

Towards the next generation thermally-insensitive interferometers using hollow core fibres, Meng Ding; *Univ. of Southampton, UK*. Hollow-core fibres (HCFs) already offer more than 10x less thermal sensitivity than single-mode fibres. I will review our work towards realising fully temperature-insensitive interferometers, paving the way for ultra-stable fibre platforms in precision sensing and spectroscopy.

Su4B.3 • 16:40 Invited

Coupling-Based Optical Fiber Sensors: A Versatile Platform for Multiparameter Sensing Applications, Abdul Ghaffar; *Beihang Univ., China*. This work presents the design principles, fabrication methods, and application potential of coupling-based configurations, including face-to-face, side-illuminating, and twisted macro-bend structures.

Room 1, Track 2

16:00-18:00
Su4C. Optical Communications & Networks IV
*Presider: **Junwei Zhang,** Sun Yat-sen University, China*

Su4C.1 • 16:00 Invited

Secure optical transmission with Layer-0 encryption seeded by QKD, Xu Wang; *Maynooth Univ., Ireland*. We introduce a novel OTN-L0 encryption scheme to provide security in optical communication systems and demonstrated the concept in a 100-Gbps optical transmission experiment seeded by QKD system with key management interface.

Su4C.2 • 16:20 Invited

Multi-channel optical chaos generation and application, Anbang Wang; *Guangdong Univ. of Tech., China*.

Su4C.3 • 16:40 Invited

Secure optical communication based on chaotic laser technology, Zhensen Gao; *Guangdong Univ. of Tech., China*. In this talk, we will review the recent progresses on chaotic optical communication and present our recent work on high-speed secure optical communication based on chaotic optical encryption/decryption.

Room 2, Track 5

16:00-18:00
Su4D. Advanced Lasers & Applications IV
Presider: ***Fanchao Meng****, Jilin University, China*

Su4D.1 • 16:00 Invited

High coherence and low-noise diamond laser generation technology, Zhenxu Bai; *Hebei Univ. of Tech., China*. We present a high-power, high-coherence, low-noise diamond laser source that delivers exceptional spectral purity, stability, and scalability for advanced photonics, precision sensing, and defense applications, enabling the next generation of high-performance laser systems.

Su4D.2 • 16:20 Invited

Mid-infrared gas fiber lasers, Fei Yu; *Shanghai Inst. of Optics and Fine Mechanics, CAS, China*. We report the latest research on gas lasing based on anti-resonant hollow-core fibers.

Su4D.3 • 16:40 Invited

Semicondcutor microcavity chaotic lasers and their applications, Yuede Yang; *Inst. of Semiconductors, CAS, China*. We systematically investigated the nonlinear dynamics of semiconductor microcavity lasers, developed a 34-GHz bandwidth chaotic microcavity laser, and achieved 500-Gb/s random number generation as well as 25-km optical fiber breakpoint detection.

Room 3, Track 4

16:00-18:00
Su4E. Optoelectronic Integration V
Presider: ***Xin Fu****, Institute of Semiconductors, CAS, China*

Su4E.1 • 16:00 Invited

Photonic Computing Chips Based on Multi-Dimensional Multiplexing Technologies, Huifu Xiao; *Lanzhou Univ., China*. In this talk, we will talk about some of our recent works on photonic computing chips based on multi-dimensional multiplexing technologies.

Su4E.2 • 16:20 Invited

Enabling High-Capacity Optical Communications through Multidimensional Optical Signal Processing, Yuanfei Zhang; *Southeast Univ., China*.

Su4E.3 • 16:40 Invited

Multimode photonic devices for on-chip optical interconnects, Xin Fu; *Inst. of Semiconductors, CAS, China*. This talk will focus on recent advances in various multimode photonic devices for on-chip optical interconnects, covering device design, mode control, and integration strategies.

Room 6, Track 17

16:00-18:00
Su4F. Quantum Optics
Presider: ***Shengshuai Liu****, East China Normal University, China*

Su4F.1 • 16:00 Invited

High performance solid-state quantum devices by micro-nano manufacturing, Yongheng Huo; *Univ. of Sci. and Tech. of China, China*.

