

# MOC2025 TECHNICAL PROGRAM

*Sunday, 12 October*

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## **Satellite Conference: High School Session**

9:30–11:00 Poster Session

11:00–12:30 Tutorial Talks

Photonics integration and devices by semiconductor material

Y. Chiu, *National Sun Yat-sen Univ. (Taiwan)*

The history of telescopes and binoculars

T. Yatagai, *Utsunomiya Univ. and Univ. of Tsukuba (Japan)*

## **12:30–13:00 Award Ceremony for High Schools**

**Lunch (13:00–13:55)**

## **13:55–14:00 Welcome Remarks and Introductory for “Microoptics for Sustainable Society ~ Green Photonics”**

Local Steering Committee Chair:

O. Sugihara, *Utsunomiya Univ.*

## **14:00–16:30 Session SS: Special Session “Microoptics for Sustainable Society ~ Green Photonics”**

Chairs: Y. Kokubun, *Institute of Technologists*

O. Sugihara, *Utsunomiya Univ.*

### **SS-1 Creating innovations to realize Society 5.0 and beyond**

14:00 K. Kyuma, *National Agriculture and Food Research Organization (Japan)*

### **SS-2 Opportunities and challenges of photonics as sustainable infrastructure**

14:45 S. Namiki, *AIST (Japan)*

**Break (15:15–15:30)**

### **SS-3 Nanoimprint lithography performance advances for nanofabrication**

15:30 S. Hirai, *Canon Inc. (Japan)*

### **SS-4 Green photonics initiatives at Utsunomiya University**

16:00 N. Hagen, *Utsunomiya Univ. (Japan)*

**Break (16:30–17:00)**

## **17:00–19:00 Welcome Party**

**9:00–9:15 Opening Remarks**

Honorary Conference Chair:

K. Iga, *Science Tokyo*

Conference Co-chairs:

S. Kimura, *Toshiba Corp.*

K. Ogawa, *Japan Women's Univ.*

**9:15–12:30 Session PS: Plenary Session**

Chairs: S. Kimura, *Toshiba Corp.*

K. Ogawa, *Japan Women's Univ.*

**PS-1 Nanostructured photonic devices and circuits**

9:15 T. Baba, *Yokohama National Univ. (Japan)*

**PS-2 VCSEL progress: High single mode power and arrays**

10:00 K. Choquette, *Univ. of Illinois (USA)*

**Break (10:45–11:00)**

**PS-3 The revolution of silicon photonics**

11:00 M. Lipson, *Columbia Univ. (USA)*

**PS-4 Next-generation sensing with micro-optics**

11:45 H. Ottevaere, *Vrije Universiteit Brussel (Belgium)*

**12:30–12:45 MOC Award Ceremony**

**Lunch (12:45–13:45)**

**13:45–15:30 Session A: Integrated Nonlinear and Topological Photonics**

Chairs: T. Miyamoto, *Science Tokyo*

T. Sato, *NTT, Inc.*

**A-1 Kerr frequency combs for data communications (Invited)**

13:45 A. L. Gaeta, *Columbia Univ. (USA)*

**A-2 Monolithically integrated terahertz light source (Invited)**

14:15 M. Jarrahi, *Univ. of California, Los Angeles (USA)*

**A-3 On-chip pulse analyzer implemented on a silicon photonics chip**

14:45 K. Kondo, R. Hayama, and O. Sugihara, *Utsunomiya Univ. (Japan)*

**A-4 Observation of lasing in chiral edge states induced by synthetic gauge fields in photonic crystals**

15:00 C. H. Jeng, Y. H. Chen, J. S. Wu, and T. C. Lu, *National Yang Ming Chiao Tung Univ. (Taiwan)*

**A-5 Observed peculiarities of high-speed dynamics of the Kerr effect and two-photon absorption in silicon nanowire waveguides**

