APE | Asia Photonics Expo

Asia Light Conference
Conference Manual 2024

5th — 8th March, 2024
Sands Expo and Convention Centre
Singapore

unesco | Light: Science & Applications | eLight | Light: Advanced Manufacturing

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Angle-Resolved Micro-Spectrometer

ARMS

- Photonic crystals
- Strong light–matter coupling
- Micro/nano structures
- Structural color
- PCSEL
- BICs

ARMS is the only precision optical instrument that provides automated multi-mode angle-resolved spectral characterization for samples at the microscopic scale. It delivers researchers and industrial customers with multi-dimensional optical field signals, including space, momentum, energy, and polarization.

- **High resolution**

With an angle-resolution as accurate as 0.1° and wavelength resolution of 0.1nm

- **Ultra-broad spectral range**

Covering a broad range of 400 ~ 1700nm

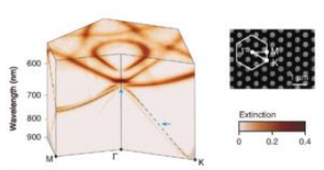
- **Captured in one shot**

Capable of one-shot angle-resolved spectrum imaging measurement in millisecond (ms)

- **Automated functionality**

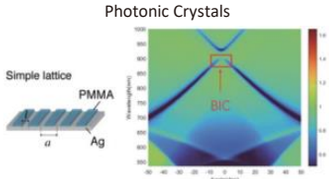
The system supports multiple automated modes, including transmission, reflection, and fluorescence

ARMS characterizes BICs of 1D photonic crystals in momentum space.

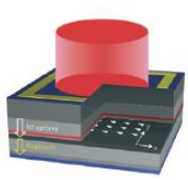


Physical review letters, 2018, 120, 186103.

BIC in the Momentum space of Photonic Crystals

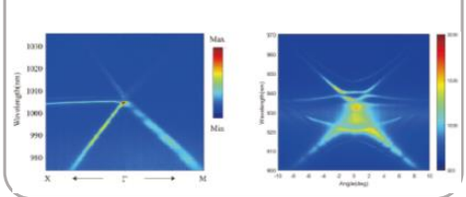


Applications of ARMS in the characterization of fluorescence emission properties in PCSEL.

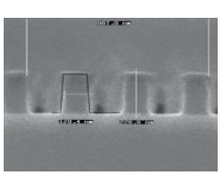


Nature, 2023, 618, 727–732.

