

# Technical Sessions

---

Sunday, 26 September

---

Moderators:

Y. Kokubun, *Inst. Technologist*

Y. Takiguchi, *Hamamatsu Photonics K. K.*

## 13:00–17:05 Session SS: Special Symposium "Photonics Progress Review"

### SS-0 Introductory talk

13:00 Y. Kawata, *Shizuoka Univ.*

### SS-1 New photonics industries starting from Shizuoka, Japan

13:05 Y. Takiguchi, *The Graduate School for the Creation of New Photonics Industries*

### SS-2 Multi-tap time-resolved CMOS image sensors and their applications

13:50 S. Kawahito, *Shizuoka Univ.*

Break (14:35–14:50)

### SS-3 Photoniccrystal surface-emitting lasers and their application to LiDAR

14:50 S. Noda, *Kyoto Univ.*

### SS-4 Development of 20-inch photomultiplier tube for neutrino experiments

15:35 Y. Yoshizawa, *Hamamatsu Photonics K.K.*

### SS-5 Clinical near-infrared spectroscopy and imaging

16:20 Y. Hoshi, *Hamamatsu Univ. School of Med.*

Break (17:05–17:15)

## 17:15–18:15+ Get Together Party

### #17:15 Open Door to Virtual Party on Zoom of MOC2021

Background Music: From the Album of Duo21.

By Kenichi Iga and Genichi Hatakoshi

Note: Please be prepared with your own mag, glass, or cup to join "Kampai".

### #17:30-18:15+ Get-Together Party

Moderator: Kiichi Hamamoto (MOC2014/2018 Conference Chair)

Welcome: Taro Arakawa (Conference Chair)

Kanpai on Do: Kenichi Iga (General Chair of Microoptics Group)

Closing: Muneharu Kuwata (Conference Chair)

**9:00–9:15 Opening Remarks**

Conference Co-chairs:

T. Arakawa, *Yokohama National Univ.*

M. Kuwata, *Mitsubishi Electric Corp.*

**9:15–10:45 Session PL1: Plenary Session 1**

Chairs: T. Arakawa, *Yokohama National Univ.*

M. Kuwata, *Mitsubishi Electric Corp.*

**PL1-1 InGaN-based nanocolumn optical devices**

9:15 K. Kishino, *Sophia Univ.*

**PL1-2 Flat optics based on metasurfaces: from components to cameras**

10:00 F. Capasso, *Harvard Univ.*

**Break (10:45–11:00)**

**11:00–11:45 Session A: Emerging Photonics (1)**

Chairs: S. Park, *Samsung Electronics Corp.*

K. Hamamoto, *Kyushu Univ.*

**A-1 All-dielectric Mie-resonant metaphotonics (Invited)**

11:00 Y. Kivshar, *Australian National Univ.*

**A-2 Conservation law of spin & orbital angular momentum for a vortex generated by a silicon photonic gear**

11:30 S. Saito, *Hitachi, Ltd.*

**Lunch (11:45–13:30)**

**13:30–14:30 Session B: Microoptics for Sensing (1)**

Chairs: K. Kato, *Kyushu Univ.*

H. Tan, *Australian National Univ.*

**B-1 Artificial chirality evolution in micro-/nano-scale three-dimensional plasmonic metamaterials (Invited)**

13:30 J. Rho, *Pohang Univ. of Science and Tech.*

**B-2 Real-time LiDAR system using VCSEL-integrated amplifier/beam scanner**

14:00 K. Tanahashi, I. Fujioka, S. Hu, X. Gu, and F. Koyama, *Tokyo Inst. Tech.*

**B-3 MOEMS technology based compact and robust broadband wavelength-swept mid-infrared quantum cascade laser**

14:15 N. Akikusa<sup>1</sup>, A. Sugiyama<sup>1</sup>, T. Ochiai<sup>1</sup>, T. Edamura<sup>1</sup>, and H. Furukawa<sup>2</sup>, <sup>1</sup>*Hamamatsu Photonics K.K.*, <sup>2</sup>*AIST*

**Break (14:30–14:45)**

**14:45–16:00 Session C: Microoptics for Sensing (2)**

Chairs: S. Iwamoto, *Univ. Tokyo*

R. Katayama, *Fukuoka Inst. Tech.*

**C-1 Light-induced spiral motion of micro-objects in nonliquid environments (Invited)**

14:45 W. Tang<sup>1,2</sup>, W. Lv<sup>1,2</sup>, J. Lu<sup>3</sup>, F. Liu<sup>1,2</sup>, J. Wang<sup>1,2</sup>, W. Yan<sup>1,2</sup>, and M. Qiu<sup>1,2</sup>, <sup>1</sup>*Westlake Univ.*, <sup>2</sup>*Westlake Institute for Advanced Study*, <sup>3</sup>*Zhejiang Univ.*