15:15 S. Heinsalu, V. Zayets, and A. Noriki, *AIST (Japan)*

**15:30–17:30 Session PO: Poster Session**

Chairs: H. Ishii, *Furukawa Electric Co., Ltd.*  
T. Kita, *Waseda Univ.*

(15:30–16:30) Even numbers

(16:30–17:30) Odd numbers

- PO-1 Evaluation of Laguerre-Gaussian beam propagation under rain using split-step beam propagation and phase screen methods**  
A. Onoe, M. Teranishi, and K. Ogawa, *Japan Women's Univ. (Japan)*
- PO-2 A six-port Si<sub>3</sub>N<sub>4</sub> resonant filter design with bus waveguides vertically and sideways coupled to a microring resonator for 3D photonic networks-on-chip**  
W. Zhou and S. Lam, *Xi'an Jiaotong-Liverpool Univ. (China)*
- PO-3 Differentiable design of freeform projector with spatial light modulator**  
H. Wang<sup>1</sup>, J. Liu<sup>2</sup>, and Y. Luo<sup>2</sup>, <sup>1</sup>*Shenzhen Univ. (China)*, <sup>2</sup>*Tsinghua Univ. (China)*
- PO-4 Molecular dynamics-based modeling of infrared absorption in acetone under varying concentrations**  
C. Y. Shin<sup>1</sup>, B. S. Shin<sup>2</sup>, and K. Hamamoto<sup>1</sup>, <sup>1</sup>*Pusan National Univ. (Korea)*, <sup>2</sup>*Kyushu Univ. (Japan)*
- PO-5 No show**
- PO-6 No show**
- PO-7 Detachable light-induced self-written optical waveguides and optical self-couplings**  
M. Ichioka, T. Takizawa, H. Terasawa, S. Tamesue, O. Sugihara, and H. Kakurai, *Utsunomiya Univ. (Japan)*
- PO-8 Fabrication of curved optical waveguide by light-induced self-written method with camera film mask**  
M. Tomiki, *Shizuoka Univ. (Japan)*
- PO-9 Design of polarization and intensity distribution for laser drilling of an odd-shaped hole using deep learning-based surrogate model**  
A. Mizutani and A. Kitamura, *Osaka Metropolitan Univ. (Japan)*
- PO-10 Optical properties of temperature-dependent polymer dispersed liquid crystal based on observation of internal microstructures**  
A. Ogiwara<sup>1</sup> and H. Kakiuchida<sup>2</sup>, <sup>1</sup>*Kobe City College of Technology (Japan)*, <sup>2</sup>*AIST (Japan)*
- PO-11 Study on the temperature and injection-current dependences of electroluminescence from GaN-based optoelectronic devices**  
C.-H. Wu, J.-C. Wu, and Y.-F. Wu, *Ming Chi Univ. of Tech. (Taiwan)*
- PO-12 Tuning the optical properties of metallic nanostructures by sputtering current**  
D. D. P. W. Patabendige and R. Fujimura, *Utsunomiya Univ. (Japan)*
- PO-13 Brillouin optical correlation-domain reflectometry based on convexity extraction algorithm**  
R. Inoue<sup>1</sup>, Y. Kosaka<sup>1</sup>, R. Mogami<sup>1</sup>, K. Kikuchi<sup>1</sup>, Y. Mizuno<sup>2</sup>, and H. Lee<sup>1</sup>, <sup>1</sup>*Shibaura Inst. of Tech. (Japan)*, <sup>2</sup>*Yokohama National Univ. (Japan)*
- PO-14 No show**
- PO-15 Design of high-efficiency Nb<sub>2</sub>O<sub>5</sub>-based grating coupler in integrated LDV for 3D velocity distribution measurement**  
I. Hamada<sup>1</sup>, K. Maru<sup>1</sup>, K. Nakatsuhara<sup>2</sup>, and Y. Hayama<sup>2</sup>, <sup>1</sup>*Kagawa Univ. (Japan)*, <sup>2</sup>*Kanagawa Inst. of Tech. (Japan)*
- PO-16 Tapering acrylic plastic optical fibers with hot water: transmission loss behavior under tension**  
S. Tsurugai<sup>1</sup>, R. Yamamoto<sup>1</sup>, K. Kikuchi<sup>1</sup>, Y. Mizuno<sup>2</sup>, and H. Lee<sup>1</sup>, <sup>1</sup>*Shibaura Inst. of Tech. (Japan)*, <sup>2</sup>*Yokohama National Univ. (Japan)*
- PO-17 Spectral limits of the rainbow**  
N. Hagen, Y. Yamamoto, and R. Ranjan, *Utsunomiya Univ. (Japan)*

