



# LOPET 2023

2023 3<sup>rd</sup> International Conference on  
Laser, Optics and  
Optoelectronic Technology

2023年第三届激光，光学和光电子技术国际学术会议

2023年5月26-28日 | 中国·昆明

# 会议手册

## CONFERENCE MANUAL

· 支持单位 ·

广东省物联网芯片与系统应用技术工程实验室  
中国光电行业平台



# Content

<b>CONTENT .....</b>	<b>0</b>
<b>CONFERENCE INTRODUCTION .....</b>	<b>1</b>
<b>ORGANIZATION .....</b>	<b>2</b>
<b>COMMITTEE .....</b>	<b>3</b>
<b>CONFERENCE AGENDA .....</b>	<b>4</b>
<b>KEYNOTE SPEECH 1 .....</b>	<b>9</b>
<b>KEYNOTE SPEECH 2 .....</b>	<b>10</b>
<b>KEYNOTE SPEECH 3 .....</b>	<b>11</b>
<b>INSTRUCTIONS FOR PRESENTATIONS .....</b>	<b>12</b>
<b>NOTICE FOR PARTICIPANTS .....</b>	<b>13</b>

## Conference Introduction

**2023 3rd International Conference on Laser, Optics and Optoelectronic Technology (LOPET 2023) will be held during May 26-28, 2023 in Kunming, China.** LOPET 2023 is a hybrid conference combing both in-person and virtual experiences. It dedicates to creating a platform for academic communications between specialists and scholars in the fields of Laser, Optics and Optoelectronic Technology. The conference will create a path to establish a research relationship for the authors and listeners with opportunities for collaboration and networking among the universities and institutions for promoting research and developing technologies.

LOPET 2023 welcomes all high-quality research papers and presentations from related research fields. The conference will invite distinguished speakers to deliver keynote speeches and invited talks. Accepted and presented papers for regular sessions will be published in the Conference Proceedings and submitted to EI Compendex, Scopus and other Abstracting and Indexing (A&I) databases. We are looking forward to your participation!

2023年第三届激光，光学和光电子技术国际学术会议(LOPET 2023)将于2023年5月26日-28日在中国昆明举行。会议将围绕“激光，光学和光电子技术及应用”的最新研究领域，为来自国内外高等院校、科学研究所、企事业单位的专家、教授、学者、工程师等提供一个分享专业经验，扩大专业网络，面对面交流新思想以及展示研究成果的国际平台，探讨本领域发展所面临的关键性挑战问题和研究方向，以期推动该领域理论、技术在高校和企业的发展和应用，也为参会者建立业务或研究上的联系以及寻找未来事业上的全球合作伙伴。

## Organization

Guangdong Engineering Laboratory of IoT IC and System Application Technologies (hereinafter referred to as the "Laboratory") was approved by the Guangdong Provincial Development and Reform Commission in 2012. It is an important provincial and ministerial research and development platform in the field of Internet of Things (IoT) in Guangdong Province. Relying on Sun Yat-sen University, the laboratory gathers the talents and teams of the School of Electronics and Information Technology (School of Microelectronics), and supports the development of local research institutes such as Huadu Industrial Technology Research Institute of Sun Yat-sen University and Shunde Research Institute of Sun Yat-sen University. As a provincial and ministerial-level scientific and technological innovation platform, the laboratory is oriented to the major strategic needs of the country and Guangdong's electronic information industry, focusing on the cutting-edge, core and fundamental technologies of the IoT and communication systems in the next three to five years. The main research directions of the laboratory include IoT identification, sensing, positioning and 5G, 5G-Advanced, 6G as well as other emerging fundamental communication technologies, and extend to the engineering and application fields like real-time multimedia data processing and storage, IoT terminal networking and optimization, edge computing and AI, low-power M2M communication, software and hardware co-design of IoT chips, broadband/narrowband signal transmission and processing, etc. After more than ten years of technological innovation and accumulation, the laboratory has achieved a series of major original research results, patented technologies and high-end products, covering RFID, QR code, GPS, Wi-Fi, Bluetooth, visible light communication /positioning, RISC-V, dedicated CPU, audio and video processing, energy harvesting, wireless multimedia data transmission, multi-mode MIMO and other technical fields, where many technologies have found applications in the industry. In addition, through the collaborations with world-class universities, scientific research institutes and well-known enterprises, the laboratory has carried out research and development of industrial common key technologies in the field of IoT and has formed an important foundation on IoT chips and system design, testing, and industrialization platform development.