- C-2 Hybridized plasmonic surface lattice resonance perovskite laser**  
15:15 Z.-T. Huang, C.-W. Yin, H. Li, K.-B. Hong, and T.-C. Lu, *National Yang Ming Chiao Tung Univ.*
- C-3 Optical metrology and sensing in times of digital transition (Invited)**  
15:30 W. Osten, *Univ. Stuttgart*

**Break (16:00–16:15)**

**16:15–17:15 Session D: Photonic Integration**

Chairs: W. Osten, *Univ. Stuttgart*  
S. Saito, *Hitachi, Ltd.*

- D-1 Photonics packaging for integrated photonics, from research to pilotscale manufacturing (Invited)**  
16:15 P. O'Brien, *Tyndall National Inst.*
- D-2 A freeform-based versatile microfluidic raman lab-on-chip system**  
16:45 Q. Liu, H. Thienpont, and H. Ottevaere, *Vrije Univ. Brussel*
- D-3 Optoacoustic mode-locking based on micro-core photonic crystal fibre**  
17:00 W. He<sup>1</sup>, M. Pang<sup>1</sup>, D.-H. Yeh<sup>1,2</sup>, and P. St. J. Russell<sup>1</sup>, <sup>1</sup>*Max Planck Institute for the Science of Light*,  
<sup>2</sup>*Friedrich-Alexander Univ.*

**Break (17:15–17:30)**

**17:30–19:00 Session PL2: Plenary Session 2**

Chairs: T. Arakawa, *Yokohama National Univ.*  
M. Kuwata, *Mitsubishi Electric Corp.*

- PL2-1 Exploring photonics — research activity on spatial light modulator in Hamamatsu —**  
17:30 T. Hara, *Hamamatsu Photonics K.K.*
- PL2-2 Novel VCSEL designs for the next generation of photonic systems**  
18:15 D. Bimberg, *CIOMP, CAS/ TU Berlin*

**19:00–19:15 MOC Award Ceremony**

Chair: T. Sato, *NTT Corp.* (Program Chair)  
Presenter: Conference Co-chairs  
T. Arakawa, *Yokohama National Univ.*  
M. Kuwata, *Mitsubishi Electric Corp.*

---

---

**8:30–9:45 Session E: Active Devices (1)**

Chairs: K.-P. Chen, *National Chiao Tung Univ.*  
T. Miyamoto, *Tokyo Inst. Tech.*

**E-1 High-efficiency photovoltaic power converters and application to optical power transmission (Invited)**

8:30 S. Fafard, D. Masson, J.G. Werthen, J. Liu, T.C. Wu, C. Hundberger, M. Schwarzfischer, G. Steinle, C. Gaertner, C. Piemonte, B. Luecke, J. Wittl, and M. Weigert, *Broadcom*

**E-2 1fJ/bit coupling-based ITO monolithic modulator in integrated photonics**

9:00 C. S. Patil<sup>1</sup>, H. Dalir<sup>1,2</sup>, H. Wang<sup>1</sup>, and V. Sorger<sup>1,2</sup>, <sup>1</sup>*George Washington Univ.*, <sup>2</sup>*Optelligence LLC*

**E-3 Commercialization of VCSELs (Invited)**

9:15 J. Tatum, L. Graham, J. Guenter, and P. Khurana, *Dallas Quantum Devices*

**Break (9:45–10:00)**

**10:00–11:00 Session F: Active Devices (2)**

Chairs: M. Mori, *AIST*  
J. Rho, *Pohang Univ. of Science and Tech.*

**F-1 60-Times power enhancement of 300-GHz terahertz wave by 8-arrayed UTC-PDs**

10:00 K. Kondo, Y. Matsuo, and K. Kato, *Kyushu Univ.*

**F-2 Terahertz-wave beam steering by photomixing with chromatic dispersion of optical fibers**

10-15 T. Saito<sup>1</sup>, S. Takasaka<sup>2</sup>, and K. Kato<sup>1</sup>, <sup>1</sup>*Kyushu Univ.*, <sup>2</sup>*Furukawa Electric Co., Ltd.*

**F-3 Active-MMI SOA on quantum-dots toward high saturation output power under high temperature**

10:30 Z. Fan, Y. Hinokuma, H. Jiang, and K. Hamamoto, *Kyushu Univ.*

**F-4 Miniaturized vertically-stacked photovoltaic/bypass diode module**

10:45 Y.-C. Wu, J.-C. Shih, Y.-C. Chen, J.-F. Liao, and Y. Hung, *National Sun Yat-sen Univ.*

