

Technical Sessions

Sunday, 19 November

ENEOS Hall, Bldg. 3-s

14:00-17:20 30th Anniversary Symposium

Moderators:

H. Nakajima, *Waseda Univ.*

Y. Kokubun, *Yokohama National Univ.*

Greeting Remarks:

14:00 Kazuo Hotate, *Toyota Tech. Inst.*

President of The Japan Society of Applied Physics

AS-1 30 years of Microoptics Conference

14:10 H. Nakajima, *Waseda Univ.*

AS-2 VCSEL and microlens array: parallel microoptics world

14:50 K. Iga, *Tokyo Inst. Tech.*

Break (15:30-15:50)

AS-3 50 years of fibers and integrated optics

15:50 Y. Kokubun, *Yokohama National Univ.*

AS-4 Photonics polymers for fiber and display

16:30 Y. Koike, *Keio Univ.*

17:10 Closing Remarks by the Moderators

Atrium, Bldg. 3

17:30-19:00

Get Together Party

Free of Charge

MoC: H. Shoji, Sumitomo Electric Ind., Ltd.

Drinks and Light Meals

♪ Light Music ♪

Performed by

Hirochika Nakajima (Waseda Univ.): Vocal

Okiihiro Sugihara (Utsunomiya Univ.): Vocal

Genichi Hatakoshi (Waseda Univ.): E-Piano

Kenichi Iga (Tokyo Inst. Tech.): Bass

Technical Sessions

Monday, 20 November

Convention Hall, Bldg. An

9:00-9:15 Opening Remarks

Conference Co-chairs:

S. Iwamoto, *Univ. Tokyo*

S. Yamashita, *Univ. Tokyo*

Welcome Address

Teruo Fujii, *Director General, IIS, Univ. Tokyo*

9:15-11:45 Plenary Session

Chairs: S. Iwamoto, *Univ. Tokyo*

S. Yamashita, *Univ. Tokyo*

PL-1 Progress in quantum dots for advanced photonics

9:15 Y. Arakawa, *Univ. of Tokyo*

PL-2 The multifaceted world of photonic crystal fibres

9:50 P. Russell, *Max Planck Institute for the Science of Light*

Break (10:25-10:35)

PL-3 Recent advances in nanoscale photonic MEMS

10:35 M. C. Wu, *Univ. of California, Berkeley*

PL-4 VCSEL technology for imaging and sensor systems applications

11:10

K. J. Ebeling and R. Michalzik, *Universität Ulm*

Lunch (12:00-13:30)

13:30-15:15 Session A: Optical Communication and Modulation

Chairs: A. Choudhary, *Univ. Sydney*

H. Kanamori, *Sumitomo Electric Ind., Ltd.*

A-1 Underwater wireless optical communications: from system-level demonstrations to channel modelling (Invited)

13:30

H. M. Oubei, C. Shen, K.-H. Park, A. Kammoun, T. K. Ng, M.-S. Alouini, and B. S. Ooi, *King Abdullah University of Science and Technology*

A-2 High extinction ratio LN modulator with low half-wave voltage and small chirp by using thin substrate

14:00

Y. Yamaguchi^{1,2}, A. Kanno¹, N. Yamamoto¹, T. Kawanishi^{1,2}, and H. Nakajima², ¹*National Institute of Information and Communications Technology*, ²*Waseda University*

A-3 60 GHz band optical single-sideband modulator using polarization-reversed structures with asymmetric Mach-Zehnder optical waveguide

14:15

Y. Matsukawa, T. Inoue, H. Murata, and A. Sanada, *Osaka University*

A-4 32-Gbps modulation of single silicon microring resonator-loaded Mach-Zehnder modulator

14:30

Y. Yabushita, H. Takazawa, Y. Kokubun, and T. Arakawa, *Yokohama National University*

A-5 Optical-to-wireless media conversion by utilizing cross gain modulation at semiconductor optical amplifier

14:45

Y. Yamanaka, Y. Kim, T. Kuboki, and K. Kato, *Kyushu University*

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- A-6** **WDM coupler for signal and second harmonic pump based on silica-based PLC for hybrid integration of linear and nonlinear optical devices**
15:00 T. Kashiwazaki, T. Kazama, T. Umeki, J. Sakamoto, and R. Kasahara, *NTT Corporation*

Break (15:15-15:30)

15:30-17:15 **Session B: Manipulation and Processing of Light**

- Chairs: B. S. Ooi, *King Abdullah Univ. Sci. and Tech.*
S. Ura, *Kyoto Inst. Tech.*