广东省物联网芯片与系统应用技术工程实验室（以下简称“实验室”）于 2012 年由广东省发展与改革委员会批准建设，是广东省在物联网领域的重要省部级研发平台。实验室以中山大学为依托，凝聚校内电子与信息工程学院（微电子学院）的人才与科技力量，支撑中山大学花都产业科技研究院、中山大学顺德研究院等地方研究院的建设。实验室作为省部级科技创新平台，面向国家和广东省电子信息产业的重大战略需求，重点聚焦未来三至五年的物联网与通信系统前沿、核心、共性技术，以物联网标识、传感、定位及 5G、5G-Advanced、6G 等新兴基础通信技术领域为主要研究方向，并向工程技术应用领域拓展为实时多媒体数据处理与存储、物联网终端组网与优化、边缘计算与 AI、低功耗 M2M 通信、物联网芯片软硬件协同设计、宽/窄带信号传输与信息处理等多个子方向。经过十余年的技术创新和积累，实验室形成了拥有自主知识产权的一系列重大原创性研究成果、专利技术和高端产品，涵盖 RFID、二维码、GPS、Wi-Fi、蓝牙、可见光通信/定位、RISC-V、专用 CPU、音视频处理、能量收集、无线多媒体数据传输、多模态 MIMO 等技术领域，并已推动多项技术的产业化应用。此外，实验室通过与国际一流科研院所和知名企业的交流合作，在物联网领域开展产业共性关键技术的研发工作，在物联网芯片及系统设计、测试、产业化平台建设等方面形成了重要基础。

## Committee

### General Chair

Prof. Ming Jiang, Sun Yat-sen University, China

### Organizing Committee

Prof. Ruifang Dong, National Time Service Center, Chinese Academy of Sciences, China

Prof. Zhaoyang Zhang, Xi'an Jiaotong University, China

Prof. Wei Guo, Ningbo Institute of Material Technology and Engineering, China

Prof. Xiaotian Li, Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences, China

Prof. Rajib Biswas, Tezpur University, India

Assoc. Prof. Xianwen Liu, Beijing Institute of Technology, China

Assoc. Prof. Leila Yousefi, University of Tehran, Iran

Dr. M.A. Butt, Samara University, Russia

Dr. Rohan Katti, Bennett University, India

### International Technical Program Committee

Prof. Abbas Zarifkar, Shiraz University, Iran

Prof. Salman Noach, Jerusalem College of Technology, Israel

Prof. Chandra Shakher, Center for Sensors, Instrumentation and Cyber-Physical System Engineering, India

Prof. Jannick Rolland, Institute of Optics, University of Rochester, USA

Prof. Manuel Filipe Costa, Universidade do Minho, Portugal

Prof. Mohammed M. Shabat, Islamic University of Gaza, Gaza Strip, Palestinian Authority

Assoc. Prof. Paulo Pereira Monteiro, University of Aveiro, Portugal

Dr. Farshad MIRAMIRKHANI, Isik University, Turkey

Dr. Patrice SALZENSTEIN, Centre National de la Recherche Scientifique, France

Dr. Lee Siang Chuah, Universiti Sains Malaysia, Malaysia

Dr. Graciana Puentes, Universidad de Buenos Aires, Argentina

Dr. Andrey Pryamikov, Prokhorov General Physics Institute of the Russian Academy of Sciences, Russia