- PO-18 Temperature sensing based on multimodal interference in highly nonlinear fibers**  
S. Tanaka<sup>1</sup>, K. Kikuchi<sup>1</sup>, Y. Mizuno<sup>2</sup>, and H. Lee<sup>1</sup>, <sup>1</sup>*Shibaura Inst. of Tech. (Japan)*, <sup>2</sup>*Yokohama National Univ. (Japan)*
- PO-19 Influence of systematic core offset variation on sensitivity in SNS fiber sensor**  
A. Majee<sup>1</sup>, K. Dey<sup>2</sup>, and S. Roy<sup>1</sup>, <sup>1</sup>*National Inst. of Tech. Warangal (India)*, <sup>2</sup>*Missouri Univ. of Sci. and Tech. (USA)*
- PO-20 Adapting a conventional microscope for multimodal 2D+1D imaging and spectral analysis of biological tissue**  
P. Thonglim, R. Ranjan, and N. Hagen, *Utsunomiya Univ. (Japan)*
- PO-21 Spectral domain optical coherence tomography using multi-wavelength light sources for simultaneous water sensing applications**  
T. Kono and N. Ozaki, *Wakayama Univ. (Japan)*
- PO-22 In-process measurement of photodetector photocurrent during femtosecond laser surface structuring**  
Y. Someta and Y. Hayasaki, *Utsunomiya Univ. (Japan)*
- PO-23 Evaluating noise profiles in femtosecond stimulated Raman scattering: a triple-laser approach**  
R. Ranjan, *Utsunomiya Univ. (Japan)*
- PO-24 Axial strain sensing utilizing in-fiber microcavity interrogated by OTDR**  
A. Majee<sup>1</sup>, K. Dey<sup>2</sup>, and S. Roy<sup>1</sup>, <sup>1</sup>*National Inst. of Technology Warangal (India)*, <sup>2</sup>*Missouri Univ. of Sci. and Tech. (USA)*
- PO-25 Development and evaluation of a spectral color management system for identifying colors in a small area**  
T. Nakayama<sup>1</sup>, N. Hashimoto<sup>1</sup>, C. Okawa<sup>1</sup>, G. Shinya<sup>1</sup>, K. Kodate<sup>1,2</sup>, R. Tabata<sup>3</sup>, and M. Kubo<sup>3</sup>, <sup>1</sup>*Photonic System Solutions Inc. (Japan)*, <sup>2</sup>*Japan Women's Univ. (Japan)*, <sup>3</sup>*Shogakukan Music & Digital Entertainment Co., Ltd. (Japan)*
- PO-26 Optimization of detection area for detecting disease symptoms of mango stem-end rot by fluorescence using blue LED and hyperspectral camera**  
A. Ohkubo, K. Makinose, Y. Iwakiri, and M. Arai, *Miyazaki Univ. (Japan)*
- PO-27 Design of a microring resonator using Nb<sub>2</sub>O<sub>5</sub> horizontal slot waveguides for sensing devices**  
Y. Shimamura, U. Endo, H. Kinoshita, Y. Hayama, and K. Nakatsuhara, *Kanagawa Inst. of Tech. (Japan)*
- PO-28 Structural optical flow calibrated volumetric phase compensation for high-resolution optical coherence elastography**  
S. Satpathy and R. Poddar, *Birla Inst. of Tech. (India)*
- PO-29 Influence of LiDAR optical window on acquired information**  
K. Muro, *Teikyo Univ. (Japan)*
- PO-30 Withdrawn**
- PO-31 Non-destructive honey quality control through dynamic laser speckle particle counting**  
H. B. Patel and A. K. Nirala, *Indian Inst. of Tech. (ISM) DHANBAD (India)*
- PO-32 Evaluation of velocity mismatch in a traveling-wave lithium niobate modulator integrated with an electro-optic equalizer for 100 GHz bandwidth**  
S. Takano<sup>1,2</sup>, S. Hirata<sup>2</sup>, Y. Kataoka<sup>2</sup>, J. Ichikawa<sup>2</sup>, R. Shimizu<sup>2</sup>, Y. Yamaguchi<sup>3</sup>, K. Akabane<sup>3</sup>, and R. Takigawa<sup>1</sup>, <sup>1</sup>*Kyushu Univ. (Japan)*, <sup>2</sup>*Sumitomo Osaka Cement Co., Ltd. (Japan)*, <sup>3</sup>*NICT (Japan)*
- PO-33 Proposal and design of a novel built-in channel waveguide (BCW) laser**  
A. Albert<sup>1</sup>, Z.-J. Sun<sup>1</sup>, I. Novitasari<sup>1</sup>, A. Kasukawa<sup>1,2,3</sup>, and S.-L. Lee<sup>1,3</sup>, <sup>1</sup>*National Taiwan Univ. of Sci. and Tech. (Taiwan)*, <sup>2</sup>*Yushan Fellow, Ministry of Education (Taiwan)*, <sup>3</sup>*Heterogeneously-integrated Silicon Photonic Integration Center (Taiwan)*
- PO-34 High-efficiency device structure of n-type InP/electro-optic polymer hybrid optical modulator**  
K. Ikai and J. Fujikata, *Tokushima Univ. (Japan)*