- B-1** **On-chip Brillouin processing for coherent optical communications (Invited)**
15:30 A. Choudhary¹, E. Giacomidis¹, M. Pelusi¹, E. Magi¹, D. Marpaung¹, T. Inoue², K. Vu³, D.-Y. Choi³, P. Ma³, S. Madden³, B. Corcoran⁴, S. Namiki², and B. J. Eggleton¹, ¹*University of Sydney*, ²*AIST*, ³*Australian National University*, ⁴*Monash University*
- B-2** **Pre-distortion technique for compensating QAM signal distortions generated by dual-parallel Mach-Zehnder modulators with low-extinction ratio and small-chirp parameter**
16:00 Y. Kodama¹, Y. Yamaguchi^{1,2}, A. Kanno², T. Kawanishi^{1,2}, and H. Nakajima¹, ¹*Waseda University*, ²*National Institute of Information and Communications Technology*
- B-3** **Novel measurement method for optical pulse width at high-repetition frequency**
16:15 K. Mitsueda, Y. Yamanaka, and K. Kato, *Kyushu University*
- B-4** **Proposal of compact three-mode exchanger based on symmetric and asymmetric directional couplers with integrated mode rotator**
16:30 T. Fujisawa¹, E. Taguchi¹, T. Sakamoto², T. Matsui², K. Tsujikawa², K. Nakajima², and K. Saitoh¹, ¹*Hokkaido University*, ²*NTT Access Service Network Laboratories*
- B-5** **Proposal of Si waveguide optical isolator based on nonreciprocal TE-TM mode conversion using magneto-optical phase shift for TM mode**
16:45 R. Yamaguchi, Y. Shoji, and T. Mizumoto, *Tokyo Institute of Technology*
- B-6** **Efficient silicon nitride grating coupler with a dielectric multilayer reflector**
17:00 J. Hong, and S. Yokoyama, *Kyushu University*

Break (Light meal served) (17:15-17:45)

17:45-19:45 **Special Session: Vehicle Microoptics for Autonomous Driving**

- Chairs: M. Kagami, *Toyota Central R&D Labs.*
O. Sugihara, *Utsunomiya Univ.*

- SS-1** **Optical communications for next generation automotive networks**
17:45 Ó. Ciordia, R. Pérez, and C. Pardo, *Knowledge Development for POF S.L.*
- SS-2** **Monolithic optical phased arrays in silicon**
18:15 H. Hashemi, *Univ. of Southern California*

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SS-3 Laser rangefinder for planetary exploration

18:45 T. Mizuno, *JAXA*

SS-4 Fiber optic interconnection devices for in-vehicle communication

19:15 S. Kobayashi¹ and C. Almeida², ¹*TE Connectivity Japan*, ²*TE Connectivity Germany*

Tuesday, 21 November

Convention Hall, Bldg. An

9:00-10:30 Session C: Lasers and Light Control

Chairs: J. Mork, *Technical Univ. Denmark*
K. Kato, *Kyushu Univ.*

C-1 Design of 100Gbps double transverse coupled cavity VCSELs

9:00 H. R. Ibrahim¹, M. Ahmed², and F. Koyama¹, ¹*Tokyo Institute of Technology*, ²*Minia University*

C-2 Multiple photon resonance by using active-multimode interferometer laser diode

9:15 B. Hong, T. Kitano, T. Mori, H. Jiang, and K. Hamamoto, *Kyushu University*

C-3 WDM lasers and arrays for applications in optical networking and interconnect: overview and perspectives (Invited)

9:30 S.-L. Lee, *National Taiwan University of Science and Technology*

C-4 Selective mode conversion using dual-phase modulation

10:00 T. Maeda¹, A. Okamoto¹, K. Ogawa¹, A. Tomita¹, Y. Wakayama², and T. Tsuritani², ¹*Hokkaido University*, ²*KDDI Research, Inc.*

C-5 Silicon waveguide Michelson interferometer for multi-wavelength modulator

10:15 K. Sekine, Y. Shoji, and T. Mizumoto, *Tokyo Institute of Technology*

Break (10:30-10:45)

10:45-12:45 Session D: Optical Fiber and Waveguide Devices

Chairs: S.-L. Lee, *National Taiwan Univ. Sci. and Tech.*
T. Watanabe, *Kagoshima Univ.*

D-1 Silicon photonics for optical computing, interconnects and sensing (Invited)

10:45 R. T. Chen, *The University of Texas, Austin*

D-2 Novel fiber attachment techniques for miniaturization of planar lightwave circuit module

11:15 S. Katayose, K. Watanabe, A. Aratake, J. Sakamoto, R. Kasahara, and M. Itoh, *NTT Corporation*

D-3 Low-noise graded-index plastic optical fiber for consumer photonics in 8K era

11:30 A. Inoue and Y. Koike, *Keio University*

D-4 Silicon photonics for optical communication and sensing (Invited)

11:45 C. R. Doerr, *Acacia Communications*

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D-5 Observation of eigenmode propagation in few-mode fibers by selective LP mode excitation

12:15

T. Yamaguchi¹, S. Miura², and Y. Kokubun³, ¹*School of Engineering Sciences, Yokohama National University*, ²*Graduate School of Engineering, Yokohama National University*, ³*Faculty of Engineering, Yokohama National University*

D-6 Pluggable photonic circuit platform using a novel passive alignment method

12:30

H. Ishikawa, K. Shikama, K. Suzuki, S. Katayose, and A. Aratake, *NTT Corporation*

Break (12:45-13:00)

2F-Foyer, Bldg. An

13:00-15:00 Session P: Poster Session

(Complimentary light meal and coffee inclusive)

Chairs: O. Sugihara, *Utsunomiya Univ.*
H. Takahashi, *Sophia Univ.*

(13:00-14:00) Odd numbers: 1st half

(14:00-15:00) Even numbers: 2nd half

P-1 Design of a high-speed graphene optical modulator on a silicon slot waveguide

G. Kovacevic¹, C. Phare², S. Y. Set¹, M. Lipson², and S. Yamashita¹, ¹*RCAST, The University of Tokyo*, ²*School of Engineering and Applied Science, Columbia University in the City of New York*