Dr. Hani Kbash, Aston University, UK

## Conference Agenda

2023 年 5 月 26 日 / 26th May, 2023 Lobby Floor, Kunming Weiju Guihua Hotel	
13: 00 - 17: 00	Registration/报到注册
2023 年 5 月 27 日 / 27th May, 2023 SOHO 1, 4 <sup>th</sup> Floor, Kunming Weiju Guihua Hotel ZOOM Conference ID: 835 7726 6838 Password: 666387	
Main Conference (09:00-12:05) Session Chair: Prof. Huabei Jiang, University of South Florida, USA	
09: 00 - 09: 05	Opening Address
嘉宾报告 / Keynote speeches	
09: 05 – 09: 50	<b>Keynote Speech 1: Advanced Photoacoustic Tomography</b> 蒋华北教授 (南佛罗里达大学, 美国) Prof. Huabei Jiang, USF Center for Advanced Biomedical Imaging, University of South Florida, USA
09: 50 – 10: 35	<b>Keynote Speech 2: DNN-aided Signal Processing for Underwater Wireless Optical Communication Systems</b> 江明教授 (中山大学, 中国) Prof. Ming Jiang, Sun Yat-sen University, China
10: 35 – 10: 50	Photography & Coffee Break
10: 50 – 11: 35	<b>Keynote Speech 3: Mode-locked infra-red fiber lasers at 2 <math>\mu\text{m}</math> using nanomaterials</b> Harith Ahmad 教授 (马来亚大学, 马来西亚) Prof. Harith Ahmad, University of Malaya, Malaysia
11: 35 – 11: 45	Oral Presentation 1: Adjustable MMI for dynamic on-chip monitoring based on nano-opto-electro-mechanical interaction Kejian Zhu (朱科建), Inspur Electronic Information Industry Co., Ltd, China
11: 45 – 11: 55	Oral Presentation 2: Correcting tristimulus colorimeters via spectrum-enhanced algorithm Yichi Zhang(张亦弛), Soochow University, China
11: 55 – 12: 05	Oral Presentation 3: Creating a spatial quasi-spherical focal spot and optical ring with controllable characteristics based on orthogonally superimposed dipoles antenna Zhixiong Xie(谢志雄), Fujian Normal University, China
12: 00 – 14:00	Lunch
Oral Session (14:00-17:00)	
14: 00 – 14: 10	Oral Presentation 4: Optical image encryption scheme based on random phase mask and phase shift digital holography Yousheng Ke(柯友胜), Wuhan University of Science and Technology, China
14: 10 – 14: 20	Oral Presentation 5: Thick-mask optimization based on particle swarm optimization algorithm Jinwei Pan(潘金伟), Wuhan University of Science and Technology, China
14: 20 – 14: 30	Oral Presentation 6: Elliptical polarization characterization of scattered light in dark field defect inspection technology Fengyou Wu(吴风友), Wuhan University of Science and Technology, China
14: 30 – 14: 40	Oral Presentation 7: An extraordinary temperature point of $\text{Eu}^{3+}:\text{Y}_2\text{SiO}_5$ for spectral hole burning based ultra-stable laser Xiuji Lin(林修己), PSL University, Paris, France