- PO-35 Improvement of optical isolation in GaN-based monolithically integrated micro-LEDs**  
J. Keller, I. Sato, H. Shibano, T. Onuma, T. Yamaguchi, and T. Honda, *Kogakuin Univ. (Japan)*
- PO-36 Single-mode wide-width waveguides enabled by photonic graphene ribbons with air claddings**  
C. Zhang, N. Ishida, and S. Iwamoto, *The Univ. of Tokyo (Japan)*
- PO-37 A study of coupling characteristics of holographic optical element as a multi-mode fiber coupler for underwater optical receiver**  
T. Manabe<sup>1,2</sup>, S. Motoyama<sup>1,2</sup>, H. Yamashita<sup>2</sup>, Y. Ichihashi<sup>2</sup>, K. Wakunami<sup>2</sup>, R. Oi<sup>2</sup>, and Y. Takayama<sup>1</sup>, <sup>1</sup>*Tokai Univ. (Japan)*, <sup>2</sup>*NICT (Japan)*
- PO-38 Directionality improvement of grating coupler by reflective layer cladding**  
Y. Mima<sup>1</sup>, K. Ozawa<sup>1</sup>, J. Inoue<sup>1</sup>, K. Kintaka<sup>2</sup>, and S. Ura<sup>1</sup>, <sup>1</sup>*Kyoto Inst. of Tech. (Japan)*, <sup>2</sup>*AIST (Japan)*
- PO-39 Self-written optical waveguide and optical self-coupling using 2  $\mu$ m laser light**  
M. Shiba, H. Terasawa, K. Kondo, and O. Sugihara, *Utsunomiya Univ. (Japan)*
- PO-40 Design of a multi-focal Fresnel lens employing liquid crystal loaded metasurface**  
T. Nishitake<sup>1</sup>, K. Nakamura<sup>1</sup>, R. Naka<sup>1</sup>, S. Fukushima<sup>1</sup>, T. Nagayama<sup>1</sup>, T. Watanabe<sup>1</sup>, and H. Kikuchi<sup>2</sup>, <sup>1</sup>*Kagoshima Univ. (Japan)*, <sup>2</sup>*Kyushu Univ. (Japan)*
- PO-41 Compact and low-loss silicon photonic polarization beam splitter designed by auto-differentiation**  
H. Soda, *Independent Consultant (Japan)*
- PO-42 Electromagnetic analysis of chiral metasurface structure and its nonlinear effect on optical reservoir computing, compared with ring resonator**  
N. Ru, J. Fujikata, and S. Akito, *Tokushima Univ. (Japan)*
- PO-43 Properties of the optical connectors using ball lenses for connecting single-mode optical fibres exposed to gamma radiation**  
V. Prajzler<sup>1</sup>, M. Zikmund<sup>1</sup>, and J. Stefl<sup>2</sup>, <sup>1</sup>*Czech Technical Univ. in Prague (Czech Republic)*, <sup>2</sup>*OPTOKON, a.s. (Czech Republic)*
- PO-44 Highly energy-efficient photonic modulator based on directional coupler**  
J. Ye, T. Wu, C. Patil, Q. Cai, A. Bazammul, E. Heidari, and H. Dalir, *Univ. of Florida (USA)*
- PO-45 Ultrasound-induced control in liquid crystal structures**  
J. Onaka<sup>1</sup>, Y. Kim<sup>1</sup>, D. Koyama<sup>2</sup>, N. Hagen<sup>1</sup>, and Y. Otani<sup>1</sup>, <sup>1</sup>*Utsunomiya Univ. (Japan)*, <sup>2</sup>*Doshisha Univ. (Japan)*
- PO-46 3-stage Mach-Zehnder interferometer optical switch with ripple-free response**  
T. Watanabe, D. Ishio, T. Nagayama, and S. Fukushima, *Kagoshima Univ. (Japan)*
- PO-47 Dual-input electro-optic modulator with ultralow energy consumption for monolithic integrated photonics**  
T. Wu, C. Patil, J. Ye, Q. Cai, B. Jahannia, E. Heidari, and H. Dalir, *Univ. of Florida (USA)*
- PO-48 Numerical analyses of QPM-tuning characteristics of PPLN-based all-optical ultra-fast 3R circuits**  
Y. Fukuchi, D. Shiratori, T. Kimura, K. Hirata, and J. Maeda, *Tokyo Univ. of Science (Japan)*
- PO-49 Resolution enhancement of passive optical phased arrays using a star coupler**  
M. Komoda, R. Taniguchi, and T. Kita, *Waseda Univ. (Japan)*
- PO-50 A proposal for technique of light-induced self-written waveguide formation using a lasing mechanism**  
S. Watanabe, K. Kondo, H. Terasawa, and O. Sugihara, *Utsunomiya Univ. (Japan)*
- PO-51 A compact multi-mode-interferometer (MMI) based 4 x 4 mode-division-multiplexing (MDM) mode switch on silicon photonics platform**  
T.-Y. Hung and C.-W. Chow, *National Yang Ming Chiao Tung Univ. (Taiwan)*
- PO-52 Structural design of hybrid periodically poled TFLN waveguide inducing multi-nonlinear optical effects**  
Y. Kitamura<sup>1,2</sup>, R. Kou<sup>2</sup>, T. Kita<sup>3</sup>, N. Yamamoto<sup>2</sup>, C. Guangwei<sup>2</sup>, K. Yamada<sup>2</sup>, and A. Ishizawa<sup>1</sup>, <sup>1</sup>*Nihon Univ. (Japan)*, <sup>2</sup>*AIST (Japan)*, <sup>3</sup>*Waseda Univ. (Japan)*