P-2 Small-signal response of slow-light VCSEL amplifier

A. M. A Hassan^{1,2}, M. Ahmed³, M. Nakahama¹, and F. Koyama¹, ¹*FIRST, Tokyo Institute of Technology*, ²*Faculty of Science, Minia University*, ³*Faculty of Science, Al-Azhar University, Assuit*

P-3 Consideration of wall-plug efficiency for LEDs

G. Hatakoshi, *Waseda University*

P-4 Theoretical and experimental thermal resistance of VCSELs considering thermal conductivity reduction effect of thin layer

M. Mimura and T. Miyamoto, *Tokyo Institute of Technology*

P-5 Electromagnetically-induced focusing controlled by a microwave field

O. N. Verma and S. Roy, *NIT Warangal*

P-6 Design and characterization of new azimuth-type lens for reading glasses with extended depth of focus

R. Onose and S. Komatsu, *Waseda University*

P-7 Comparison of wavefront coding optical system using two conjugate phase masks among cubic, sinusoidal, and tangent phase masks

M. Nakamura and S. Komatsu, *Waseda University*

P-8 Artifacts in fluorescence lifetime imaging of gold nanorod dimer

S.-P. Chen^{1,2}, P.-J. Cheng², C.-T. Hsieh², and S.-W. Chang^{1,2}, ¹*National Chiao Tung University*, ²*Research Center for Applied Sciences, Academia Sinica*

P-9 Image evaluation based on the mean structural similarity for wavefront coding

T. Fukuda and S. Komatsu, *Waseda University*

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- P-10 Evaluation of inverse tangent phase mask in wavefront coding**
M. Takahashi and S. Komatsu, *Waseda University*
- P-11 Evaluation of the diffractive element depth sensor under the thermal conditions**
K.-D. Chang, C.-W. Liu, L.-Y. Chen, and C.-I. Tai, *Mechanical and Mechatronics Systems Research Laboratories, Industrial Technology Research Institute*
- P-12 CAD modelling of optical fiber reflectance probe for biomedical diffuse reflectance spectroscopy applications**
Y. Amer and H. Omran, *German University in Cairo*
- P-13 Simultaneous utilization of spontaneous emission and laser emission in VCSEL for efficiency improvement of optical wireless power transmission**
Y. Suda and T. Miyamoto, *Tokyo Institute of Technology*
- P-14 Highly aberrated phase elements for presbyopia and astigmatism correction**
C. Almaguer, J. Arines, and E. Acosta, *University of Santiago de Compostela*
- P-15 Ultrafast direct measurement of HBT effect by two-photon absorption based on Feynman's path-integral theory**
B. Bai, Y. Zhou, H. Chen, H. Zheng, J. Liu, and Z. Xu, *Xi'an Jiaotong University*
- P-16 Beam propagation analysis of optical activity and circular dichroism in helically twisted photonic crystal fiber**
S. Nakano, T. Fujisawa, T. Sato, and K. Saitoh, *Hokkaido University*
- P-17 Nanostructured gradient index microlens for mid infrared applications**
R. Buczynski^{1,2,3}, P. Stafiej^{1,2}, A. Anuszkiewicz¹, A. Filipkowski¹, D. Pysz¹, A. J. Waddie³, and M. R. Taghizadeh³,
¹*Institute of Electronic Materials Technology*, ²*Faculty of Physics, University of Warsaw*, ³*Department of Physics, School of Engineering and Physical Sciences, Heriot-Watt University*
- P-18 Resonant frequency analysis of dielectric equilateral triangular microcavities**
I. O. Sukharevsky¹, M. Lebental², and S. Bittner², ¹*Technical University of Munich*, ²*Ecole normale superieure Paris-Saclay*
- P-19 Gallium diffused lithium niobate optical waveguide**
S. Ren¹, X. F. Yang¹, W. H. Wong², D. Y. Yu¹, E. Y. B. Pun², and D. L. Zhang¹, ¹*Tianjin University*, ²*City University of Hong Kong*
- P-20 Light-induced self-written waveguide formation by near-infrared wavelength continuous wave laser light**
K. Kawamura, F. S. Tan, and O. Sugihara, *Utsunomiya University*
- P-21 MEMS plasmonic switch with stripe plasmonic waveguide**
T. Ando¹, T. Kaji¹, K. Yamaguchi², T. Okamoto¹, and M. Haraguchi¹, ¹*Tokushima University*, ²*Kagawa University*