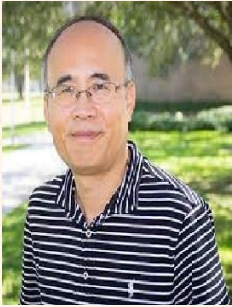
14: 40 – 14: 50	Oral Presentation 8: On-chip light field modulation based on meta-waveguides Spectral Responses Yuzhu Pan(潘禹竹), Southeast University, China
14: 50 – 15: 00	Oral Presentation 9: Highly Luminescent and Stable Inorganic Perovskite Micro-Nanocomposites and their Application Zhihai Wu(吴之海), Southeast University, China
15: 00 – 15: 10	Oral Presentation 10: Operational Lifetime Prediction of Blue Quantum Dots Light-Emitting Diode Cuili Chen(陈翠丽), Beijing Institute of Technology, China
15: 10 – 15: 20	Oral Presentation 11: The reconfigurable diffractive deep neural network based on tunable metasurfaces Chengkun Dong (董成坤), Southeast University, China
15: 20 – 15: 30	Oral Presentation 12: Antireflective micro hole array on ZnS surface by femtosecond laser Kun Zhou(周堃), Beijing University of Technology, China
15: 30 – 15: 40	Oral Presentation 13: Adaptive star extraction algorithm in high dynamic Xuwei Zhang (张徐玮), Shanghai Academy of Spaceflight Technology, China
15: 40 – 15: 50	Oral Presentation 14: Effects of Laser Parameters on Microgrooves morphology of SiC/SiC Composites fabricated by Femtosecond Laser Xin Li(李鑫), Beijing University of Technology, China
15: 50 – 16: 00	Oral Presentation 15: Cavity gain drop caused by revisited Gouy phase Xing Liu(柳兴), Tsinghua University, China
16: 00 – 16: 10	Oral Presentation 16: Irradiation damage distribution characteristics of DKDP in large-aperture high-energy laser Chang Liu (刘畅), University of Science and Technology Beijing, China
16: 10 – 16: 20	Oral Presentation 17: Nonlinear Vectorial Holography with Quad-atom Metasurfaces Guanqing Zhang (张冠卿), Hong Kong Baptist University, Hong Kong, China <a href="#">Online</a>
16: 20 – 16: 30	Oral Presentation 18: Femtosecond laser rapidly targets gene transfection and regulates cell expression Ziyan Song (宋紫岩), Beijing Institute of Technology, China <a href="#">Online</a>
16: 30 – 16: 40	Oral Presentation 19: Optical-Carrier Radio-Frequency Phase Stabilization Transfer Based on Phase Lock Loop Dongjie Wang(王东杰), The 54th Research Institute of China Electronics Technology Group Corporation, China <a href="#">Online</a>
16: 40 – 16: 50	Oral Presentation 20: Study on model of laser interference on UAV detector Peng Zhang(张鹏), Space Engineering University, China <a href="#">Online</a>
16: 50 – 17: 00	Oral Presentation 21: Multichannel coherent channelized reception of high frequency broadband signals based on cascaded modulation dual combs Haoyang Li(李昊阳), The 54th Research Institute of China Electronics Technology Group Corporation, China <a href="#">Online</a>
17: 00 – 17: 10	Oral Presentation 22: Ultra Wideband Flexible Frequency Conversion for Integrated Electronic Systems Anni Liu(刘安妮), The 54th Research Institute of China Electronics Technology Group Corporation, China <a href="#">Online</a>
17: 10 – 17: 20	Oral Presentation 23: The change of reflectivity of CFRP femtosecond laser ablation based on pump-probe Boda Yang(杨博达), Beijing Institute of Technology, China <a href="#">Online</a>
17: 20 – 17: 30	Oral Presentation 24: The demonstration of integrated coupled DFB lasers to generate tunable microwave signal Hefei Qi(齐合飞), The 54th Research Institute of China Electronics Technology Group Corporation, China <a href="#">Online</a>

17: 30 – 17: 40	<p>Oral Presentation 25: Noise-Robust Hyperspectral Anomaly Detection via Relative Total Variation Collaborative Representation</p> <p>Chensong Yin(尹辰松), The 54th Research Institute of China Electronics Technology Group Corporation, China <a href="#">Online</a></p>
-----------------	---