**Break (11:00–11:15)**

**11:15–12:15 Session G: Emerging Photonics (2)**

Chairs: H. Ishii, *Furukawa Electric Co., Ltd.*  
T.-C. Lu, *National Chiao Tung Univ.*

**G-1 Structural colors and lasers by lattice resonance in silicon nitride metasurfaces (Invited)**

11:15 K.-P. Chen, *National Chiao Tung Univ.*

**G-2 Two-dimensional topological photonic crystals with helical edge states below the light line**

11:45 C. Zhang<sup>1</sup>, H. Yoshimi<sup>1</sup>, Y. Ota<sup>2</sup>, and S. Iwamoto<sup>1</sup>, <sup>1</sup>*The Univ. of Tokyo*, <sup>2</sup>*Keio Univ.*

**G-3 Fabrication of valley photonic crystals with CMOS-compatible process**

12:00 T. Yamaguchi<sup>1</sup>, H. Yoshimi<sup>1</sup>, M. Seki<sup>2</sup>, M. Ohtsuka<sup>2</sup>, N. Yokoyama<sup>2</sup>, Y. Ota<sup>3</sup>, M. Okano<sup>2</sup>, and S. Iwamoto<sup>1</sup>, <sup>1</sup>*The Univ. of Tokyo*, <sup>2</sup>*AIST*, <sup>3</sup>*Keio Univ.*

**Lunch (12:15–14:00)**

**14:00–15:00 Session H: Fabrication Technology**

Chairs: S.-L. Lee, *Taiwan Tech.*  
H. Takahashi, *Sophia Univ.*

**H-1 Random depolarization film doped with calcite microparticles for clear real-color displays**

14:00 S. Sasaki<sup>1</sup>, M. Udono<sup>1</sup>, and Y. Koike<sup>1,2</sup>, <sup>1</sup>*Keio Univ.*, <sup>2</sup>*Keio Photonics Research Inst.*

- H-2 Blue/green-light resistant non-doped silica waveguide for visible-light applications**  
14:15 Y. Fujiwara, J. Sakamoto, K. Watanabe, and R. Kasahara, *NTT Corp.*
- H-3 Fabrication of GaN-QPM crystals for slab waveguide type wavelength conversion devices**  
14:30 H. Ishihara, K. Matsuhisa, K. Kurose, Y. Kawata, A. Sugita, Y. Inoue, and T. Nakano, *Shizuoka Univ.*
- H-4 Laser-wavelength stabilization by a focusing cavity-resonator-integrated guided-mode resonance filter**  
14:45 R. Ueda<sup>1</sup>, A. Watanabe<sup>1</sup>, K. Ozawa<sup>1</sup>, K. Kintaka<sup>2</sup>, K. Nishio<sup>1</sup>, T. Kusuura<sup>1</sup>, J. Inoue<sup>1</sup>, and S. Ura<sup>1</sup>, <sup>1</sup>*Kyoto Inst. Tech.*, <sup>2</sup>*AIST*

**Break (15:00–15:15)**

**15:15–16:15 Session J: New Materials**

Chairs: T. Kita, *Waseda Univ.*  
U. D. Zeitner, *Fraunhofer IOF*

- J-1 Novel structural optimization of femtosecond laser writing of waveguides in lithium niobate by raman spectroscopy**  
15:15 A. Inoue, Y. Fujiwara, and K. Watanabe, *NTT Corp.*
- J-2 Two-photon polymerization-based direct laser writing and characterization of micro-lenses for optical interconnect applications**  
15:30 K. Vanmol, A. Kandeel, G. Y. Belay, H. Thienpont, H. Ottevaere, and J. V. Erps, *Vrije Univ. Brussel*
- J-3 Micro-optics in single crystal diamond (Invited)**  
15:45 N. Quack, G. Huszka, A. Toros, T. Graziosi, M. Kiss, and S. Mi, *EPFL*