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- P-22 Fabrication of fine metal structure by using interference pattern of copropagating optical vortices and lift-off process**
M. Sakamoto¹, T. Hizatsuki¹, K. Noda¹, T. Sasaki¹, N. Kawatsuki², K. Goto³, and H. Ono¹, ¹*Nagaoka University of Technology*, ²*University of Hyogo*, ³*Nissan Chemical Industries, Ltd.*
- P-23 Enhanced thermal stability of electro-optic polymer modulator**
H. Miura¹ and S. Yokoyama², ¹*Interdisciplinary Graduate School of Engineering Sciences, Kyushu University*, ²*Institute for Materials Chemistry and Engineering, Kyushu University*
- P-24 Withdrawn**
- P-25 Magneto-plasmonics on perpendicular magnetic nanostructures consisting of CoPt layers and noble metal grains**
H. Yamane¹, Y. Isaji², K. Takeda², and M. Kobayashi², ¹*Akita Industrial Technology Center*, ²*Chiba Institute of Technology*
- P-26 Proximity amplitude and phase control for beam reduction using computer-generated hologram**
C. H. Vu¹, S. Hasegawa¹, Y. Ogura², J. Tanida², and Y. Hayasaki¹, ¹*Department of Optical Engineering, Utsunomiya University*, ²*Graduate School of Information Science and Technology, Osaka University*
- P-27 Au nanostructures electrodeposited on graphene oxide-modified ITO glass as SERS substrates for dopamine detection in human serum**
V. D. Phung¹, J. W. Sik¹, J.-H. Kim², and S.-W. Lee¹, ¹*Gachon University*, ²*Gil Medical Center*
- P-28 Thermoplasmonics of micro glassbead coated with gold nanoparticles**
N. Sekimoto, S. Yanagiya, and A. Furube, *Tokushima University*
- P-29 Transient absorption of titanium dioxide sputtered film deposited on two-dimensionally assembled gold nanoparticles**
T. Takahata, S. Yanagiya, and A. Furube, *Tokushima University*
- P-30 Light-emitting diode conditioned with YAG:Ce³⁺ phosphors and CdSe/ZnS quantum dots for high color-rendering-index white-light generation**
H. Xiao¹, X. Xiao², K. Wang², and K. S. Chiang¹, ¹*City University of Hong Kong*, ²*Southern University of Science and Technology*
- P-31 Luminescence investigation of near white light emitting zinc stannate**
M.-T. Tsai, C.-H. Lin, and C.-C. Chan, *National Formosa University*
- P-32 Resistance evaluation of holographic polymer-dispersed liquid crystal memory for gamma-ray irradiation**
A. Ogiwara¹, M. Watanabe², and Y. Ito², ¹*Kobe City College of Technology*, ²*Shizuoka University*

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- P-33 Effective permeability measurement of μ -negative metamaterials using an inductance method**
Z. Hong¹, C. Zhao¹, X. Luo², Z. Huang¹, H. Zhu¹, and S. Zhu¹, ¹*School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University*, ²*Department of Physics, Shanghai Jiao Tong University*
- P-34 Optical and emission properties of dye molecules captured in the mesoscale channels of micron-sized metal-organic framework crystals**
S. Huh¹, I.-H. Choi¹, and Y. Kim², ¹*Hankuk University of Foreign Studies*, ²*Ewha Womans University*
- P-35 Effect of UV irradiation on transmittance spectra in polymer stabilized cholesteric liquid crystals**
A. Ogiwara¹ and H. Kakiuchida², ¹*Kobe City College of Technology*, ²*National Institute of Advanced Industrial Science and Technology*
- P-36 Vertical split-ring resonator metamaterial for isotropic absorption and sensor**
M. K. Chen¹, P. C. Wu², C. Y. Liao¹, J.-W. Chen¹, R. J. Lin¹, Y. H. Chen¹, and D. P. Tsai^{1,2}, ¹*Department of Physics, National Taiwan University*, ²*Research Center for Applied Sciences, Academia Sinica*
- P-37 Real time sensing of ¹²CO₂ and ¹³CO₂ using 2 μ m DFB-LD**
K. Amamoto, K. Tei, S. Yamaguchi, S. Sakai, M. Asobe, and T. Ohba, *Tokai University*
- P-38 AC magnetic field imaging by using digital micro-mirror device**
S. Taue, Y. Toyota, K. Fujimori, and H. Fukano, *Okayama University*
- P-39 Experimental demonstration of a digital holographic microscope based on a planar lightwave circuit**
H. Satake¹, K. Ikeda¹, K. Inomoto¹, K. Okamoto², and E. Watanabe¹, ¹*The University of Electro-Communications*, ²*Okamoto Laboratory*
- P-40 Proposal of interference signal processing for dynamic displacement measurement with high time-resolution**
O. Furukawa and Y. Tanaka, *Tokyo University of Agriculture and Technology*
- P-41 Observation of stimulated Brillouin scattering growth along optical fiber using two-photon absorption process in a silicon avalanche photodiode**
M. Nemoto, H. Miyazawa, and Y. Tanaka, *Tokyo University of Agriculture and Technology*
- P-42 Computational ghost imaging ---An alternative for underwater optical imaging**
M. Le, H. Zheng, and Z. Xu, *Xi'an Jiaotong University*
- P-43 Long-term stability improvement of Brillouin measurement in plastic optical fibers by Fresnel suppression using amorphous fluoropolymer**
N. Matsutani, H. Lee, Y. Mizuno, and K. Nakamura, *Tokyo Institute of Technology*
- P-44 Perfluorinated graded-index plastic optical fiber Bragg gratings: observation and theoretical analysis of unique dependence on pressure**
R. Ishikawa¹, H. Lee¹, A. Lacraz², A. Theodosiou², K. Kalli², Y. Mizuno¹, and K. Nakamura¹, ¹*Tokyo Institute of Technology*, ²*Cyprus University of Technology*