- PO-53 Bidirectional optical wireless communication (OWC) using unmanned-aerial-vehicle (UAV) with improved reliability**  
Y.-H. Chang<sup>1,2</sup>, C.-W. Chow<sup>1</sup>, C.-H. Yeh<sup>3</sup>, Y.-H. Hong<sup>2</sup>, and H.-C. Kuo<sup>2</sup>, <sup>1</sup>*National Yang Ming Chiao Tung Univ. (Taiwan)*, <sup>2</sup>*Hon Hai Research Inst. (Taiwan)*, <sup>3</sup>*Feng Chia Univ. (Taiwan)*
- PO-54 Holographic laser processing for the fabrication of micro-optical devices**  
H. Fujiki, Y. Hayasaki, and S. Hasegawa, *Utsunomiya Univ. (Japan)*
- PO-55 Evaluation of transmitter-side phase correction filters for long-range laser wireless power transmission using Laguerre-Gaussian beams**  
S. Terauchi and K. Ogawa, *Japan Women's Univ. (Japan)*
- PO-56 Investigation of free-space optical communication (FSOC) under turbulence over single-mode fiber and multi-mode fiber connected receivers at different wavelengths**  
B.-H. Lin, P.-L. Chiu, Y.-Z. Lin, Y.-H. Jian, and C.-W. Chow, *National Yang Ming Chiao Tung Univ. (Taiwan)*
- PO-57 Performance evaluation of LG beams in strong underwater turbulence with pix2pix-based phase compensation filter**  
M. Teranishi, K. Takeuchi, and K. Ogawa, *Japan Women's Univ. (Japan)*
- PO-58 Computer generated hologram optimized using laser-generated luminescence in holographic laser processing machine**  
K. Takahashi, S. Hasegawa, and Y. Hayasaki, *Utsunomiya Univ. (Japan)*
- PO-59 Compensation for positional and angular errors on mode sorting for orbital angular momentum optical beam**  
K. Mitani<sup>1</sup>, H. Kishikawa<sup>1</sup>, S.-K. Liaw<sup>2</sup>, and J.-Y. Sung<sup>2</sup>, <sup>1</sup>*Tokushima Univ. (Japan)*, <sup>2</sup>*National Taiwan Univ. Sci. and Tech. (Taiwan)*
- PO-60 Filter comparison of wavelength routers in wavelength routing networks**  
K. Oguchi, C.-C. Chung, and B.-S. Yang, *National Taiwan Univ. of Sci. and Tech. (Taiwan)*
- PO-61 Effect of temporal coherence on mode separation in multiplexed OAM beams**  
T. Hamada and H. Kishikawa, *Tokushima Univ. (Japan)*

The following postdeadline papers are accepted for poster presentation.

- PO-62 Fabrication of a micro opto-fluidic chip with a gold nanoparticle layer for sensing of nonlinear refractive index profile concerning various concentrated ethanol solutions**  
H. J. Huang<sup>1</sup>, Z. Chen<sup>1</sup>, J. Fan<sup>1</sup>, K. Kao<sup>2</sup>, and Y. Lin<sup>3</sup>, <sup>1</sup>*National Formosa Univ. (Taiwan)*, <sup>2</sup>*National Changhua Univ. of Education (Taiwan)*, <sup>3</sup>*National United Univ. (Taiwan)*
- PO-63 Generation of terahertz dual-chirp FMCW signals using a single wavelength tunable laser in a delayed self-multiplexing system**  
Y. Wang<sup>1</sup>, S. Ye<sup>1</sup>, R. Kaide<sup>1</sup>, Y. Kamiura<sup>1</sup>, N. Masutomi<sup>1</sup>, Y. Mikami<sup>1</sup>, Y. Ueda<sup>2</sup>, and K. Kato<sup>1</sup>, <sup>1</sup>*Kyushu Univ. (Japan)*, <sup>2</sup>*NTT Corp. (Japan)*
- PO-64 High-power broadband photomixing THz transmitter enabling 40-Gbit/s wireless links**  
Y. Kamiura, M. Kawano, Y. Mikami, and K. Kato, *Kyushu Univ. (Japan)*
- PO-65 Fundamental research on waveguide layout to realize long (50 cm) optical path integration**  
Y. Kiya, H. Jiang, and K. Hamamoto, *Kyushu Univ. (Japan)*

**17:30–18:30 The 25th Microconcert**

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**9:00–10:30 Session B: Optical Sensing and Imaging Technologies**