<p>2023 年 5 月 27 日 / 27th May, 2023</p> <p>海报展示/Poster Presentations</p> <p>SOHO 1, 4<sup>th</sup> Floor, Kunming Weiju Guihua Hotel</p>	
Poster 1: Study on the influence of laser pulse width on nanosecond pulse laser cleaning of 2A12 aluminum alloy surface composite coating	Zhi Wei(魏智) University in Changchun, China
Poster 2: The influence of laser power on the effect of different paint layers on the surface of 2024 aluminum alloy with nanosecond pulse laser	Wei Zhang(张巍) University in Changchun, China
Poster 3: U-L-shaped silicon modulator for efficient and high-speed transmission	Zijian Zhu(朱子健) Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, China
Poster 4: Ultra-Broadband, Compact, Low-loss 3-dB Power Splitter Using Adiabatic Subwavelength Grating in Silicon-on-insulator	Xiang Liu(刘翔) Shanghai Institute of microsystems and information technology, Chinese Academy of Sciences, China
Poster 5: High-Finesse Optical Enhancement Cavity and its Finesse Measurement	Xinyi Lu (陆心怡) Tsinghua University, China
Poster 6: Distributed Optical Fiber Strain Sensing under Ultra-low Temperature Based on Rayleigh Backscattering	Yantao Liu(刘砚涛) Beijing Institute of Structure and Environment Engineering, China
Poster 7: High repetition rate passively Q-switched microchip laser at 1.5 $\mu\text{m}$	Kexiong Sun(孙克雄) Huazhong University of Science and Technology, China
Poster 8: Research on Precise Proportioning Method of Matrine by Applying Spectral Analysis Technique	Jian Zhang (张健) Guangzhou Huali College, China
Poster 9: Theoretical analysis of rotational Doppler effect when vortex beam is misaligned with rotational axis	Lingfei Zheng(郑玲飞) Tianjin University of Technology and Education, China
Poster 10: Simulation Research on Adaptive Nulling Technology Based on Wavelength Selective Switching Delay Network	Guangsu Xing(邢贯苏) China Electronics Technology Group Corporation 54th, China

Poster 11: Simulation of Two PMTs Layout Differences for the Imaging Atmospheric Cherenkov Telescope	Haoshen Fan (范昊樂) Kunming University, China
Poster 12: Adaptive star extraction algorithm in high dynamic	Yuan Gao(高原) Shanghai Aerospace Control Technology Institute, China
Poster 13: Experimental and numerical study on molten pool dynamics and porosity formation mechanism of laser beam oscillation welding of titanium and aluminum	Jinbo Yu(俞锦波) Wenzhou University, China
Poster 14: Design of improved Gram–Schmidt orthonormalization method for phase extraction of random phase shifting grating projection interferograms	Lulu Mao(毛露露) Xianyang Normal University, China
Poster 15: Optical imaging method of space target based on compressive sensing	Hang Yin(尹航) Space Engineering University, China
Poster 16: A thermo-optic switch based on RAMZI with graphene heater	Wenqi Yu(于文琦) China Electronics Technology Group Corporation 54th, China
Poster 17: Study of the polarization conversion characteristics of surface liquid crystal vertical cavity surface emitting lasers	Xiaoyu Zhang(张晓昱) Beijing University of Technology, China
Poster 18: Study on Polarization Characteristics of LC-VCSEL Arrays by Liquid Crystal Rotation Angle	Yan Wen(闻燕) Beijing University of Technology, China
Poster 19: Flexible Non-fullerene Organic Photodetectors Enabled by a Metal Ion-Chelated Polymer Cathode Interfacial Layer	Jianhua Xiao(肖建花) University of Electronic Science and Technology of China, China
Poster 20: Slippery Liquid Infused Surface with Corrosion Resistance Fabricated through Temporally Shaped Femtosecond Laser Processing	Xiaoyu Liu(刘晓雨) Beijing University of Technology, China
Poster 21: Free-space Optical Link for Quantum Key Distribution using Unmanned Vehicle	Yao Zhang(张峒) Nanjing University, China
Poster 22: Signal enhancement and mechanism analysis of pulse shaped femtosecond laser-induced breakdown spectroscopy of fused silica	Maolin Guo(郭茂林) Beijing Institute of Technology, China
Poster 23: Fiber optical in-situ sensor for accurate monitoring the discharge quantity of lead-acid batteries	Yunxin Hu(胡蕴薪) Heilongjiang University, China
Poster 24: Detection of E. coli O157:H7 via GO-modified fiber-optic SPR sensor with Au nanoparticle signal amplification	Shiyu Jiang(姜石玉) Heilongjiang University, China
Poster 25: Femtosecond Laser Surface Treatment of Aerospace High Modulus CFRP Composites and Its Effect on Surface Wettability	Qingeng Meng(孟庆赓) Beijing Institute of Technology, China