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- P-45 Tens-of-nanometer-scale dynamic displacement measurement using active change of operation point for phase modulator**
K. Ueda, K. Tsuchiya, and Y. Tanaka, *Tokyo University of Agriculture and Technology*
- P-46 Proposal of signal processing based on machine learning in Brillouin optical correlation domain analysis/reflectometry**
Y. Yao, S. Y. Set, and S. Yamashita, *The University of Tokyo*
- P-47 Dual-wavelength, low-coherence digital holography using quantum dot based light source**
S. Jeon¹, J.-Y. Lee¹, J.-S. Lim², Y.-J. Kim¹, and N.-C. Park¹,
¹*Department of Mechanical Engineering, Yonsei University,*
²*Center for Information Storage Device, Yonsei University*
- P-48 The application of micro laser Doppler velocimeter to hemodialysis**
K. Yoshinaga, F. Nakashima, H. Nogami, and R. Sawada,
Kyushu University
- P-49 Proposal of Si-based integrated probe for laser Doppler cross-sectional velocity distribution measurement**
K. Maru¹, K. Yamashita¹, H. Watanabe¹, R. Matsuda¹, and K. Nakatsuhara²,
¹*Kagawa University,* ²*Kanagawa Institute of Technology*
- P-50 Basic study on real-time vibration displacement measurement using probe light modulated by phase-modulated RF signal**
K. Yamamoto, Y. Yamada, and Y. Tanaka, *Tokyo University of Agriculture and Technology*
- P-51 Output characteristics for high-order resonance modes in resonance-type guided-wave optical acoustic emission sensors**
K. Shimizu¹, M. Ohkawa², and T. Sato²,
¹*Graduate School of Science and Technology, Niigata University,* ²*Faculty of Engineering, Niigata University*
- P-52 Thermally annealed gold film on optical fiber for multimode interferometric refractive index measurement**
Y. Hosokawa, S. Taue, and H. Fukano, *Okayama University*
- P-53 Non-destructive inspection of semiconductor optical waveguide using optical coherence tomography with visible broadband light source**
K. Ishida¹, N. Ozaki¹, N. Ikeda², and Y. Sugimoto²,
¹*Wakayama University,* ²*NIMS*
- P-54 Design method of a liquid crystal based computer-generated hologram for freeform surface measurement**
Q. Hao, S. Wang, and Y. Hu, *Beijing Institute of Technology*
- P-55 Weight sensor by 3D printed mechanically induced long-period fiber grating for power control inside single-mode fiber**
R. Khun-in^{1,2}, K. Nanjo¹, Y. Jiraraksopakun², A. Bhatranand², and H. Yokoi^{1,3},
¹*Graduate School of Engineering and Science, Shibaura Institute of Technology,* ²*King Mongkut's Univ. of Tech. Thonburi,* ³*SIT Research Center for Green Inno. Shibaura Institute of Technology*
- P-56 Diaphragm thickness-dependent sensitivity in a glass-based guided-wave optical microphone**
Y. Karasawa¹, M. Ohkawa², and T. Sato²,
¹*Graduate School of Science and Technology, Niigata University,* ²*Faculty of Engineering, Niigata University*

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- P-57 Preparation of Cu₂O@apoferritin for detection of dopamine**
H. K. Lee and S. J. Park, *Gachon University*
- P-58 Optical performance of computer generated hologram under a small reconstruction beam**
T.-T. Huang, Q.-C. Zeng, C.-J. Chuang, and C.-M. Wang, *National Dong Hwa University*
- P-59 Breakdown voltage based transformer oil analysis using optical fiber as sensor**
D. K. Mahanta¹, and S. Laskar², ¹*Assam Engineering College*, ²*Assam Don Bosco University*
- P-60 Magnetic field sensing by bi-layer Ni-based subwavelength periodic structure operating visible wavelength region**
Y. Takashima, M. Haraguchi, and Y. Naoi, *Tokushima University*
- P-61 Dynamic observation of laser-tissue interaction with optical coherence tomography**
W.-J. Chen¹, W.-C. Chen¹, and M.-T. Tsai^{1,2}, ¹*Department of Electrical Engineering, Chang Gung University*, ²*Department of Dermatology, Chang Gung Memorial Hospital*
- P-62 Fundamental demonstration of mode-group demultiplexing technique based on volume holographic demultiplexer**
S. Shimizu¹, A. Okamoto¹, F. Mizukawa¹, K. Ogawa¹, A. Tomita¹, T. Takahata^{1,2}, S. Shinada³, and N. Wada³, ¹*Hokkaido University*, ²*OPTOQUEST Co., Ltd.*, ³*National Institute of Information and Communications Technology*
- P-63 Offset-launch measurement for few-mode long-period fiber gratings fabricated using tilted amplitude mask**
T. Mizunami, R. Shioya, and M. Minami, *Kyushu Institute of Technology*
- P-64 Waveguide-type optical circuit for recognition of 8PSK-coded labels**
N.-E. Odbayar, Y. Oiwa, H. Kishikawa, and N. Goto, *Tokushima University*
- P-65 Asymmetric LP₀₁-LP₁₁-LP₀₁ mode conversion along in-line few-mode fibers for all-fiber bandpass filters**
M. Kanda, T. Kibune, and H. Sakata, *Shizuoka University*
- P-66 A thickness-varying sub-wavelength grating focusing lens for TE polarization Light**
M. Zhang, Y. Huang, W. Fang, H. Fan, X. Duan, K. Liu, and X. Ren, *Beijing University of Posts and Telecommunications*
- P-67 Phase effect on silicon-wire based broadband directional coupler using Mach-Zehnder structure for CWDM applications**
S.-H. Hsu, W.-D. Lin, and Y.-C. Chung, *National Taiwan University of Science and Technology*
- P-68 Linewidth-adjustable silicon photonics waveguide Bragg filters**
T.-H. Yen, C.-J. Wu, C.-J. Yu, and Y.-J. Hung, *National Sun Yat-sen University*
- P-69 Fabrication of micro-tip for coupling to wire waveguides**
M. Tomiki and H. Sakata, *Shizuoka University*