Chairs: H. Kawano, *Mitsubishi Electric Corp.*  
T. Watanabe, *Kagoshima Univ.*

- B-1 Computational imaging through scattering media with synthetic waves (Invited)**  
9:00 F. Willomitzer, *Univ. of Arizona (USA)*
- B-2 Monolithically integrated 4×1 surface-grating VCSEL array scanner for compact solid-state LiDAR applications**  
9:30 A. M. A. Hassan<sup>1,2</sup>, F. Koyama<sup>1</sup>, and X. Gu<sup>1,3</sup>, <sup>1</sup>*Science Tokyo (Japan)*, <sup>2</sup>*Al-Azhar Univ. Assuit (Egypt)*, <sup>3</sup>*Ambition Photonics Inc. (Japan)*
- B-3 Ultra-high-resolution linear scale using circular optical system -design of an optical system for enhanced subdivision-**  
9:45 T. Zhou, S. Masui, M. Michihata, and S. Takahashi, *The Univ. of Tokyo (Japan)*
- B-4 Liquid-crystal-layer thickness-distribution measurement by scaling-factor determination with full-voltage-range retardation curves**  
10:00 N. Kato, Y. Takiguchi, K. Nakamura, and H. Tanaka, *Hamamatsu Photonics K.K. (Japan)*
- B-5 Areal surface texture measurement with film thickness calibration using two fluorescence intensity ratio**  
10:15 S. Fujii, S. Masui, M. Michihata, and S. Takahashi, *The Univ. of Tokyo (Japan)*

**Break (10:30–11:00)**

**11:00–12:30 Session C: Optical Sensing Enabled by Integrated Photonics**

Chairs: J.-W. Shi, *National Central Univ.*  
E. Heidari, *Univ. of Florida*

- C-1 Free-form nanostructured optical fibers: the state of the art and future perspectives (Invited)**  
11:00 R. Buczynski, *Univ. of Warsaw (Poland)*
- C-2 Silicon photonics based interferometric fiber optic gyroscope with hybrid integrated III-V photodiode and miniaturized thermoelectric cooler**  
11:30 S.-T. Yang, W.-X. Chen, and Y.-J. Hung, *National Sun Yat-sen Univ. (Taiwan)*
- C-3 Group birefringence measurement of a polarization-maintaining fiber using a chip-based Sagnac interferometer with grating couplers**  
11:45 Y.-M. Lin, W.-X. Chen, and Y.-J. Hung, *National Sun Yat-sen Univ. (Taiwan)*
- C-4 Smartphone-integrated optical biosensor based on gradient guided-mode resonance**  
12:00 C.-S. Huang, Y.-P. Lei, and T.-Z. Lin, *National Yang Ming Chiao Tung Univ. (Taiwan)*
- C-5 Demonstration of optical hydrogen sensor based on silicon microring resonator with Pt/WO<sub>3</sub>-SiO<sub>2</sub> film**  
12:15 A. Sato, Y. Eto, S. Okazaki, Y. Nishijima, and T. Arakawa, *Yokohama National Univ. (Japan)*

**Lunch (12:30–14:00)**

**14:00–15:45 Session D: VCSELs and High-Density Optical Communication Devices**

Chairs: T. Hamaguchi, *Kyushu Univ.*  
Y.-J. Hung, *National Sun Yat-sen Univ.*

- D-1 High-speed VCSELs and APDs arrays for free-space optical communications (Invited)**  
14:00 J.-W. Shi, *National Central Univ. (Taiwan)*

- D-2** **Membrane surface-emitting lasers with distributed reflectors exhibiting highly-efficient single-mode lasing in O-band**  
 14:30 T. Tsurugaya<sup>1</sup>, Y. Maeda<sup>1</sup>, T. Aihara<sup>1</sup>, T. Fujii<sup>1</sup>, E. Kanno<sup>1</sup>, K. Takeda<sup>1</sup>, T. Sato<sup>1</sup>, F. Koyama<sup>2</sup>, and S. Matsuo<sup>1</sup>,  
<sup>1</sup>NTT Corp. (Japan), <sup>2</sup>Science Tokyo (Japan)
- D-3** **Single-mode 48-channel 1060nm metal aperture VCSEL array enabling 9.6Tbps data throughput**  
 14:45 H. R. Ibrahim<sup>1,2</sup>, A. Hassan<sup>1,3</sup>, C. Ge<sup>1</sup>, X. Gu<sup>1,4</sup>, and F. Koyama<sup>1</sup>, <sup>1</sup>Science Tokyo (Japan), <sup>2</sup>Minia Univ. (Egypt), <sup>3</sup>Al-Azhar Univ. (Egypt), <sup>4</sup>Ambition Photonics Inc. (Japan)
- D-4** **Development of high power DFB lasers with high power conversion efficiency for external laser sources**  
 15:00 T. Yoshida, G. Kobayashi, A. Imamura, and H. Ishii, Furukawa Electric Co., Ltd. (Japan)
- D-5** **Optical pigtail 64 channel silicon photonics grating couplers through a two-dimensional fiber array for co-packaged optics applications**  
 15:15 C.-H. Shih and Y.-J. Hung, National Sun Yat-sen Univ. (Taiwan)
- D-6** **Enabling wavelength tunability in 980-nm vertical-cavity surface-emitting lasers utilizing exceptional points**  
 15:30 T. Wu, Q. Cai, J. Ye, B. Jahannia, H. Dalir, and E. Heidari, Univ. of Florida (USA)