Su4F.2 • 16:20 Invited

Quantum information processing with photonic integrated circuits, Youngik Sohn; *KAIST, South Korea*. I will discuss how nonlinear quantum optics can be modeled and applied to complex photonic integrated circuit architectures. The proposed framework is expected to serve as a vital design tool for the development of large-scale quantum photonic systems.

Su4F.3 • 16:40 Invited

Quantum network nodes based on solid-state quantum memories, Xiao Liu; *Univ. of Sci. & Tech. of China, China*. We present recent progress on quantum network nodes using solid-state quantum memories, enabling efficient entanglement storage and distribution over optical fibers toward scalable quantum communication.

Room 7, Track 15

Su4A.4 • 17:00 Invited

Linear flip-chipped Micro-LED arrays for optogenetic probes, Xiaoyan Yi; *Inst. of Semiconductors, CAS, China.*

Su4A.5 • 17:20 Invited

Interferometric Diffuse Optics for Measuring Cerebral Blood Flow with High Brain Specificity, Wenjun Zhou; *China Jiliang Univ., China.*

Su4A.6 • 17:40 8558

From Fiber to Camera: Direct Spectral Line Acquisition by a Chip without any lens or algorithm, Shijie Ke; *Westlake Univ., China.* We demonstrate a novel integrated photonic spectrometer by incorporating grating and lens function into waveguide array. This device allows spectral lines directly imaged at the camera from the waveguide without any free optics.

Room 8, Track 3

Su4B.4 • 17:00 Invited

Avanced Optical Gas Sensing using Photoacoutics and TDLAS, Chaotan Sima; *Hubei Optics Valley Lab & Huazhong Univ. of Sci. & Tech., China.* Recent research progress and implementations on optical gas sensing using photoacoustic spectroscopy and TDLAS in HUST will be presented.

Su4B.5 • 17:20 Invited

Operando Events Monitoring with Optical Sensors in Lithium Metal Batteries, Xun Guan; *Tsinghua Univ. Shenzhen International Graduate School, China.* We develop an operando spatiotemporal super-resolution thermal monitoring system capable of real-time, super-resolution temperature mapping across the anode of lithium metal batteries, providing localized battery sensing, analysis and fault warning.

Su4B.6 • 17:40 Invited

Microcavity-Enhanced Optoelectronic Fiber Photoacoustic Spectroscopy for ppb-Level Trace Gas Sensing, Yafei Li; *Jinan Univ., China.* A miniaturized, ultrasensitive photoacoustic spectroscopy gas sensor was developed by integrating a thermally drawn multimaterial optoelectronic fiber, a T-type resonant photoacoustic cell, and a MEMS microphone at the fiber tip.

Room 1, Track 2

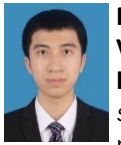
Su4C.4 • 17:00 Invited

Chaos-based Encryption for Secure Optical Communications: Advances and Applications, Chongfu Zhang; *Univ. of Electron. Sci. and Tech. of China, China.* This report presents our latest advances in chaotic encryption schemes and demonstrates their applications in optical communication scenarios.

Su4C.5 • 17:20 Invited

Explorations on high-speed optical chaos communication, Longsheng Wang; *Taiyuan Univ. of Tech., China.* This talk will present our explorations on improving the rate of optical chaos communication.

Su4C.6 • 17:40 Invited



Multiplication-free look-up-table-based Volterra decision-feedback equalizers for IM/DD systems, Junwei Zhang; *Sun Yat-sen Univ., China.* In this talk, we will review our two recently proposed multiplication-free look-up-table-based Volterra decision-feedback equalizers for IM/DD systems.

18:30-21:00 Conference Banquet & Awards Ceremony

Room 2, Track 5

Su4D.4 • 17:00 Invited

Efficiency scaling of monolithic single-frequency Er/Yb co-doped fiber MOPA via long-wavelength off-peak pumping, Quan Sheng; *Tianjin Univ., China*. We demonstrate a hundred-watt single-frequency Er/Yb co-doped fiber amplifier with a slope efficiency of 52%. The enhanced efficiency is attributed to 981 nm off-peak pumping, which mitigates Yb3+ emission and exhibits a lower quantum defect.