PCSEL Schematic diagram of the structure

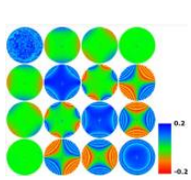


Angle-resolved Mueller polarimeter



Phys.stat.sol. 2008,4,743-747

SEM image of a photoresist grating



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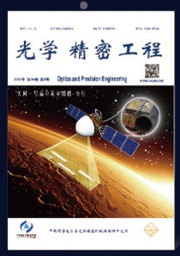
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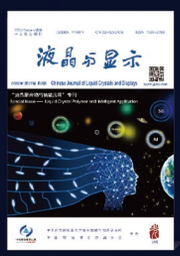
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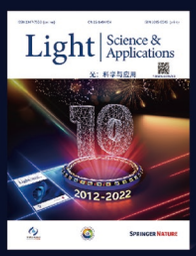
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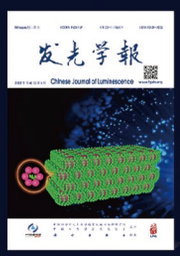
Chinese Journal of Luminescence
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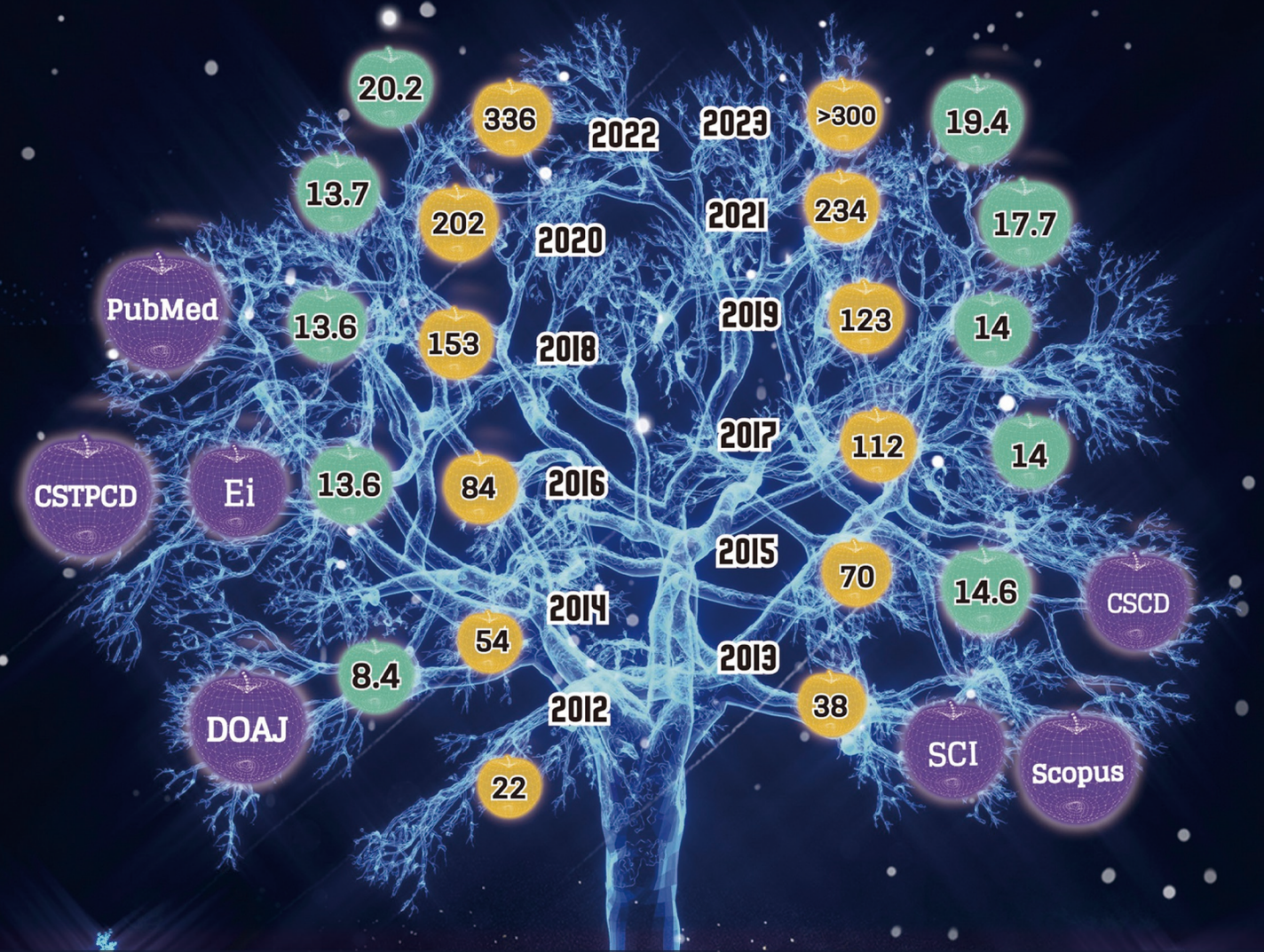
Publication year Indexed by Impact Factor Published article



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ABOUT ASIA LIGHT CONFERENCE IN SINGAPORE

5th — 8th March, 2024
Sands Expo and Convention Centre
10 Bayfront Ave, *Singapore*

Asia Light Conference 2024 is the academic conference of Asia Photonics Expo. It is hosted by journals *Light: Science & Applications*, *eLight*, and *Light: Advanced Manufacturing*, taking place from March 5th — 8th, 2024 in Sands Expo and Convention Centre (Marina Bay Sands) 4th Floor Meeting Room, Singapore.

Highlighted by UNESCO's International Day of Light, **Asia Light Conference 2024** consists of plenary session and 10 parallel keynote & invited sessions: Tunable Optoelectronics, Micro and Nanophotonics I, Topological Photonics, Quantum Photonics, Terahertz Optoelectronics, Nonlinear Photonics and Functional Lasers, Nano Materials and Luminescence, Advanced Manufacturing, Micro and Nanophotonics II and Biophotonics and Medical Optics. With **Asia Light Conference 2024**, we hope to contribute to the wellbeing of optics frontiers and showcase the advances in optics and photonics.

