

## **Asia Light Conference Conference Manual 2024**

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





eLight Light Manufacturing



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  $0.1^\circ$  and wavelength resolution of 0.1 nm

#### • Ultra-broad spectral range

Covering a broad range of 400 ~ 1700nm

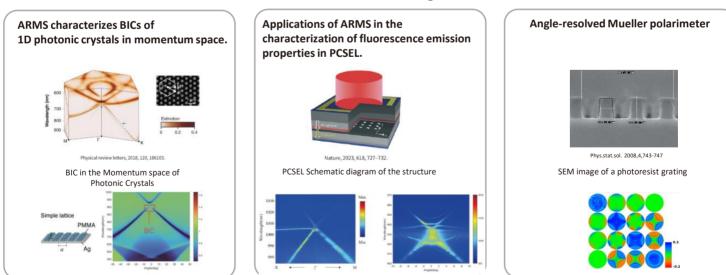
#### • Captured in one shot

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

idecoptio

#### • Automated functionality

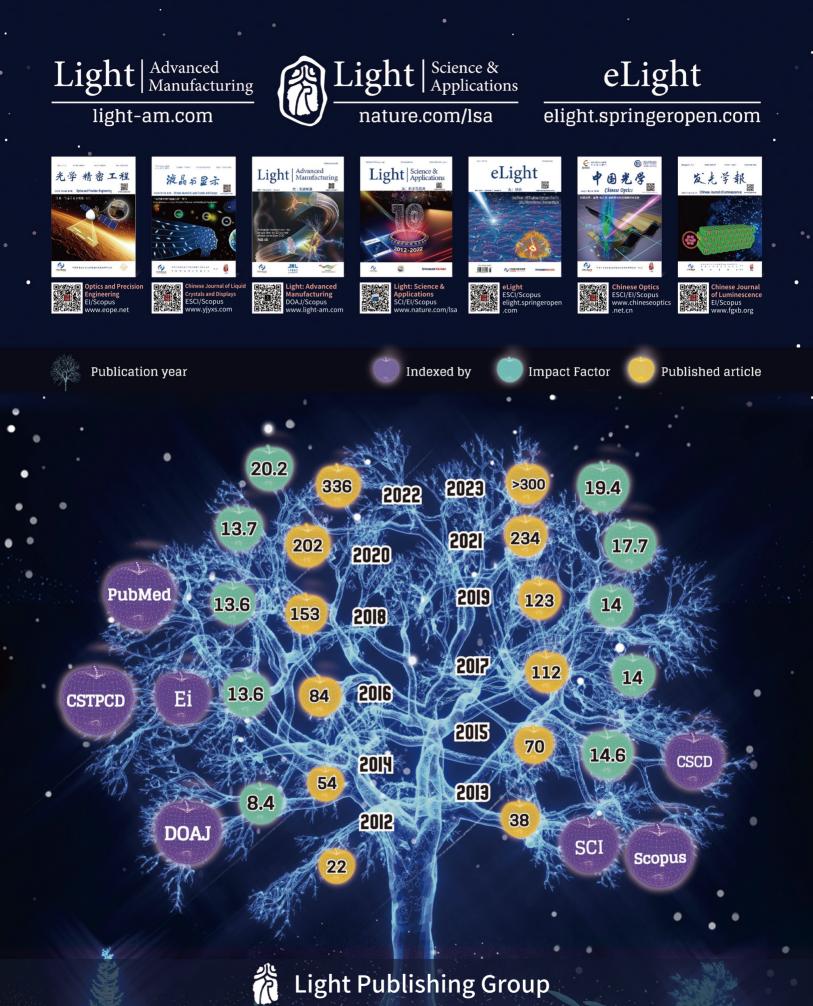
The system supports multiple automated modes, including transmission, reflection, and fluorescence



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#### Innovator in deep spectroscopy



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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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Dr. Yukun Wang, CIOMP, Chinese Academy of Sciences

## **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. Ping Jia (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	
Cha	ir: 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:	

## 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. Xue Bai (Jilin University, China) (Invited) Title: Lanthanide based materials and optoelectronic devices	
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	
16:10-16:35	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	
16:35-17:00	Prof. Zhihan Zhu (Harbin University of Science and Technology, China) (Invited) Title: Nonlinear toolkits for shaping structured light	
17:00-17:20	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	
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. Min Qiu (Westlake University, China) (Keynote) Title: Optical manipulation on solid surfaces	
14:35-15:00	Prof. Baohua Jia (RMIT University, Australia) (Invited) Title: Laser nanoprinting integrated with in-situ characterization system for miniaturize photonic devices	
15:00-15:25	Prof. Qijie Wang (Nanyang Technological University, Singapore) (Invited) Title: Broadband Room-Temperature Mid-infrared Detection with 2D Materials and Nanoparticles	
15:25-15:45	Coffee break	
Chair: Prof. Min Qiu		
15:45-16:10	Prof. Wei Li (CIOMP, China) (Invited) Title: Multidimensional manipulating and sensing of photons	
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	
17:25-17:50	Dr. Haiwei Yin (Ideaoptics Inc., China) (Invited) Title: Applications of Deep Spectroscopy in Micro and Nanophotonics	
17:50-18:10	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. Jing Zhang (Shanxi University, China) (Invited) Title: Atomic Bose-Einstein condensate in a twisted-bilayer optical lattice	
11:10-11:35	Prof. Fei Ding (Leibniz University Hannover, Germany) (Invited) Title: High-rate intercity quantum key distribution with a semiconductor singl photon source	
11:35-12:00	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.htm		

## 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. Fan Zhang (Fudan University, China) (Invited) Title: NIR-II Fluorescent Probes for in vivo Multiplexed Biodetection		
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. Xiyan Li (Nankai University, China) (Invited) Title: High efficient halide pervoskite materials for lighting and display application		
11:35-12:00	Prof. Sanyang Han (Tsinghua University, China) (Invited) Title: Triplet energy transfer at lanthanide nanocrystal-molecule interface		
12:00-12:20	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		
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 8 Advanced Manufacturing

#### 8th March AM | L4 Orchid Jnr 4312

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: will be updated later on the conference's website		
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. Dangyuan Lei (City University of Hong Kong, China) (Invited) Title: Plasmonic nanocavity enhanced nonlinear optics	
16:35-17:00	Prof. Jianwei Wang (Peking University, China) (Invited) Title: Topological Quantum Photonics	
17:00-17:20	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

#### 8th March PM | L4 Orchid Jnr 4312

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		
16:55-17:15	Dr. Jiajie Chen (Shenzhen University, China) (Contributed) Title: Optothermal Tweezers for Bio-Nanoparticles Manipulation and DNA Identification		
17:15-17:30	Poster Awards Ceremony		
To access the	bio & abstract of the speakers, please visit: http://asia.lightconference.cn/introduce-pid-2-ty-6-tty-13.html		

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# Innovation

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## **Congratulations** on the success of Asia Light Conference 2024!

## **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.



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