Su4D.5 • 17:20 Invited

High power and high brightness fiber lasers at 980nm, Tianfu Yao; *National Univ.of Defense Tech., China*. Through the strategic design of the resonant cavity and the incorporation of several brightness-enhancing techniques such as SRS, multimode beam purification, and spatial mode selection of FBGs, we have achieved high-brightness laser at ~980 nm with hundreds of watt.

Su4D.6 • 17:40 Invited

Real-time measurements of instabilities and control of soliton dynamics in mode-locked fiber lasers, Fanchao Meng; *Jilin Univ., China*. We report real-time measurements of intracavity dynamics of ultra-broadband incoherent solitons and will also present the active control of soliton wavelength and operation regime switching using a voltage-controlled gold nanofilm saturable absorber in fiber lasers.

Room 3, Track 4

Su4E.4 • 17:00 Invited

Silicon photonic self-coherent detection receivers for high-capacity and low-cost optical interconnect, Jingchi Li; *Shanghai Jiao Tong Univ., China*. We demonstrate several monolithically integrated self-coherent detection receivers for high-capacity and low-cost optical interconnect.

Su4E.5 • 17:20 9659

Quantum Dots Integrated AlGaN Diodes for Dual-Band DUV-Visible Optical Wireless Communication, Muhammad Hunain Memon, Yuchen Du, Junxing Qiu, Yang Kang, Yuanmin Luo and Haiding Sun; *Univ. of Sci. and Tech. of China, China*. We present compact AlGaN-QDs-integrated dual-band emitters (275/470 nm) enabling simultaneous or independently controllable DUV/visible links via micro-LEDs.

Su4E.6 • 17:35 5094

A Research on Power Consumption and Polarization-Insensitive Characteristics of Phase Shifters and VOA on 3 μm-SOI Platforms, Hao Wang[1], Xianjie Gao[1], Jiahao Peng[2], Yalin Li[1], Peichuan Yin[1], Aimin Wu[1] and Ruxue Wang[1]; [1]*SIMIT, UCAS, China;* [2]*USST, China*. A thermo-optic phase shifter and VOA fabricated on a 3 μm SOI, Experimental results show that it is feasible to reduce power consumption by decreasing the doping gap and width.

Room 6, Track 17

Su4F.4 • 17:00 Invited

Waveguide-coupled indistinguishable single-molecule single photon sources for on-chip quantum optics Jianwei Tang; *Huazhong Univ. of Sci. and Tech., China*. We report an organic-inorganic hybrid integrated quantum photonic platform and demonstrate near-perfect on-chip two-photon Hong-Ou-Mandel quantum interference between indistinguishable single photons from independent molecules.

Su4F.5 • 17:20 Invited

Generation, Manipulation and Application of Quantum Light Sources based on Atomic Ensembles, Jietai Jing; *East China Normal Univ., China*. We have focused on generating high-capacity, multi-beam and low-noise quantum light sources and developing high capacity, multi-node and high-fidelity quantum information systems.

Su4F.6 • 17:40 Invited

Experimental construction of high-capacity quantum information protocols, Shengshuai Liu; *East China Normal Univ., China*. We will introduce a series of high-capacity quantum information protocols that we have recently implemented based on the four-wave mixing process, including high-capacity all-optical quantum teleportation, quantum dense coding, and all-optical quantum erasure-correcting code.

18:30-21:00 Conference Banquet & Awards Ceremony

Room 7, Track 1

08:30-10:00
M1A. Optical Fiber & Waveguide Tech V
*Presider: **Ailing Zhang,** Tianjin University of Technology, China*

M1A.1 • 08:30 Invited

Structured Helical Fibers: A Versatile Platform for Advanced Photonic Angular Momentum Manipulation, Chengliang Zhu; *Northeastern Univ., China*. This presentation focuses on our recent work in structured helical fibers, showcasing their establishment as a versatile platform for advanced manipulation of photonic spin and orbital angular momentum.

M1A.2 • 08:50 Invited

Chiral photon-phonon Brillouin interaction: in twisted photonic crystal fiber and beyond, Xinglin Zeng; *Shanghai Inst. of Optics & Fine Mechanics, China*. Some recent findings on multi-dimensional Brillouin interaction in chiral PCF will be shared, including the study of topology-selective SBS and angular momentum-transferring SBS. Both nonlinear effects lead to many novel applications and will be reviewed.