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- P-70 Fabrication and characterization of a binary diffractive lens for controlling the focal length and depth of focus**
A. Motogaito, Y. Iguchi, S. Kato, H. Miyake, and K. Hiramatsu, *Mie University*
- P-71 Numerical estimation of dispersion effect in deeply-etched fully integrated MEMS Mach-Zhender interferometer**
H. Omran,¹ B. Mortada², and D. Khaliq³, ¹*German University in Cairo*, ²*Si-Ware Systems*, ³*Ain Shams University*
- P-72 Analysis of phase-sensitive amplification in phase-shifted periodically-poled waveguide for discrimination and amplification of optical vector modulation signal**
S. Sakakibara, H. Murata, and A. Sanada, *Osaka University*
- P-73 Analyses of all-optical gate switches employing quasi-phase matched devices: effects on pattern difference of domain inversion period error**
Y. Fukuchi, T. Kimura, T. Yoshida, M. Fujisawa, and E. Uzu, *Tokyo University of Science*
- P-74 Pattern effects of random domain length error in PPLN-based all-optical retiming switches**
Y. Fukuchi, T. Kimura, and T. Matsuura, *Tokyo University of Science*
- P-75 Withdrawn**
- P-76 Numerical analyses of all-optical gate switches employing periodically poled lithium niobate devices: pattern effect of domain length error**
Y. Fukuchi and T. Matsuura, *Tokyo University of Science*
- P-77 Low attenuation mode converter with mode power distribution controllability by twist processing in step-index optical fibers**
K. Horiguchi^{1,2}, T. Iikubo¹, Y. Beppu¹, Y. Hyakutake¹, and O. Sugihara², ¹*Adamant Co., Ltd.*, ²*Utsunomiya University*
- P-78 Fast wavelength stabilization of tunable laser after starting laser oscillation**
H. Fukuda, K. Yamaguchi, T. Kuboki, and K. Kato, *Kyushu University*
- P-79 Evaluation of wavelength dependence of integrated MZM using balanced-bridge and asymmetric X waveguide structures for high extinction ratio modulation**
Y. Hanawa¹, Y. Yamaguchi^{1,2}, A. Kanno², T. Kawanishi^{1,2}, and H. Nakajima¹, ¹*Waseda University*, ²*National Institute of Information and Communications Technology*
- P-80 Proposal of quantum well polarization modulator based on double microring resonator for Stokes vector modulation**
T. Hirayama, K. Suzuki, Y. Kokubun, and T. Arakawa, *Yokohama National University*
- P-81 Efficiency improvement by serial-connection of VCSEL array for optical wireless power transmission**
Y. Katsuta and T. Miyamoto, *Tokyo Institute of Technology*
- P-82 Linearizer for wavelength sweep at tunable DBR-LD and linearity evaluation of sweep**
M. Gohara, R. Kimura, K. Yamaguchi, T. Kuboki, and K. Kato, *Kyushu University*

Technical Sessions

- P-83 MOVPE growth of lattice matched InAs/GaAsSb superlattice on InAs substrate for mid-infrared sensing devices**
K. Takahashi, Y. Fujiwara, Y. Yamagata, K. Yoshimoto, Y. Inoue, R. Wakaki, K. Maeda, and M. Arai, *University of Miyazaki*
- P-84 Hybrid ultra thin silicon and electro-optic polymer waveguide modulator**
Y. Inoue¹, H. Miura¹, and S. Yokoyama^{1,2}, ¹*Interdisciplinary Graduate School of Engineering Sciences, Kyushu University*, ²*Institute for Materials Chemistry and Engineering, Kyushu University*
- P-85 Emission spectrum evaluation of 0.8 - 1.1 μm range chirped multiple quantum wells for optical sensing**
M. Kamikado, Y. Imamura, and M. Arai, *University of Miyazaki*
- P-86 Reliability analysis of GaN-based UVLEDs under forward bias operations in salty vapor environment**
S.-C. Huang¹, H. Li¹, Y.-S. Lee², C.-H. Hung², S.-C. Wang¹, H. Chen², and T.-C. Lu¹, ¹*National Chiao Tung University*, ²*National Chi Nan University*
- P-87 Three-dimensional compressive strain and its effect on optical properties of GaN-based light emitting diode grown on patterned sapphire substrate by confocal spectromicroscopy**
H. Li¹, H.-Y. Cheng², W.-L. Chen², Y.-H. Huang², C.-K. Li², C.-Y. Chang¹, Y.-R. Wu², T.-C. Lu¹, and Y.-M. Chang², ¹*National Chiao Tung University*, ²*National Taiwan University*
- P-88 Gold and silver core-shell nanoparticles for light absorption enhancement of organic solar cells**
H. S. Kim, Q. N. Tran, and S. J. Park, *Gachon University*
- P-89 Silicon waveguide TE₀/TE₁ mode conversion Bragg grating for constituting a resonator device**
H. Okayama^{1,2}, Y. Onawa^{1,2}, D. Shimura^{1,2}, H. Yaegashi^{1,2}, and H. Sasaki^{1,2}, ¹*Ok Electric Industry Co., Ltd.*, ²*PETRA*
- P-90 Heat-resistant low-loss connectors for gigabit plastic optical fiber communication**
M. Uchida¹, H. Tanaka¹, S. Kobayashi^{1,2}, T. Kikuta³, F. S. Tan¹, and O. Sugihara¹, ¹*Utsunomiya University*, ²*Tyco Electronics Japan G.K.*, ³*Adamant Co., Ltd*
- P-91 Analysis on Si modified MMI-waveguide-type optical switch operated with carrier injection**
T. Shirai¹, A. Ishikawa¹, Y. Matsushima², H. Ishikawa¹, and K. Utaka¹, ¹*Faculty of Science and Engineering, Waseda University*, ²*Green Computing Systems Research Organization, Waseda University*
- P-92 Output position variation in grating coupler integrated in waveguide resonator**
R. Tsujimoto¹, K. Mori¹, K. Kintaka², J. Inoue¹, and S. Ura¹, ¹*Kyoto Institute of Technology*, ²*National Institute of Advanced Industrial Science and Technology*
- P-93 Robust silicon 3-dB coupler using Inverse engineering based optimization**
H.-C. Chung and S.-Y. Tseng, *National Cheng Kung University*