**Break (16:15–16:30)**

**16:30–17:30 Session K: Optical Processing (1)**

Chairs: Y. Luo, *Tsinghua Univ.*  
O. Sugihara, *Utsunomiya Univ.*

- K-1 Color centers with exceptional properties in diamond (Invited)**  
16:30 T. Lühmann, S. Pazzagna, and J. Meijer, *Univ. Leipzig*
- K-2 Phase characteristic of phase-only spatial light modulator under high-power laser irradiation**  
17:00 Y. Takiguchi, H. Tanaka, T. Watanabe, Y. Ohtake, and H. Toyoda, *Hamamatsu Photonics K.K.*
- K-3 Silicon photonic optical phase arrays with apodized subwavelength gratings**  
17:15 T.-H. Lee<sup>1</sup>, S.-H. Chung<sup>1</sup>, W.-X. Chen<sup>1</sup>, Y.-H. Lin<sup>1</sup>, P.-Y. Wu<sup>2</sup>, V. Kung<sup>2</sup>, T.-T. Hu<sup>2</sup>, and S.-L. Lee<sup>1</sup>, <sup>1</sup>*National Taiwan Univ. of Science and Technology*, <sup>2</sup>*FOCI Fiber Optic Communications, Inc.*

**Break (17:30–17:45)**

**17:45–19:00 Session L: Novel Transmission Technology**

Chairs: R. Kou, *AIST*  
N.-C. Park, *Yonsei Univ.*

- L-1 Vector vortex beams propagation, manipulation, and detection in classical and quantum regime (Invited)**  
17:45 T. Giordani, *Sapienza Univ. di Roma*
- L-2 Recent advancements in optical wireless communications (Invited)**  
18:15 H. Haas, *The Univ. of Strathclyde*
- L-3 High output and high efficiency handy-sized LED-array based optical wireless power transmission system using fresnel lenses**  
18:45 M. Zhao and T. Miyamoto, *Tokyo Inst. Tech.*

**Break (19:00–19:20)**

**19:20–21:00 Session PO: Poster Session**

Chairs: T. Sato, *NTT Corp.*

T. Watanabe, *Kagoshima Univ.*

(19:20–20:10) Even numbers

(20:10–21:00) Odd numbers

- PO-1 Termination of fiber fuse propagation using optical pulses**  
K. Kurokawa and D. Shimokura, *Kitami Inst. Tech.*
- PO-2 Fabrication of polarization control devices using metal grating structures**  
A. Motogaito, Y. Hayashi, A. Watanabe, and K. Hiramatsu, *Mie Univ.*
- PO-3 Influence of lateral displacement of laguerre-gaussian beams on spiral mode sorting**  
S. Kunimatsu, H. Kishikawa, N. Goto, and J. Fujikata, *Tokushima Univ.*
- PO-4 Nb<sub>2</sub>O<sub>5</sub>-based grating coupler employing multiple Nb<sub>2</sub>O<sub>5</sub>/SiO<sub>2</sub> layers in integrated probe for cross-sectional velocity distribution measurement**  
K. Maru<sup>1</sup>, Y. Yamamoto<sup>1</sup>, and K. Nakatsuhara<sup>2</sup>, <sup>1</sup>*Kagawa Univ.*, <sup>2</sup>*Kanagawa Inst. Tech.*
- PO-5 Silk fibroin optical planar waveguides fabricated on acrylic polymer foil**  
V. Prajzler<sup>1</sup>, K. Min<sup>2</sup>, S. Kim<sup>2</sup>, and P. Nekvindova<sup>3</sup>, <sup>1</sup>*Czech Technical Univ. in Prague*, <sup>2</sup>*Ajou Univ.*, <sup>3</sup>*Institute of Chemical Technology*
- PO-6 Femtosecond laser fabrication of metallic nanostructures using polarization control**  
M. Shimose, S. Toriyama, K. Hashimoto, V. Mizeikis, and A. Ono, *Shizuoka Univ.*
- PO-7 Research on deep ultraviolet photodetectors based on carbon dots**  
Y. Fang, Z. Zhao, Z. Weng, and M. Zhu, *Southeast Univ.*
- PO-8 Surface plasmon propagation of fluorescence from quantum dots through a crystalline silver nanowire**  
T. Komatsu, Y. Hayashi, X. Ren, and A. Ono, *Shizuoka Univ.*
- PO-9 LiNbO<sub>3</sub>/Si-hybrid slot-waveguide electro-optical modulator designs for 1550 nm**  
T. M. Mercier<sup>1</sup>, M. D.B. Charlton<sup>1</sup>, and I. Tomita<sup>2</sup>, <sup>1</sup>*Univ. of Southampton*, <sup>2</sup>*National Inst. Tech., Gifu College*
- PO-10 Liquid crystal clad polymer waveguide based electro-optic attenuator**  
R. Panchal and A. Sinha, *Indian Inst. Tech. Delhi*
- PO-11 Numerical modelling of initial photoacoustic pressure in colloidal suspensions for photoacoustic imaging**  
H. Fujii, T. Aoki, Y. Inoue, I. Terabayashi, K. Kobayashi, and M. Watanabe, *Hokkaido Univ.*
- PO-12 Sensitivity improvement of dynamic displacement measurement system composed of phase-modulated fiber optic interferometer**  
M. Fujimori, S. Takemae, and Y. Tanaka, *Tokyo Univ. of Agriculture and Technology*
- PO-13 Switchable mode converter for four-mode MDM system assisted by passive mode controlling device designed by wavefront matching method**  
Y. Sawada, T. Fujisawa, T. Sato, and K. Saitoh, *Hokkaido Univ.*
- PO-14 Simulation on non-axisymmetric ring resonator with nano-antenna for heat-assisted magnetic recording**  
J. Chen<sup>1</sup>, R. Katayama<sup>1</sup>, and S. Sugiura<sup>2</sup>, <sup>1</sup>*Fukuoka Inst. Tech.*, <sup>2</sup>*InnovaStella, Inc.*
- PO-15 Imaging spectral detection of single gold nanorod based on polarization-controlled excitation**  
L. Shen, Y.-C. Hou, and W.-S. Tsai, *National Chung Hsing Univ.*
- PO-16 Experimental demonstration of full-range high-speed high-reliability wavelength switching at DFB laser with current temperature cooperative control**  
S. Ye, M. Che, and K. Kato, *Kyushu Univ.*