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PLENARY SESSION

6th March AM | L4 Melati Jnr 4010AB - 4111

Time	Content
	Chair: Prof. Yuhong Bai (CIOMP, Chinese Academy of Sciences)
08:30-08:35	Prof. Cheng-Wei Qiu (National University of Singapore) (Opening Speech)
08:35-08:42	Prof. Hong Jin (CIOMP, Chinese Academy of Sciences) (Opening Speech)
08:42-08:52	Prof. Yun-Feng Xiao (Peking University) (Opening Speech) Title: Light is a brand
08:52-09:00	Group Photo
	Chair: Prof. Cheng-Wei Qiu (National University of Singapore)
09:00-09:40	Prof. Xiang Zhang (University of Hong Kong) (Plenary Talk) Title: Photonics at sub-wave length scale
09:40-10:20	Prof. Qihuang Gong (Peking University) (Plenary Talk) Title: will be updated later on the conference's website
10:20-11:00	Prof. Alexandra Boltasseva (Purdue University) (Plenary Talk) Title: Advancing Nanophotonics: From Tailorable Materials to Novel Phenomena
11:00-11:40	Prof. Shanhui Fan (Stanford University) (Plenary Talk) Title: Control of thermal radiation with photonic structures
11:40-12:20	Prof. Vladimir M. Shalaev (Purdue University) (Plenary Talk) Title: Extreme Space-Time Optics & Quantum Meta-Photonics
12:25-13:30	Lunch

To access the bio & abstract of the plenary speakers, please visit:
http://asia.lightconference.cn/light/1.html

SESSION 1
TUNABLE OPTOELECTRONICS

6th March PM | L4 Orchid Jnr 4212

Time	Content
	Chair: Prof. Yang Li
14:00-14:35	Prof. Yanqing Lu (Nanjing University, China) (Keynote) Title: From Liquid Crystal Photonics to Soft Mattonics
14:35-15:00	Prof. Yuzhi Shi (Tongji University, China) (Invited) Title: Exploiting optical lateral forces in optical tweezers
15:00-15:25	Prof. Yanjun Liu (Southern University of Science and Technology, China) (Invited) Title: Photopolymerization-Induced Phase Separation for the Fabrication of Electrically Tunable Liquid Crystal Microlens Arrays
15:25-15:45	Coffee break
	Chair: Prof. Yanqing Lu
15:45-16:10	Prof. Yang Li (Tsinghua University, China) (Invited) Title: Integrated lithium niobate photonics: from communications to metrology
16:10-16:30	Prof. Dan Luo (Southern University of Science and Technology, China) (Contributed) Title: Light-driven liquid crystal elastomer actuators: polarization manipulation and application in terahertz metasurface
16:30-16:50	Dr. Jiajie Chen (Shenzhen University, China) (Contributed) Title: Optothermal Tweezers for Bio-Nanoparticles Manipulation and DNA Identification
To access the bio & abstract of the speakers, please visit: http://asia.lightconference.cn/introduce-pid-2-ty-6-tty-13.html	

SESSION 2
MICRO AND NANOPHOTONICS I

6th March PM | L4 Orchid Jnr 4312

Time	Content
	Chair: Prof. Wei Li
14:00-14:35	Prof. Baohua Jia (RMIT University, Australia) (Invited) Title: Laser nanoprinting integrated with in-situ characterization system for miniaturize photonic devices
14:35-15:00	Prof. Qijie Wang (Nanyang Technological University, Singapore) (Invited) Title: Broadband Room-Temperature Mid-infrared Detection with 2D Materials and Nanoparticles
15:00-15:25	Dr. Haiwei Yin (Ideaoptics Inc., China) (Invited) Title: Applications of Deep Spectroscopy in Micro and Nanophotonics
15:25-15:45	Coffee break
	Chair: Prof. Baohua Jia
15:45-16:10	Prof. Wei Li (CIOMP, China) (Invited) Title: Dynamic and directional control of thermal radiation
16:10-16:35	Prof. Guangwei Hu (Nanyang Technological University, Singapore) (Invited) Title: Hyperbolic polaritonics with bulk optical crystals
16:35-17:00	Prof. Cheng Zhang (Huazhong University of Science and Technology, China) (Invited) Title: Metasurface-enabled Multifunctional Displays
17:00-17:25	Prof. Qiaoqiang Gan (KAUST, Saudi Arabia) (Invited) Title: Plasmonic-based “rainbow” Chip for Intelligent Spectrometer
17:25-17:45	Prof. Zhongwei Jin (China Jiliang University, China) (Contributed) Title: Deep-learning enhanced inverse design of meta-devices
To access the bio & abstract of the speakers, please visit: http://asia.lightconference.cn/introduce-pid-2-ty-6-tty-13.html	