Technical Sessions

- P-94 Optimization of TiO₂ composite coating on pc-WLED package to enhance optical efficiency**
I. S. Han¹, H. J. Kim¹, M. H. Shin¹, C. S. Kim², and Y. J. Kim¹, ¹*Yonsei University*, ²*LUMIMICRO.Co.,Ltd*
- P-95 Feasibility study of adaptive gain control of quantum-dot SOA for unicast/multicast wavelength selective routing systems in T-band**
T. Fujimoto¹, T. Uesugi¹, R. Kubo¹, H. Tsuda¹, M. Sudo², T. Hajikano², Y. Tomomatsu³, and K. Yoshizawa⁴, ¹*Keio University*, ²*Optoquest Co., Ltd.*, ³*Koshin Kogaku Co., Ltd.*, ⁴*Pioneer Micro Technology Corporation*
- P-96 Pump phase-locking to phase-conjugated twin waves with heterodyne OPLL assisted by sum-frequency and second harmonic generation for ND-PSAs**
Y. Okamura¹, K. Kondo¹, T. Okabe¹, M. Koga², and A. Takada¹, ¹*Tokushima University*, ²*Oita University*
- P-97 Quadrature imbalance compensation for M-ary modulated signals interleaved with reference light**
Y. Okamura¹, H. Uno¹, M. Hanawa², and A. Takada¹, ¹*Tokushima University*, ²*University of Yamanashi*
- P-98 Proposal of cost-efficient and low-complexity platform for software defined visible light communication**
M. Che, T. Kuboki, and K. Kato, *Kyushu University*
- P-99 Tolerance to lateral displacement and angular deflection on mode sorting performance for beams carrying orbital angular momentum**
N. Sakashita, H. Kishikawa, and N. Goto, *Tokushima University*
- P-100 Multicast wavelength allocation for energy-efficient access networks considering wavelength switching time of T-band devices**
T. Shobudani, T. Fujimoto, and R. Kubo, *Keio University*
- P-101 Efficiency evaluation of hybrid concentrated photovoltaic under direct and diffuse illumination**
Q.-C. Zeng¹, W.-C. Tsao¹, T.-T. Huang¹, H.-F. Hong², and C.-M. Wang¹, ¹*Opto-electronic Engineering, National Dong Hwa University*, ²*Institute of Nuclear Energy Research, Atomic Energy Council, Executive Yuan*
- P-102 Medium-range propagation experiment using optical duplicate system**
T. Nakayama¹, Y. Takayama¹, C. Fujikawa², and K. Kodate³, ¹*Faculty of Information and Telecommunication Engineering, Tokai University*, ²*Faculty of Engineering, Tokai University*, ³*Japan Women's University*
- P-103 Metamaterial computational ghost imaging**
Y. He, S. Zhu, G. Dong, A. Zhang, and Z. Xu, *Xi'an Jiaotong University*
- P-104 Hybrid refractive-diffractive spectrum-splitting module as a full-spectrum concentrator**
J.-R. Sze¹ and A.-C. Wei², ¹*Instrument Technology Research Center, National Applied Research Laboratories*, ²*Graduate Institute of Energy Engineering, National Central University*
- P-105 Enlarging acceptance angle of a planar solar concentrator with a V-groove array**
A.-C. Wei¹, S.-Y. Hsiao², and J.-R. Sze³, ¹*Graduate Institute of Energy Engineering, National Central University*, ²*Department of Mechanical Engineering, National Central University*, ³*Instrument Technology Research Center, National Applied Research Laboratories*

Technical Sessions

- P-106 Pressure dependence of Brillouin frequency shift in plastic optical fibers**
H. Lee¹, Y. Mizuno¹, N. Hayashi², and K. Nakamura¹, ¹*Tokyo Institute of Technology*, ²*Univ. of Tokyo*

(Following postdeadline papers are accepted for poster presentation)

- PD-5 Compensation of optical aberration for improvement of image quality in virtual-phase-conjugation based optical tomography**
Y. Goto, A. Okamoto, K. Ogawa, and A. Tomita, *Hokkaido University*
- PD-6 Enhanced optical absorption in nanowires over a desire range of wavelengths**
M. Aghaeipour¹ and H. Pettersson², ¹*Lund University*, ²*Halmstad University*
- PD-7 Boronic acid-functionalized magnetic nanocomposites for an efficient extraction of dopamine molecules and their detection using fluorescent polydopamine**
J. K. Kook, D. Koh, A. V. Tran, and S.-W. Lee, *Gachon University*
- PD-8 Distance measurement using free space optics**
D. K. Mahanta¹ and S. Laskar², ¹*Assam Engineering College*, ²*Assam Don Bosco University*