- PO-17 Fabrication of vertical-taper structures for silicon photonic devices by local-thickness-thinning process**  
S. Abe<sup>1,2</sup>, H. Hara<sup>2</sup>, S. Masuda<sup>2</sup>, and H. Yamada<sup>1</sup>, <sup>1</sup>*Tohoku Univ.*, <sup>2</sup>*Advantest Laboratories Ltd.*
- PO-18 All-dielectric perfect absorber of quadrupole modes by using cross-shaped Mie resonators**  
R. Xu and J. Takahara, *Osaka Univ.*
- PO-19 A cost-effective mode converter based on staircase structure for thin-film lithium niobate devices**  
M. Wang and K. Chen, *Univ. of Electronic Science and Technology of China*
- PO-20 Safety system of optical wireless power transmission by suppressing light beam irradiation to human using depth camera**  
X. Ma and T. Miyamoto, *Tokyo Inst. Tech.*
- PO-21 Imprinted microoptics for grey scale pattern projectors**  
T. Scharf, W. Noell, G. Quaranta, M. Pfeiffer, and R. Völkel, *Suss Microoptics SA*
- PO-22 Multipoint sensing system with a fine refractive index resolution by combining multimode-interference-sensors and wavelength selection configuration**  
H. Fukano and T. Mukai, *Okayama Univ.*
- PO-23 Holographic gratings formed by wavelength multiplexing in liquid crystal composites**  
A. Ogiwara<sup>1</sup> and M. Watanabe<sup>2</sup>, <sup>1</sup>*Kobe City College of Technology*, <sup>2</sup>*Okayama Univ.*
- PO-24 Formation of temperature dependent polymer dispersed liquid crystal using laser speckle pattern irradiation**  
A. Ogiwara<sup>1</sup> and H. Kakiuchida<sup>2</sup>, <sup>1</sup>*Kobe City College of Technology*, <sup>2</sup>*AIST*
- PO-25 Acceptable angular range of beam pointing in free-space optical communications**  
T. Nakayama<sup>1</sup>, Y. Takayama<sup>1</sup>, C. Fujikawa<sup>1</sup>, and K. Kodate<sup>2</sup>, <sup>1</sup>*Tokai Univ.*, <sup>2</sup>*Japan Women's Univ.*
- PO-26 Highly sensitive and stable temperature sensing method using amplified-spontaneous-emission feedback circuit**  
H. Masuda and B. Biswas, *Shimane Univ.*
- PO-27 Correlated photon pairs generation from a silicon micro-ring resonator with a gain-switched laser diode**  
F. Yang, M. Fukunaga, K. Edamatsu, H. Yokoyama, H. Yamada, and N. Matsuda, *Tohoku Univ.*
- PO-28 Compact plasmonic enhanced MoTe<sub>2</sub> photodetector based on engineering gain-bandwidth-product scaling laws**  
H. Wang<sup>1</sup> and V. J. Sorger<sup>1,2</sup>, <sup>1</sup>*The George Washington Univ.*, <sup>2</sup>*Optelligence LLC*
- PO-29 Formation of periodic nanostructures induced by circularly-polarized femtosecond laser**  
R. Miyagawa, H. Matsuura, A. Nakamura, and O. Eryu, *Nagoya Inst. Tech.*
- PO-30 Orbital angular momentum mode recognition based on sparse coding**  
K. Suzuki, H. Kishikawa, N. Goto, and J. Fujikata, *Tokushima Univ.*
- PO-31 Highly accurate, reliable and non-contaminating two-dimensional material transfer system**  
C. S. Patil<sup>1</sup>, C. Dong<sup>1</sup>, H. Dalir<sup>1,2</sup>, and V. J. Sorger<sup>1,2</sup>, <sup>1</sup>*George Washington Univ.*, <sup>2</sup>*Optelligence LLC*
- PO-32 Optimizing optical convolution with nonlinear absorption**  
J. K. George, M. Gorgone-Solyanik, and V. J. Sorger, *George Washington Univ.*
- PO-33 Optical feedback tolerance of transverse coupled cavity VCSELs**  
H. R. Ibrahim<sup>1,2</sup>, A. M. A. Hassan<sup>1,3</sup>, M. Ahmed<sup>2</sup>, and F. Koyama<sup>1</sup>, <sup>1</sup>*Tokyo Institute of Technology*, <sup>2</sup>*Minia Univ.*, <sup>3</sup>*Al Azhar Univ., Assuite*
- PO-34 Thermal crosstalk evaluation of 1.1 μm-band vertical cavity surface emitting laser array for multi-core fiber transmission**  
L. Dong<sup>1</sup>, X. Gu<sup>1,2</sup>, and F. Koyama<sup>1</sup>, <sup>1</sup>*Tokyo Inst. Tech.*, <sup>2</sup>*Ambition Photonics Inc.*
- PO-35 An apodization method for grating coupler in waveguide cavity**  
A. Watanabe<sup>1</sup>, K. Ozawa<sup>1</sup>, R. Ueda<sup>1</sup>, J. Inoue<sup>1</sup>, K. Kintaka<sup>2</sup>, and S. Ura<sup>1</sup>, <sup>1</sup>*Kyoto Inst. Tech.*, <sup>2</sup>*AIST*
- PO-36 Disk-hole array structure for hot-electron emission enhancement**  
H. Morisawa, A. Ono, W. Inami, and Y. Kawata, *Shizuoka Univ.*