SESSION 3
TOPOLOGICAL PHOTONICS

7th March AM | L4 Orchid Jnr 4212

Time	Content
	Chair: Prof. Avik Dutt
09:00-09:35	Prof. Che Ting Chan (Hong Kong University of Science and Technology, China) (Keynote) Title: Topological photonic crystals realized using connected and nested structures
09:35-10:00	Prof. Sebabrata Mukherjee (Indian Institute of Science, India) (Invited) Title: Floquet Solitons in Photonic Topological Materials
10:00-10:20	Prof. Zhen Gao (Southern University of Science and Technology, China) (Contributed) Title: Realization of a topological one-way photonic crystal fiber
10:20-10:40	Coffee break
	Chair: Prof. Che Ting Chan
10:40-11:15	Prof. Mordechai Segev (Technion – Israel Institute of Technology, Israel) (Keynote) Title: Topological Photonics: Where do we go from here?
11:15-11:40	Prof. Avik Dutt (University of Maryland, USA) (Invited) Title: Floquet synthetic dimensions for analog Hamiltonian simulation of topological physics
11:40-12:00	Prof. Ya Bai (Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China) (Contributed) Title: Lightwave driven dynamics in topological states
12:10-13:30	Lunch
To access the bio & abstract of the speakers, please visit: http://asia.lightconference.cn/introduce-pid-2-ty-6-tty-13.html	

SESSION 4
QUANTUM PHOTONICS

7th March AM | L4 Orchid Jnr 4312

Time	Content
	Chair: Prof. Jin Liu
09:00-09:35	Prof. Xuehua Wang (Sun Yat-sen University, China) (Keynote) Title: Highly-efficient realization of room-temperature strong coupling quantum states
09:35-10:00	Prof. Kartik Srinivasan (National Institute of Standards and Technology (NIST), USA) (Invited) Title: Quantum light sources on silicon nitride PICs: bulk nonlinearity, heterogeneously-integrated quantum dots, and vapor-phase atoms
10:00-10:25	Prof. Bo Wang (Nanyang Technological University, Singapore) (Invited) Title: Weakly-Confined perovskite quantum dots as high purity room-temperature single-photon sources
10:25-10:45	Coffee break
	Chair: Prof. Xuehua Wang
10:45-11:10	Prof. Fei Ding (Leibniz University Hannover, Germany) (Invited) Title: High-rate intercity quantum key distribution with a semiconductor single-photon source
11:10-11:35	Prof. Zhanghai Chen (Xiamen University, China) (Invited) Title: Manipulation of Van der Waals Exciton Polaritons
12:10-13:30	Lunch

To access the bio & abstract of the speakers, please visit:
http://asia.lightconference.cn/introduce-pid-2-ty-6-tty-13.html

SESSION 5
TERAHERTZ OPTOELECTRONICS

7th March PM | L4 Orchid Jnr 4212

Time	Content
	Chair: Prof. Xiaojun Wu
14:00-14:35	Prof. Mona Jarrahi (University of California, Los Angeles, USA) (Keynote) Title: Plasmonic Terahertz Optoelectronics
14:35-15:00	Prof. Kosuke Murate (Nagoya University, Japan) (Invited) Title: Recent advances in THz parametric generation and detection techniques
15:00-15:20	Prof.Tao Zhao (University of Electronic Science and Technology of China, China) (Contributed) Title: Ultra-broadband absorption limit by MXene nano-thin film
15:20-15:40	Coffee break
	Chair: Prof. Mona Jarrahi
15:40-16:05	Prof. Xiaojun Wu (Beihang University, China) (Invited) Title: Generation of 45-mJ High-Energy Strong-Field THz Radiation from Lithium Niobate Crystals
16:05-16:30	Prof. Aparajita Bandyopadhyay (Indian Institute of Technology Delhi, India) (Invited) Title: Fiber-coupled handheld THz scanners for field applications
16:30-16:50	Prof. Cheng Chi (Beijing Institute of Technology, China) (Contributed) Title: High-efficiency broadband achromatic metalens for terahertz regime
16:50-17:10	Dr. Xurong Li (University of California, Los Angeles, USA) (Contributed) Title: High-speed and super-resolution terahertz imaging with a plasmonic photoconductive focal-plane array
To access the bio & abstract of the speakers, please visit: http://asia.lightconference.cn/introduce-pid-2-ty-6-tty-13.html	