Poster 26: Three-dimensional surface reconstruction based on known point cloud normal vector	Zhiyi Wang(王之一) Changchun Institute of Optics, Fine Mechanics and Physics (CIOMP), China
Poster 27: A path planning method for large-aperture non-spherical surface detection profilometer	Tingyu Wang(王廷煜) Changchun Institute of Optics, Fine Mechanics and Physics (CIOMP), China
Poster 28: A Frequency-hopping System Based on Optical Frequency Comb	Yu Liang(梁宇), The 54th Research Institute of China Electronics Technology Group Corporation, China
Poster 29: Analysis of the effect of surface recombination on the results of microwave photoconductive decay method for measuring minority carrier lifetime of HgCdTe epilayers	Shan Chen(陈姗), Kunming Physics Institute, China
Poster 30: Preparation of g-C <sub>3</sub> N <sub>4</sub> @V <sub>2</sub> C MXene composites and their visible photocatalytic properties	Ming Li(李明), Guilin University of Technology, China
Poster 31: Ultrafast carrier dynamics in metallic Ti <sub>2</sub> CTx and semiconductor-like Nb <sub>4</sub> C <sub>3</sub> Tx MXenes	Bofeng Xue(薛博丰), Beijing Institute of Technology, China
Poster 32: Fabrication of a Fabry-Pérot Dielectric Filter with Sub-Nanometer Narrow Bandwidth	Peng Xu(徐鹏), Nanjing University, China
Poster 33: An infrared and visible image fusion method based on multi-head attention feature and autoencoder	Chenwei Yang(杨晨伟), Southwest Technology Physics Institute, China
Poster 34: Femtosecond laser ablation evolution of ultrahard double-layer films	Xinchuang Zhang(张新闻), Beijing Institute of Technology, China
Poster 35: Influence of Multiple-beam Interference on Diffractive Waveguide Imaging	Wenjie Ji(纪文杰), Beijing Jiaotong University, China

**Keynote Speech 1**

**Prof. Huabei Jiang**  
**USF Center for Advanced Biomedical Imaging**  
**University of South Florida, Tampa, Florida, USA**

Dr. Huabei Jiang started his career as an assistant professor at Clemson University (Clemson, South Carolina, USA) in 1997 and became an associate professor and a professor at Clemson University in 2001 and 2003, respectively. He moved to University of Florida (Gainesville, Florida, USA) in 2005 and became the J. Crayton Pruitt Family Endowed Chair there in 2008. Huabei joined the University of South Florida (USF) (Tampa, Florida, USA) in 2017 as a Professor and Director of the USF Center for Advanced Biomedical Imaging. Huabei has published nearly 500 peer-reviewed scientific articles and patents. He is also the author of four books on diffuse optical, photoacoustic, thermoacoustic, and fluorescence molecular imaging, respectively. He has been continuously funded by the National Institutes of Health (NIH) since 1998 and has won numerous national and international awards. Huabei is a Fellow of OSA/OPTICA, SPIE, and AIMBE. Outside of his research/teaching, Huabei enjoys practicing Chinese Calligraphy and paintings (ink/color pencil, watercolor, pastel, acrylic, and oil). He had a one-person exhibition of his artworks in July 2019 in Chengdu, China, and has won multiple awards in several international art competitions since 2021.

**Speech Title: Advanced Photoacoustic Tomography****Abstract**

In this keynote talk, I will describe several new concepts and strategies to realize advanced photoacoustic tomography (PAT) for biomedical imaging. These new ideas will allow us to photoacoustically visualize tissue conductivity, cellular scattering property and molecular contrast agent in superb resolution, hence offering several advanced variations of PAT. I will illustrate these new concepts and strategies using simulated and experimental data.