**Break (15:45–16:00)**

**16:00–17:00 Session E: Photonic Signal Processing and Acceleration Technologies**

Chairs: S. Iwamoto, *The Univ. of Tokyo*  
 T. Arakawa, *Yokohama National Univ.*

- E-1** **Boosting photonic computing efficiency with photonic memory and energy efficient ADC/DAC design (Invited)**  
 16:00 E. Heidari, *Univ. of Florida (USA)*
- E-2** **High-dimensional quantum random number generation by metalens array**  
 16:30 S. Chen, Y. Fan, and D. P. Tsai, *City Univ. of Hong Kong (Hong Kong)*
- E-3** **Photonic data encoding/decoding using hybrid Fourier phase shift neural network**  
 16:45 T. Wu, J. Ye, A. S. Bazammul, Q. Cai, B. Jahannia, H. Dalir, and E. Heidari, *Univ. of Florida (USA)*

**Break (17:00–17:15)**

**17:15–18:30 Session F: Novel Nanophotonic Structures**

Chairs: R. Buczynski, *Univ. of Warsaw*  
 H. Ottevaere, *Vrije Univ. Brussel*

- F-1** **Waveguide integration and micro-LED-on-CMOS optical pumping of micron-scale photonic devices on-chip (Invited)**  
 17:15 M. Strain, *University of Strathclyde (UK)*
- F-2** **Analysis of oblique-incidence effects on metasurface beam shaper for optical wireless power transmission**  
 17:45 N. Ochiai<sup>1,2</sup>, Y. Toriumi<sup>1</sup>, M. Takahashi<sup>1</sup>, and S. Iwamoto<sup>2</sup>, <sup>1</sup>NTT Space Environment and Energy Labs. (Japan), <sup>2</sup>The Univ. of Tokyo (Japan)
- F-3** **Nonlocal meta-lens for high-quality-factor wavefront shaping**  
 18:00 R. Lin, J. Yao, and D. P. Tsai, *City Univ. of Hong Kong (Hong Kong)*
- F-4** **Demonstration of ultra-compact nano-pixel optical mode switch**  
 18:15 Y. Xie, P. Lin, H. Jiang, and K. Hamamoto, *Kyushu Univ. (Japan)*

**Banquet (19:00–21:00)**

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**9:00–10:30 Session G: Terahertz Photonics and Innovations in Spatial Beam Control**

Chairs: H. Takahashi, *Sophia Univ.*

K. Hamamoto, *Kyushu Univ.*

- G-1** **Generation of frequency-spacing tunable and bandwidth enhanced OFC signals using nonlinear semiconductor laser dynamics in a 3-stage cascaded optical injection system**  
9:00 H.-T. Tang and Y.-H. Hung, *National Sun Yat-sen Univ. (Taiwan)*
- G-2** **Polarization-division multiplexed terahertz transmission with a photonic dual-feed 2D array antenna**  
9:15 M. Kawano, Y. Kamiura, R. Kaide, S. Iwamoto, Y. Mikami, and K. Kato, *Kyushu Univ. (Japan)*
- G-3** **Generation of modulated THz waves using a two-wavelength tunable silicon photonics heterogeneous laser diode**  
9:30 K. Tsujishita, S. Kawano, and T. Kita, *Waseda Univ. (Japan)*
- G-4** **Cost-effective photonics-based THz frequency-division multiplexer by electro-optically tunable RTF lasers**  
9:45 S. Ye<sup>1</sup>, Y. Wang<sup>1</sup>, B. Li<sup>1</sup>, R. Kaide<sup>1</sup>, Y. Mikami<sup>1</sup>, Y. Ueda<sup>2</sup>, and K. Kato<sup>1</sup>, <sup>1</sup>*Kyushu Univ. (Japan)*, <sup>2</sup>*NTT Device Technology Labs. (Japan)*
- G-5** **Vision-kinematic fusion approach for real-time safety of steerable beams in optical wireless power transmission**  
10:00 C. Zuo and T. Miyamoto, *Science Tokyo (Japan)*
- G-6** **High-sensitivity on-chip autocorrelator with two-photon absorption avalanche photodiode array**  
10:15 N. Koyama, O. Sugihara, and K. Kondo, *Utsunomiya Univ. (Japan)*