SESSION 6
NONLINEAR PHOTONICS AND FUNCTIONAL LASERS

7th March PM | L4 Orchid Jnr 4312

Time	Content
	Chair: Prof. Yuri Kivshar
14:00-14:35	Prof. Uriel Levy (The Hebrew University of Jerusalem, Israel) (Keynote) Title: Active metasurfaces
14:35-15:00	Prof. Rupert F. M. Oulton (Imperial College London, UK) (Invited) Title: Photon thermalization and Bose-Einstein condensation in a InGaAs quantum well open microcavity
15:00-15:25	Prof. Renmin Ma (Peking University, China) (Invited) Title: Reconfigurable Moiré nanolaser arrays with phase synchronization
15:25-15:45	Coffee break
	Chair: Prof. Renmin Ma
15:45-16:10	Prof. Yuri Kivshar (Australian National University, Australia) (Invited) Title: Nonlinear metaphotonics empowered by resonances
16:10-16:35	Prof. Kosmas L. Tsakmakidis (National and Kapodistrian University of Athens, Greece) (Invited) Title: Broadband true invisibility of 3D electrically large objects
16:35-17:00	Prof. Hong-Gyu Park (Seoul National University, Korea) (Invited) Title: Vortex nanolaser based on a photonic disclination cavity
17:00-17:25	Prof. Linde Zhang (Shanghai Tech University, Synlumin Conuninex (Shanghai) Enterprise Development Co., Ltd, China) (Invited) Title: Designable spatially coherent wideband radiation and its application in white light lasers
17:25-17:45	Prof. Wenxin Wang (Harbin Engineering University(Qingdao), China) (Contributed) Title: Lattice plasmons: generation and applications
To access the bio & abstract of the speakers, please visit: http://asia.lightconference.cn/introduce-pid-2-ty-6-tty-13.html	

SESSION 7
NANO MATERIALS AND LUMINESCENCE

8th March AM | L4 Orchid Jnr 4212

Time	Content
	Chair: Prof. Feng Wang
09:00-09:35	Prof. Xiaogang Liu (National University of Singapore, Singapore) (Keynote) Title: Lanthanide Transducers for Advanced Imaging and Assistive Technology
09:35-10:00	Prof. Xiyan Li (Nankai University, China) (Invited) Title: High efficient halide pervoskite materials for lighting and display application
10:00-10:25	Prof. Hans H. Gorris (Masaryk University, Czech Republic) (Invited) Title: Single-molecule immunoassays based on upconversion nanoparticles (UCNP)
10:25-10:45	Coffee break
	Chair: Prof. Xiaogang Liu
10:45-11:10	Prof. Feng Wang (City University of Hong Kong, China) (Invited) Title: Taming energy transfer in micro/nanostructured materials
11:10-11:35	Prof. Sanyang Han (Tsinghua University, China) (Invited) Title: Triplet energy transfer at lanthanide nanocrystal-molecule interface
11:35-11:55	Prof. Xue Liu (Nanyang Technological University, Singapore) (Contributed) Title: Fluorescent graphene quantum dot sensor array for precise multi-label biothiol detection enabled by artificial intelligence
11:55-13:30	Lunch

To access the bio & abstract of the speakers, please visit:
http://asia.lightconference.cn/introduce-pid-2-ty-6-tty-13.html

SESSION 8
ADVANCED MANUFACTURING

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Time	Content
	Chair: Prof. Zhanshan Wang
09:00-09:35	Prof. Hongbo Sun (Tsinghua University, China) (Keynote) Title: O-FIB and beyond: Pursuing super-resolution in fs laser 3D manufacturing
09:35-10:00	Prof. Mohsen Rahmani (Nottingham Trent University, UK) (Invited) Title: Thermally controlled metasurfaces for sensing applications and image generation
10:00-10:25	Dr. Rachel Won (Nature Photonics, UK) (Editor's talk) Title: Publishing your papers in Nature journals
10:25-10:45	Coffee break
	Chair: Prof. Mohsen Rahmani
10:45-11:20	Prof. Zhanshan Wang (Tongji University, China) (Keynote) Title: Manufacture and metrology of X-ray and EUV mirrors
11:20-11:45	Prof. Yoshito Tanaka (Hokkaido University, Japan) (Invited) Title: Nanoplasmonic forces and actuators by controlling light scattering
11:45-12:10	Prof. Arseniy Kuznetsov (Institute of Material Research and Engineering (IMRE), Singapore) (Invited) Title: Dielectric metasurfaces for passive and tunable flat optics
12:10-12:30	Prof. Liaoyong Wen (Westlake University, China) (Contributed) Title: Aluminum-Based Multiscale 3D Lithography: Concept and Applications
12:30-13:30	Lunch
To access the bio & abstract of the speakers, please visit: http://asia.lightconference.cn/introduce-pid-2-ty-6-tty-13.html	