## Keynote Speech 2



**Prof. Ming Jiang**  
**Sun Yat-sen University, China**

Ming Jiang received the B.Eng. and M.Eng. degrees in electronic engineering from the South China University of Technology (SCUT), China, and the Ph.D. degree in electronic engineering from the University of Southampton, U.K. He has substantial international and industrial experience with Fortune 500 telecom companies. From 2006 to 2013, he had held key research and development or management positions at Samsung Electronics Research Institute (SERI), U.K.; Nortel Networks' research and development center, China; and the telecom equipment maker New Postcom, China, where he actively participated in numerous collaborative projects across the EU, North America and Asia, contributing to algorithm and system research and standardization, as well as radio access and core network product designs. Since June 2013, he has been a Full Professor and a Ph.D. Supervisor with Sun Yat-sen University, China, where he focuses on both fundamental research and technology transfer, and leads a number of national, provincial and industrial research projects. He has coauthored six books, 90+ articles, 100+ patents and 400+ 3GPP/IEEE standardization contributions. He received several Chinese local council awards in 2011 and 2022, including Innovative Leading Talents, Outstanding Experts, and Top Overseas Scholars.

### **Speech Title: DNN-aided Signal Processing for Underwater Wireless Optical Communication Systems**

#### **Abstract**

Visible light communication (VLC) has been recently proposed for high-rate data services. Thanks to the prominent advantages of abundant spectrum, zero radio radiation, low cost, etc., it has been considered as a promising technology for 6G wireless systems targeting hot-spot broadband services. Specifically, the application of VLC in the underwater scenarios results in the so-called underwater VLC (UVLC) or underwater wireless optical communication (UWOC) systems. In the underwater environment, the channel conditions are complicated due to various effects of the water waves, such as absorption, scattering and turbulence, which exhibit different statistical properties with diverse water types. Such capricious phenomena make signal processing operations, such as channel estimation (CE) and signal detection (SD), become challenging particularly for high-rate reliable transmissions. To address these challenges, we devise a deep learning (DL) based joint channel classification (CC), CE and SD scheme for UWOC systems. Different from existing systems, where CE is typically an independent and fundamental module, we combine CE with SD by utilizing a new deep neural network (DNN). Furthermore, the proposed scheme exploits the channel characteristics extracted through an offline training powered by a new robust DNN channel classifier (CC), which can identify and classify the water types online to produce optimized estimated combinational weights (ECW) for improving the CE/SD performances under time-varying UWOC channels. Simulation and experimental results demonstrate the superiority of the proposed system in terms of link performances in various UWOC channel environments.

## Keynote Speech 3



**Prof. Harith Ahmad**  
**University of Malaya, Malaysia**

Professor Datuk Dr Harith Ahmad FASc obtained his BSc in Physics with First Class Honours from the University of Malaya in 1979. Subsequently, he obtained his MSc from the University of Wales in 1980, followed by his PhD in 1983 from the same institution. Upon returning to Malaysia in 1983, he became a member of the academic staff of UM, and since then has led the university's research into the area of photonics. He is currently a Distinguished Professor, and is also the director of the Photonics Research Centre of the University of Malaya, a Higher Education Centre of Excellence (HiCoE) under the purview of the Ministry of Education, Malaysia (MOE). His substantial contributions in the area of photonics has been acknowledged with multiple awards and recognitions, including as a Fellow of Akademi Sains Malaysia and recipient of the Malaysia-Toray Science Foundation Award, Merdeka Award for Scholastic Achievement and ASEAN Outstanding Scientist and Technology Award. He is very active as both a researcher and an academician, with numerous ISI ranked research publications to his name, as well as supervising numerous undergraduate and postgraduate students in photonics.

### **Speech Title: Mode-locked infra-red fiber lasers at 2 $\mu\text{m}$ using nanomaterials**

#### **Abstract**

Generally, mode-locked fiber lasers with nanomaterials can be a useful source in photonics applications. Mode locking is a technique used to generate ultra-short optical pulses in optical fiber gain materials opening up numerous applications in areas such as communication, sensing, and medical sciences. Usually, generating these ultrashort pulses can be undertaken using active means such as electro-optical and acoustic-optic crystals. These have been superseded by nanomaterials such as graphene, graphene oxide, carbon nanotubes, topological insulators, transition-metal dichalcogenides, and many others.