- PO-37 Light-induced self-written waveguide using soft material**  
Z. Ni, H. Terasawa, and O. Sugihara, *Utsunomiya Univ.*
- PO-38 Tunable mode converter based on Mach-Zehnder interferometer**  
D. Minemura, S. Liu, Y. Shoji, and T. Mizumoto, *Tokyo Inst. Tech.*
- PO-39 Mode decomposition from near-field intensity pattern by a correlation discriminant and stochastic parallel gradient descent combined algorithm**  
W. Jiang and K. S. Chiang, *City Univ. of Hong Kong*
- PO-40 4-Stage Mach-Zehnder interferometer optical switch with phase generating couplers**  
M. Kawasako, T. Watanabe, T. Nagayama, and S. Fukushima, *Kagoshima Univ.*
- PO-41 Demonstration of equal input (intensity and phase) MMI like power coupler by using nano-pixel structure**  
K. Shoda, X. He, K. Kozu, H. Jiang, and K. Hamamoto, *Kyushu Univ.*
- PO-42 Compact high-extinction-ratio multimode interference electroabsorption modulator**  
Y. Kanesaka and T. Arakawa, *Yokohama National Univ.*
- PO-43 Stability of spatiotemporal soliton in multimode fiber with optically induced temporal potential**  
V. Mishra and M. S. Kang, *KAIST*
- PO-44 221K local heating in a Co loaded Si plasmonic waveguide**  
N. Ota, T. Miyauchi, and H. Shimizu, *Tokyo Univ. of Agriculture and Technology*
- PO-45 Modeling of surface grating-loaded VCSEL with slowing light**  
C. Ge and F. Koyama, *Tokyo Inst. Tech.*
- PO-46 36.6 dB/mm extinction ratio in TE mode semiconductor optical isolators with Co**  
R. Oshikiri, Y. Kobayashi, S. Nishiyama, and H. Shimizu, *Tokyo Univ. of Agriculture and Technology*
- PO-47 Emission enhancement of fluorescence using electron beam excited localized plasmons**  
Y. Matsui, W. Inami, and Y. Kawata, *Shizuoka Univ.*
- PO-48 Development of luminescent thin films based on superlattice structures of Al<sub>2</sub>O<sub>3</sub> and ZnO by atomic layer deposition**  
S. Kobayashi, A. Nakamura, W. Inami, and Y. Kawata, *Shizuoka Univ.*
- PO-49 Enhancing the figure of merit in surface plasmon resonance sensors with a wedge-shape Au thin film**  
T. Ogura, T. Maeda, S. Suzuki, and H. Shimizu, *Tokyo Univ. of Agriculture and Technology*
- PO-50 Evaluation of modal power distribution of graded-index plastic optical fiber connections**  
S. Ueda and O. Sugihara, *Utsunomiya Univ.*
- PO-51 Optical reflection and fluorescence study for non-destructive estimation of crude protein content in leaves of grass**  
M. Sakakura, N. Kita, G. Ishigaki, and M. Arai, *Univ. of Miyazaki*
- PO-52 Zn doping effect on surface morphology of metamorphic InAs on GaAs grown by MOVPE**  
S. Nakagawa, Y. Imamura, Y. Hirata, K. Maeda, and M. Arai, *Univ. of Miyazaki*
- PO-53 Design of high-order series-coupled microring resonator wavelength filter with differential evolution method**  
Y. Udagawa and T. Arakawa, *Yokohama National Univ.*
- PO-54 Footprint reduction of arrayed waveguided grating by waveguide width variation**  
H. Zhou, S. Heinsalu, Y. Matsushima, H. Ishikawa, and K. Utaka, *Waseda Univ.*
- PO-55 Observation of living cells using surface plasmon resonance in the deep ultraviolet region**  
K. Kobayashi, W. Inami, and Y. Kawata, *Shizuoka Univ.*
- PO-56 Study on the single-mode condition for lithium niobate-on-insulator (LNOI) rib waveguides**  
X. Yu, M. Wang, and K. Chen, *Univ. of Electronic Science and Technology of China*