SESSION 9
MICRO AND NANOPHOTONICS II

8th March PM | L4 Orchid Jnr 4212

Time	Content
	Chair: Prof. Shuwen Zeng
14:00-14:35	Prof. Zhipei Sun (Aalto University, Finland) (Keynote) Title: Miniaturized Spectrometers with Bandgap Engineerings
14:35-15:00	Prof. Qing Dai (National Center for Nanoscience and Technology, China) (Invited) Title: Control of polaritons in low-dimensional nanomaterials
15:00-15:25	Prof. Di Zhu (National University of Singapore, Singapore) (Invited) Title: Non-classical light generation and control on thin-film lithium niobate photonic integrated circuits
15:25-15:45	Coffee break
	Chair: Prof. Zhipei Sun
15:45-16:10	Prof. Shuwen Zeng (French National Centre for Scientific Research , France) (Invited) Title: Ultra-sensitive Plasmonic Biosensors based on Two-Dimensional NanoMaterials
16:10-16:35	Prof. Jianwei Wang (Peking University, China) (Invited) Title: Topological Quantum Photonics
16:35-16:55	Prof. Yang Chen (University of Science and Technology of China, China) (Contributed) Title: Chiroptics empowered by resonant metastructures
To access the bio & abstract of the speakers, please visit: http://asia.lightconference.cn/introduce-pid-2-ty-6-tty-13.html	

SESSION 10
BIOPHOTONICS AND MEDICAL OPTICS

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Time	Content
	Chair: Prof. Yukun Wang
14:00-14:35	Prof. Robert J. Zawadzki (University of California Davis, USA) (Keynote) Title: Progress on assessment of retinal function with optical coherence tomography (OCT)
14:35-15:00	Prof. Hongda Wang (The Changchun Institute of Applied Chemistry, China) (Invited) Title: Studying the structure and functions of cell membranes by single molecule approaches
15:00-15:25	Prof. Tong Ling (Nanyang Technological University, Singapore) (Invited) Title: Label-free imaging of functional activities in primary neurons and retinal cells
15:25-15:45	Coffee break
	Chair: Prof. Robert J. Zawadzki
15:45-16:10	Prof. Yasuno Yoshiaki (University of Tsukuba, Japan) (Invited) Title: Computational augmentation of optical coherence microscopy
16:10-16:35	Prof. Linbo Liu (Nanyang Technological University, Singapore) (Invited) Title: Spectrally extended line field optical coherence tomography angiography
16:35-16:55	Dr. Xinyu Liu (Singapore Eye Research Institute, Singapore) (Contributed) Title: Triple-input polarization-sensitive optical coherence tomography in ophthalmology
16:55-17:10	Poster Awards Ceremony

To access the bio & abstract of the speakers, please visit:
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Congratulations
on the success of Asia Light Conference 2024!

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Company Profile

Spectroscopy is an optical sensing technology that uses light as a messenger to detect matter's information. With the emergence of novel materials such as metamaterials, traditional energy spectra are insufficient to meet the detection demands. It needs to develop comprehensive spectral technologies capable of covering multi-dimensional light fields signals, such as momentum, polarization, phase, etc. Meanwhile, driven by the demands of high-throughput material analysis, it is imperative to systematically introduce artificial intelligence deep learning technology. We collectively refer to these technologies as Deep Spectroscopy.

Ideaoptics is the first spectral technology enterprise that develops Deep Spectroscopy based on photonic and artificial intelligence technology. We are working within applications including research & science, microelectronics, optoelectronics, photonics, energy, biomedicine and industrial inspection and metrology. We provide spectrometers, spectral systems and customized spectral analysis solutions. We use Deep Spectroscopy to help customers solve problems more efficiently and at lower cost.

2011	The first full-band UV-Vis-NIR miniature spectrometer in China.
2013	The first angle resolved spectrometer.
2014	The first angle-resolved micro-spectrometer.
2016	The first modular micro-spectroscopy system.
2021	The first optical metrology equipment for wafer-level AR optical waveguides.
2022	The first specialized optical measurement system of metalens and metasurfaces.

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