In this presentation, the basic idea of mode locking will be presented, and different approaches to obtaining ultrashort pulses will be discussed. Also, the historical development of nanomaterials on saturable absorbers will be elaborated. At the same time, the fabrication of these materials will be highlighted, especially the preparation, and also how these materials are deposited on the optical fibers to act on saturable absorbers.

# Instructions for Presentations

## Oral Presentation

1. Timing: a maximum of 15 minutes total, including speaking time and discussion. Please make sure your presentation is well timed. Please keep in mind that the program is full and that the speaker after you would like their allocated time available to them.
2. You can use CD or USB flash drive (memory stick), make sure you scanned viruses in your own computer. Each speaker is required to meet her/his session chair in the corresponding session rooms 10 minutes before the session starts and copy the slide file (PPT or PDF) to the computer.
3. It is suggested that you email a copy of your presentation to your personal inbox as a backup. If for some reason the files can't be accessed from your flash drive, you will be able to download them to the computer from your email.
4. Please note that each session room will be equipped with a LCD projector, screen, point device, microphone, and a laptop with general presentation software such as Microsoft PowerPoint and Adobe Reader. Please make sure that your files are compatible and readable with our operation system by using commonly used fonts and symbols. If you plan to use your own computer, please try the connection and make sure it works before your presentation.
5. Movies: If your PowerPoint files contain movie, please make sure that they are well formatted and connected to the main files.

## Poster Presentation

1. Please make your poster size is A1 in PDF format.
2. Posters are required to be condensed and attractive. The characters should be large enough so that they are visible on a computer screen.
3. During your poster session, the posters will be shown on Zoom.

## Notice for Participants

欢迎各位专家学者们参加第三届激光，光学和光电子技术国际学术会议(LOPET 2023)，为了您在会议期间方便顺利，请注意以下事项：

Welcome all leaders and researchers to the 2023 3rd International Conference on Laser, Optics and Optoelectronic Technology (LOPET 2023). For your convenience during the conference, please pay attention to the following concerns:

### 线上参会：

1. 会议将通过线上及线下同步召开，线上参会请先下载 **ZOOM** 最新版。  
下载链接：<https://zoom.us/download>
2. 参会者可通过以下任意一个方式进入线上会议室：(请将名称改为自己的姓名拼音。)
  - a. 输入对应的会议 ID 和密码，参见会议日程表格。
  - b. 点击链接以启动 ZOOM，直接进入会议室。

会场链接：

<https://zoom.us/j/83577266838?pwd=TnpIdmt2azJGQXQ5SW5GZHhVWTJHZz09>

会议号：835 7726 6838

密码：666387

1. The conference will be held on **ZOOM Meeting**. To participate online, please download the latest version of ZOOM first

Download link: <https://zoom.us/download>

2. You can access the online conference room by **either** of the following two ways: (**Please use your real name in the meeting room.**)

- a. Input the ZOOM Meeting ID and the Password respectively, which is shown on the conference agenda.

**OR**

- b. Click the link:

Main Conference:

<https://zoom.us/j/83577266838?pwd=TnpIdmt2azJGQXQ5SW5GZHhVWTJHZz09>

Conference ID: 835 7726 6838

Password: 666387

2. 参会期间，如需提问，可待演讲完毕后，在对话框中发送“2”，主持人将会为您解除静音。

2. During the conference, if you would like to ask questions to the speaker, please send number “2” in the chat box after the speech. The host will unmute you.

### 线下参会：

1. 会议地址：昆明维居桂花大酒店 SOHO 1 会议室
2. 酒店信息：昆明维居桂花大酒店（云南昆明西山区滇池路 56 号）
  1. Address: SOHO 1 of Kunming Weiju Guihua Hotel
  2. Hotel information: Kunming Weiju Guihua Hotel (No. 56 Dianchi Road, Xishan District, Kunming, Yunnan, China)



**LOPET** **Contact us**

Vivian Wang | 王老师

联系手机(微信同号): 19139737380

咨询邮箱: [lopetcontact@163.com](mailto:lopetcontact@163.com)

QQ咨询: 2644824662