- PO-57 Nb<sub>2</sub>O<sub>5</sub> horizontal slot waveguides fabricated by an improved etching process**  
T. Hinata, Y. Hayama, N. Sawayanagi, T. Tsuma, K. Nakatsuhara, M. Takeda, and T. Nishizawa, *Kanagawa Inst. Tech.*
- PO-58 Inflection in hysteresis and haze of PDLC devices by ferroelectric nanoparticle**  
A. Kumari and A. Sinha, *Indian Inst. Tech. Delhi*
- PO-59 Analysis and experiments of surface-plasmon tip-tapered fiber sensor with gold nanoparticles**  
M. Yamamoto, T. Matsumura, Y. Matsushima, H. Ishikawa, and K. Utaka, *Waseda Univ.*
- PO-60 Proposal and analysis of Si/CaF<sub>2</sub> distributed feedback waveguide for near- and mid- infrared applications**  
G. Tei, K. Kitamura, L. Liu, Y. Koyanagi, D. Sugawara, and M. Watanabe, *Tokyo Inst. Tech.*

(Following postdeadline papers are accepted for poster presentation)

- PO-61 Proposal of space-mode “compressor” by using nano-pixel**  
Y. Wang, H. Jiang, and K. Hamamoto, *Kyushu Univ.*
- PO-62 Proposal of the all-optical memory using the pseudo-localized plasmon resonance excited by an optical vortex beam**  
D. Tanaka<sup>1</sup>, H. Jiang<sup>2</sup>, and K. Hamamoto<sup>2</sup>, <sup>1</sup>*National Inst. Tech., Oita College*, <sup>2</sup>*Kyushu Univ.*
- PO-63 Investigation on diffraction properties of polarization gratings with optically biaxial anisotropy**  
R. Momosaki<sup>1</sup>, M. Sakamoto<sup>1</sup>, K. Noda<sup>1</sup>, T. Sasaki<sup>1</sup>, T. Sakai<sup>2</sup>, Y. Hattori<sup>2</sup>, N. Kawatsuki<sup>3</sup>, and H. Ono<sup>1</sup>, <sup>1</sup>*Nagaoka Univ. of Technology*, <sup>2</sup>*Hayashi Telempu Corp.*, <sup>3</sup>*Univ. of Hyogo*
- PO-64 Examination for the application of Laguerre-Gaussian beams for underwater optical wireless communication**  
Y. Yokoyama, K. Yada, and K. Ogawa, *Japan Women's Univ.*
- PO-65 Affection analysis of frequency response with photon-photon-resonance (PPR) to directly modulated 40 Gbps signal**  
H. Xiao, K. Shoda, K. Koudu, H. Jiang, and K. Hamamoto, *Kyushu Univ.*
- PO-66 Beta-BBO-on-insulator waveguide design for coherent deep-ultraviolet light generation**  
M. S. Mohamed, and S. Forouhar, *Jet Propulsion Lab., California Inst. Tech.*