M1A.3 • 09:10 Invited

Fiber Bragg grating array sensing system based on wavelength-time domain joint demodulation, Ailing Zhang; *Tianjin Univ. of Tech., China*. A wavelength-time domain joint demodulation scheme for fiber Bragg grating array distributed sensing system is demonstrated.

Room 8, Track 3

08:30-10:00
M1B. Optical Sensors & Measurement VII
*Presider: **Xuezhi Zhang,** Tianjin University, China*

M1B.1 • 08:30 Invited

Advances in Optical Measurement of Complex Freeform and Functional Structures, Lingbao Kong; *Fudan Univ., China*. This talk will deliver the advances in optical measurement technologies for complex freeform and functional structures based on the speaker's research team, including various optical measurement approaches as well as the developed system.

M1B.3 • 08:50 Invited

Renormalization Theory of Avalanche Dynamics in Narrow-bandgap Optoelectronic Devices, Runzhang Xie; *Shanghai Inst. of Technical Physics, CAS., China*. We develop a renormalization approach and micro-meso Monte Carlo method for narrow-bandgap single-carrier avalanche processes, enabling quantitative nanoscale photodetection modeling while bypassing Boltzmann transport equations.

M1B.1 • 09:10 Invited

Phase Encoding-Based Multiplexing for Fiber-Optic Heterodyne Interferometric Sensing, Xuezhi Zhang; *Tianjin Univ., China*. High-precision measurements can be achieved in optical fiber heterodyne interferometric sensing through phase analysis. Accordingly, a phase-encoding method is proposed, and its effectiveness for multiplexed sensing applications has been experimentally verified.

Room 1, Track 2

08:30-10:00
M1C. Optical Communications & Networks V
*Presider: **Tao Yang,** Beijing University of Posts and Telecommunications, China*

M1C.1 • 08:30 Invited

Breakthroughs in High-Speed Optical Modulators, Oskars Ozoliņš; *Riga Technical Univ., Latvia*. We summarize recent advances in high-speed modulators in different materials (silicon photonics, thin-film lithium niobate, heterogeneously integrated Indium Phosphide electro-absorption modulator with Silicon waveguides, Silicon Germanium).

M1C.2 • 08:50 Invited

Impairment-Aware Spectrum Allocation with Shared Protectionin C+L Band Elastic Optical Networks, Bowen Chen; *Soochow Univ., China*. This paper introduces a damage-aware shared path protection scheme by a two-dimensional frequency-time slot model.

M1C.3 • 09:10 Invited

Next-Generation High-Speed Optical Networks: Enabling Technologies and Future Directions, Toms Salgals; *Riga Technical Univ., Latvia*. This talk explores enabling technologies for next-generation high-speed optical networks, including photonic integration, optical frequency combs, and advanced modulation formats, highlighting future directions toward intelligent, energy-efficient, and scalable telecommunication infrastructures.

Room 2, Track 13

08:30-10:00
M1D. Optical Imaging, Display & Storage II
*Presider: **Han Wu,** Sichuan University, China*

M1D.1 • 08:30 Invited

Mid-infrared computational temporal and spectral ghost imaging, Han Wu; *Sichuan Univ., China*.

M1D.2 • 08:50 8983

Research on DC/AC Electric Field Sensing Technology Based on Microwave Photonics, Beilei Wu and Yihua Cai; *Beijing Jiaotong Univ., China*. This work demonstrates high-resolution, rapid electric field sensing using microwave photonics. Two schemes based on microwave photonic filters and optoelectronic oscillators successfully reconstruct AC electric field waveforms, enabling reliable monitoring in complex electromagnetic environments.

M1D.3 • 09:05 1824

Dual-Fiber Excitation of a Common-Cavity PT-Symmetric Brillouin Laser for Narrow-Linewidth Microwave Signal Generation, Qing Yan, Lei Yu, Shaofei Wang, Mingxing Li, Zepeng Wu, Wenjun He, Yajun You, Yi Liu and Xiujian Chou; *North Univ. of China, China*. We demonstrate a dual-fiber excited parity-time symmetric Brillouin fiber laser in a common-cavity configuration for narrow-linewidth microwave generation.