**Break (10:30–11:00)**

**11:00–12:30 Session H: Materials for Functional Photonic Devices**

Chairs: G. Hatakoshi, *Microoptics Group*

H. Ishii, *Furukawa Electric Co., Ltd.*

- H-1** **Integrated quantum photonic technologies with diamond membranes (Invited)**  
11:00 A. A. High, *Argonne National Laboratory (USA)*
- H-2** **Reflective plasmonic fano sensor using a double-layer Au diffraction-grating structure**  
11:30 A. Motogaito<sup>1</sup>, K. Ukai<sup>1</sup>, T. Nabuchi<sup>1</sup>, T. Kato<sup>2</sup>, and K. Hiramatsu<sup>1</sup>, <sup>1</sup>*Mie Univ. (Japan)*, <sup>2</sup>*Nagoya Univ. (Japan)*
- H-3** **Photo and electro switchable guest-host cholesteric liquid crystals**  
11:45 W.-H. Wu<sup>1</sup>, Y.-Y. Chen<sup>2</sup>, L.-M. Chang<sup>1</sup>, W.-C. Lin<sup>1</sup>, H.-H. Chen<sup>2</sup>, and C.-T. Wang<sup>1</sup>, <sup>1</sup>*National Sun Yat-Sen Univ. (Taiwan)*, <sup>2</sup>*National Taipei Univ. of Tech. (Taiwan)*
- H-4** **Broadband and polarization-selective reflection from a single-layer cholesteric liquid crystal film**  
12:00 P.-C. Shih<sup>1</sup>, Y.-M. Huang<sup>1</sup>, C.-T. Chen<sup>1</sup>, C.-C. Li<sup>2</sup>, K.-W. Lin<sup>2</sup>, W.-C. Lin<sup>1</sup>, and C.-T. Wang<sup>1</sup>, <sup>1</sup>*National Sun Yat-Sen Univ. (Taiwan)*, <sup>2</sup>*Brilliant Optronics Co., Ltd. (Taiwan)*
- H-5** **Flexible light-induced self-written optical waveguide with cladding fabricated by advanced selective polymerization process**  
12:15 R. Futawatari<sup>1,2</sup>, H. Terasawa<sup>2</sup>, K. Kondo<sup>2</sup>, and O. Sugihara<sup>2</sup>, <sup>1</sup>*Orbray Co., Ltd. (Japan)*, <sup>2</sup>*Utsunomiya Univ. (Japan)*

**Lunch (12:30–13:30)**

### **13:30–15:00 Session I: Photonic Integration for Communication Systems**

Chairs: R. Kou, *AIST*

T. Kita, *Waseda Univ.*

#### **I-1 No show**

13:30

#### **I-2 Cascaded triple ring resonators with low-loss waveguide bends for dense wavelength division (de) multiplexing**

14:00

Y.-M. Lee, P.-C. Hung, C.-H. Chen, and Y.-J. Hung, *National Sun Yat-sen Univ. (Taiwan)*

#### **I-3 The influence of rear facet phase fluctuations on the linewidth characteristics of high-power MSPCG DFB lasers**

14:15

S. Sulikhah<sup>1,2</sup>, H.-C. Chou<sup>1</sup>, and S.-L. Lee<sup>1,2</sup>, <sup>1</sup>*National Taiwan Univ. of Science and Technology (Taiwan)*,  
<sup>2</sup>*Heterogeneously-integrated Silicon Photonic Integration Center (Taiwan)*

#### **I-4 Wavelength and free-spectral-range control of a silicon nitride based Mach-Zehnder interferometer for DWDM applications**

14:30

C. Chien, C. Chen, and Y. Hung, *National Sun Yat-sen Univ. (Taiwan)*

#### **I-5 Photonic crystal nanolasers wedged into silicon waveguides**

14:45

T.-W. Lu, H.-C. Chen, C.-W. Chen, and P.-T. Lee, *National Yang Ming Chiao Tung Univ. (Taiwan)*

**Break (15:00–15:30)**

### **15:30–16:15 Session PD: Postdeadline Session**

Chairs: H. Ishii, *Furukawa Electric Co., Ltd.*

T. Kita, *Waseda Univ.*

#### **PD-1 Ultra-high repetition FMCW measurement using thermo-optic effects with SiN/Si hybrid wavelength tunable laser diode**

15:30

T. Tsunoda and T. Kita, *Waseda Univ. (Japan)*

#### **PD-2 Terahertz multi-beam generation by photomixer arrays using fiber chromatic dispersion**

15:45

M. Kawano, Y. Kamiura, Y. Mikami, and K. Kato, *Kyushu Univ. (Japan)*

#### **PD-3 100Gbaud data transmission over 500m multimode fibers using a 1060nm single-mode coupled cavity VCSEL**

16:00

H. R. Ibrahim<sup>1,2</sup>, A. Hassan<sup>1,3</sup>, X. Gu<sup>1,4</sup>, and F. Koyama<sup>1</sup>, <sup>1</sup>*Science Tokyo (Japan)*, <sup>2</sup>*Minia Univ. (Egypt)*, <sup>3</sup>*Al-Azhar Univ. (Egypt)*, <sup>4</sup>*Ambition Photonics Inc. (Japan)*

### **16:15–16:45 Paper Award Ceremony / Closing Remarks**

Program Co-chairs: H. Ishii, *Furukawa Electric Co., Ltd.*

T. Kita, *Waseda Univ.*