**10:00–11:15 Microconcert MC2**

- 1) Georg Friedrich Händel: “Concerto Grosso” Op.6-7
- 2) John Rutter: “Suite for Strings”
- 3) Carl Philipp Emanuel Bach: “Symphony for String Orchestra” Wq. 182 No.4
- 4) Ralph Vaughan-Williams: “Fantasia on Green-Sleeves”
- 5) Peter I. Tchaikovsky: “Souvenir de Florence” 1st mov.
- 6) Charles Gounod-Bach: “Ave Maria” (Encore)

**Break (11:15–11:20)**

**11:20–12:00 Session CT: Commemorative Talk: IEEE Edison Medal**

Chair: Y. Tohmori, *Tsurugi-Photonics Foundation*

**CT VCSEL: Its Concept, Physics, and Development**

11:20 Kenichi Iga, *Tokyo Inst. Tech.*

**Lunch (12:00–13:15)**

**13:15–14:15 Session M: Optical Processing (2)**

Chairs: D. Inoue, *Sumitomo Electric Ind., Ltd.*

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

**M-1 Optical excitation and detection of picometer-order longitudinal motion in sub- $\mu\text{m}$  plasmomechanical resonator**

13:15

S. Lee and M.-K. Seo, *Korea Advanced Institute of Science and Technology*

**M-2 Plasmonic color modulation of crystalline Ag nanocube monolayer by dynamic control of stretchable substrate**

13:30

A. Mizuno<sup>1,2</sup> and A. Ono<sup>1</sup>, <sup>1</sup>*Shizuoka Univ.* <sup>2</sup>*JSPS*

**M-3 Symmetric two-mode waveguide directional coupler on thin-film lithium niobate for electro-optic mode switching**

13:45

M. Zhang<sup>1</sup>, K. Chen<sup>1</sup>, M. Wang<sup>1</sup>, H. Yao<sup>1</sup>, and K. S. Chiang<sup>2</sup>, <sup>1</sup>*Univ. of Electronic Science and Technology of China*, <sup>2</sup>*City Univ. of Hong Kong*

**M-4 Color-selective photodetector based on hexagonal-lattice silver nanodisk array**

14:00

Z. Wu, Y. Zhai, and Q. Wang, *Southeast Univ.*

**Break (14:15–14:30)**

**14:30–15:30 Session N: Silicon Photonics**

Chairs: S. Ura, *Kyoto Inst. Tech.*

K. Yu, *KAIST*

**N-1 Ultracompact autocorrelator with pulse-width-range switch function integrated on a silicon photonic chip**

14:30

K. Kondo and H. Oshima, *Utsunomiya Univ.*

**N-2 High-efficiency focusing double-etched SiN grating coupler for trapped ion qubit manipulation**

14:45

M. Shirao<sup>1</sup>, D. Klawson<sup>1</sup>, S. Mouradian<sup>2</sup>, and M. C. Wu<sup>1</sup>, <sup>1</sup>*Univ. of California*, <sup>2</sup>*Univ. of California, Berkeley*

**N-3 High extinction ratio Si optical modulator loaded with integrated polarizer**

15:00

H. Kojima<sup>1</sup>, J. Fujikata<sup>2</sup>, and T. Kita<sup>1</sup>, <sup>1</sup>*Waseda Univ.*, <sup>2</sup>*Tokushima Univ.*

- N-4**    **A unique combination of microlens and pillar on fiber facet using UV-curable resin for high optical coupling to silicon photonics**  
15:15    Y. Kamiura, T. Kurisawa, C. Fujikawa, and O. Mikami, *Tokai Univ.*

**Break (15:30–15:45)**

**15:45–16:30    Session PD: Postdeadline Session**

Chairs: T. Sato, *NTT Corp.*  
T. Watanabe, *Kagoshima Univ.*

- PD-1**    **Characterization of Laguerre-Gaussian mode multiplexing in atmospheric turbulence for optical wireless communication**  
15:45    K. Yada, and K. Ogawa, *Japan Women's Univ.*

- PD-2**    **Rapid automatic waveguide recognition using YOLO for 3D waveguide drawing**  
16:00    S. Matsubara, T. Zennouji, H. Jiang, and K. Hamamoto, *Kyushu Univ.*

- PD-3**    **50 Gb/s 850 nm Few-Mode VCSELs for Pre-emphasis NRZ-OOK over 100-m GI-SMF Transmission**  
16:15    Y.-W. Yeh, P.-T. Lee, and H.-C. Kuo, *National Yang Ming Chiao Tung Univ.*

**16:30–16:45    Award Ceremony**

**16:45–17:00    Closing Remarks**

Program Co-chairs:  
T. Sato, *NTT Corp.*  
T. Watanabe, *Kagoshima Univ.*