Room 3, PDP

08:30-10:00
M1E. Post-Deadline Papers
*Presider: **Jing Xu,** Zhejiang University, China*

M1E.1 • 08:30 ☆ 0696

A Highly Sensitive Gold-Coated PCF-SPR Biosensor for Dengue Virus Detection, Md. Siddik, Emranul Haque and Feroz Ahmed; *Independent Univ., Bangladesh*. This study introduces a gold-coated hexagonal PCF-SPR biosensor for rapid, sensitive dengue detection, showing strong performance across the RI range 1.27–1.37 with high resolution, wavelength sensitivity, and accuracy validated by FEM simulations.

M1E.2 • 08:45 ☆ 7903

Numerical Analysis of a PCF-SPR Sensor for Adulterant Detection in Milk, Emranul Haque[1], Abdullah Al Noman[2], S. M. Rakibul Islam[2], Kh Shahriya Zaman[1] and Feroz AhmedX[1]; [1]*IUB, Bangladesh;* [2]*Lamar Univ., USA*. We propose a novel photonic crystal fiber-based surface plasmon resonance sensor for the simultaneous detection of milk adulterants, which achieved wavelength sensitivities of up to 4878.05 nm/RIU for fat adulteration, and 4255.32 nm/RIU for melamine.

M1E.3 • 09:00 ☆ 5283

Comb line Extraction and Noise Characterization of Optical Frequency Combs Enabled by Fiber Brillouin Amplification, Yatan Xiong[1], Jiaqi Zhou[1] and Yan Feng[2]; [1]*SIOM, CAS, China;* [2]*HIAS, UCAS, China*. We demonstrate the extraction of individual comb lines from optical frequency combs via fiber Brillouin amplification. The extraction is applied to measure the timing jitter spectra and comb mode linewidth of optical frequency combs.

Room 6, Track 11

08:30-10:00
M1F. Plasmonics & Metamaterials II
*Presider: **Zhen Gao,** Southern University of Science and Technology, China*

M1F.1 • 08:30 Invited

Topological rainbows based on valley photonic crystals, Chunmei Ouyang; *Tianjin Univ., China*. Topological photonics has made great progress from physical concept verification to new technical applications, and valley topological photonic crystal are one of the most important candidates for future applications in functional devices.

M1F.2 • 08:50 Invited

TBD, Kaifeng Wu; *Dalian Inst. of Chemical Physics, China*.

M1F.3 • 09:10 4521

Precision Spectral Engineering of Quantum Emitters with Photonic Crystal Cavities, Muhammad Hanif Ahmed Khan Khushik[1], Shahzadi Bano[2] and Muhammad Saleem[3]; [1]*Quanzhou Univ. of Info. Eng., China;* [2]*Zhengzhou Univ., China;* [3]*BBSUTSD, Pakistan*. Photonic crystal microcavities are simulated to predict their abiltity to tailor the emission spectrum for communication and lasing applications. High Q-Factor cavities are designed.

Room 7, Track 1

M1A.4• 09:30 5983

Adaptive Optics in Waveguides: Conversion from Arbitrary Multimode to Single-mode, Zeyu Deng; *Westlake Univ., China*. In this paper, we present adaptive optics technology in the guide domain. This device uses a multimode waveguide to convert arbitrary multimode situations into a single-mode fiber and shows low loss in both VIS&IR-band.

M1A.5• 09:45 6146

Design and Analysis of a Dual-Core Helical Fiber for Multichannel OAM Propagation, Jing Wen, Zhifeng Wang, Liang Zhang, Heming Wei, Mengshi Zhu, Jianxiang Wen and Fufei Pang; *Shanghai Univ., China*. A dual-core helical fiber supporting OAM modes is numerically investigated using a finite difference algorithm. It maintains circular polarization across all wavelengths, and phase matching further enables simultaneous OAM excitation in both cores.

Room 8, Track 3

M1B.4 • 09:30 0844

Fabrication of a Sapphire Vibration Diaphragm Based on Laser Micromachining, Xingkui Pang[1], Guangze Yao[1], Zhifeng Wang[1], Xuecheng Liu[1], Hongchun Gao[2], Yong Yang[2] and Fufei Pang[1]; [1]*Shanghai Univ., China;* [2]*Beijing Inst. of Aero. Control Device, China*. This paper presents a UV nanosecond laser processing technique that achieves 10 μm thinning of 100 μm-thick sapphire diaphragms. The fabricated sapphire diaphragm demonstrates excellent vibration response within the 0-7g acceleration range.

M1B.5 • 09:45 4052

MEMS chip-based single proof-mass triaxial fiber-optic accelerometer, Bing Yao[1], Shiqi Duan[1], Qixin Yao[1], Shiya Zhao[1], Fan Zhou[1], Yao Li[1], Chaoyue Liu[2] and Ping Lu[2]; [1]*State Grid Hubei Direct Current Co., China;* [2]*HUST, China*. We demonstrate a monolithic triaxial optical accelerometer based on MEMS chip, which seamlessly combines a compact footprint with ultralow noise. The sensing structure employs a shared proof mass, enabling significant miniaturization while achieving nano-g resolution.

M1B.6 • 10:00 8211

Design of a High-Sensitivity, Broadband Sapphire-Based MEMS Vibration Sensor, Zhifeng Wang[1], Xingkui Pang[1], Guangze Yao[1], Xuecheng Liu[1], Hongchun Gao[2], Yong Yang[2] and Fufei Pang[1]; [1]*Shanghai Univ., China;* [2]*Beijing Inst. of Aero. Control Device, China*. This paper presents a novel sapphire-based vibration sensor design.

Room 1, Track 2

M1C.4 • 09:30 Invited

Research on Key Technologies of "Solar-Blind" Ultraviolet Communication, Tao Yang; *Beijing Univ. of Posts and Tel., China*. This report presents our research group's work on addressing key technical challenges in traditional UV communication, including channel modeling methods, high-efficiency demodulation algorithms, and the development of high-speed long-range real-time communication systems.

M1C.5 • 09:50 Invited

Direct Detection with Field Recovery for Beyond 400G Optical Interconnects, Yixiao Zhu; *Shanghai Jiao Tong Univ., China*. The next-generation AI data-center interface is expected to be scaled up by a further factor of 2. In this talk, we discuss enabling solutions to address capacity and distance constraints by exploring the phase diversity.

Room 3, Track PDP

M1E.4 • 09:15 ☆ 6051

Reconfigurable multifunctional nano-photonic device for multiband thermal radiation management, Mingyu Luo and Chao Lu; *The Hong Kong Polytechnic Univ., HK.* We innovatively composed the top layer of metals with slits and introduced a non-volatile PCM Ge2Sb2Te5 (GST) for selective absorption/radiation regulation to make the maximum absorption rate from 95% to 22%.

M1E.5 • 09:30 ☆ 8429

Multiscale Insights into Ultrafast Laser-Induced Dynamics through Coupled Two-Temperature Model and Molecular Dynamics, Prem Dheeraj Mortha, Upendra V Bhandarkar and Deepak Marla; *Indian Inst. of Tech. Bombay, India*. This study presents multiscale hybrid modeling fs-laser gold heating, integrating Two-Temperature Model with Molecular Dynamics within LAMMPS.

M1E.6 • 09:45 ☆ 0461

Integrated DAS/BOTDR with dual microcombs, Zhaoyu Li, Rong Tang, Xiangyang Lu, Jianting Li, Teng Tan and Yunjiang Rao; *Univ. of Electron. Sci. and Tech.of China, China*. We propose and demonstrate a integrated dual-microcombs based DAS/BOTDR scheme.

M1E.7 • 10:00 ☆ 8351

Widely tunable single-mode slotted Fabry-Perrot lasers via quantum well intermixing, Zhengkai Jia[1], Frank Peters[2] and Hua Yang[1]; [1]*Inst. of Semiconductors, CAS, China;* [2]*Univ. College Cork, Ireland*. This paper demonstrates a regrowth-free, two-section slotted Fabry-Perot laser fabricated by using quantum well intermixing and a conventional FP process.

Room 6, Track 11

M1F.4 • 09:25 4641

High-Q Local and Nonlocal Plasmonic Resonances, Yao Liang[1], Yuri Kivshar[2] and Din Ping Tsai[1]; *City* [1]*University of Hong Kong, HK;* [2]*Australian National Univ., Australia*. Overcoming plasmonic losses, a universal inverse-square-root law employs controlled geometry for a local-to-nonlocal resonance transition in plasmonic metasurfaces, boosting Q factors over 100 times. This establishes a foundational principle for record-setting nanophotonic devices.

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