Break (15:00-15:15)

Convention Hall, Bldg. An

15:15-17:00 Session E: Photonic Crystals and Nanostructure

Chairs: R. Chen, *Univ. Texas at Austin*
K. Kishino, *Sophia Univ.*

- E-1 Photonic crystal Fano lasers and Fano switches (Invited)**
15:15 J. Mork, Y. Yu, D. Bekele, K. S. Mathiesen, T. S. Rasmussen, E. Semenova, L. Ottaviano, A. Sakanas, and K. Yvind, *Technical University of Denmark*
- E-2 A photonic crystal nanocavity with a quantum dot active region embedded by MBE regrowth**
15:45 Q. H. Vo¹, Y. Ota², K. Watanabe², T. Kageyama², S. Iwamoto^{1,2}, and Y. Arakawa^{1,2}, ¹*Institute of Industrial Science, Univ. of Tokyo*, ²*NanoQuine, Univ. of Tokyo*
- E-3 Lasing characteristics of intermixed highly-stacked quantum dot structure by ion implantation for wavelength-manipulated light sources**
16:00 S. Matsui¹, Y. Akashi¹, S. Isawa¹, A. Matsumoto², K. Akahane², Y. Matsushima¹, H. Ishikawa¹, and K. Utaka¹, ¹*Waseda University*, ²*National Institute of Information and Communications Technology*
- E-4 Experimental demonstration of polarization beam splitter based on auto-cloning photonic crystal**
16:15 K. Yajima¹, T. Kawashima², T. Ijiri², T. Chiba², S. Kawakami², and H. Takahashi¹, ¹*Sophia University*, ²*Photonic Lattice, Inc.*
- E-5 Bragg grating coupled high Q factor ring resonator using LSCVD deposited Si₃N₄ film**
16:30 X. Cheng and S. Yokoyama, *Kyushu University*

Technical Sessions

E-6 **New method for development of fused silica fibres with freeform nanostructured gradient index core**
16:45 R. Buczynski^{1,2}, R. Kasztelan^{1,2}, A. Anuszkiewicz¹, A. Filipkowski¹, G. Stepniewski¹, D. Pysz¹, B. Siwicki¹, R. Stepien¹, and M. Klimczak¹, ¹*Department of Glass, Institute of Electronic Materials Technology*, ²*Faculty of Physics, University of Warsaw*

Break (17:00-17:15)

Presentation Room, Bldg. S

17:15-18:15 Microconcert

♪♪ The 18th Microconcert ♪♪

Machida Philharmony Baroque Ensemble (MPB)

Program

- # J. S. Bach: "Brandenburg Concerto" No. 3
- # A. Vivaldi : "Autumn" from Violin Concertos "The Four Seasons" Violin Solo: Takako Yoshii
- # G. F. Händel: "Ombra mai fu" Vocal: Hirochika Nakajima
- # E. Elgar: "Serenade"
- # B. Britten: "Simple Symphony"



Members

Chair : Prof. Kenichi Iga
Solo Concert Mistress and Coach: Takako Yoshii
Secretariat : Kaeko Fujii
Stage Manager : Akio Yoshii
Violin : Takako Yoshii, Kaeko Fujii, Tomoko Iga, Sanae Konno, Shoko Suzuki, Mizuho Okada, Mizue Hoshi, Mariko Furuta, Yoshikazu Karasawa, Michiko Hoshijima, Erika Masuzawa, Akiko Maehara
Viola : Yoko Miyazaki, Katsumi Mori, Yumi Matsubayashi, Reiko Araki
Cello : Mitsuko Nagahama, Kazutaka Okasaka, Masamichi Ishikawa
Contrabass : Kenichi Iga
Cembalo : Naomi Hanzawa.

2F-Foyer, Bldg. An

18:15-19:45 Conference Party

Technical Sessions

Wednesday, 22 November

Convention Hall, Bldg. An

9:00-10:30 Session F: Optical Materials and Applications

Chairs: D. Iannuzzi, *Vrije Univ. Amsterdam*
K. Hamamoto, *Kyushu Univ.*

F-1 Surface functionalization by femtosecond lasers and its ultrafast formation dynamics (Invited)

9:00 C. Guo, *University of Rochester*

F-2 Consideration of equilibrium condition in Shockley-Queisser limit for solar cell efficiency

9:30 G. Hatakoshi¹ and K. Iga², ¹Waseda University, ²Tokyo Institute of Technology

F-3 Narrow-band plasmonic thermal emitter using plasmonic nanochannel structure

9:45 Z. Wang, J. K. Clark, Y.-L. Ho, and J.-J. Delaunay, *School of Engineering, The University of Tokyo*

F-4 Independent drive of integrated multicolor (RGBY) micro-LED array using regularly arrayed InGaN based nanocolumns

10:00 N. Sakakibara¹, K. Narita¹, T. Oto¹, and K. Kishino^{1,2}, ¹Department of Applied Sciences and Engineering, *Sophia University*, ²Sophia Nanotechnology Research Center, *Sophia University*

F-5 GaN-based vertical-cavity surface-emitting lasers operating at high temperature

10:15 T.-C. Chang, S.-Y. Kuo, J.-T. Lian, K.-B. Hong, T.-C. Lu, and S.-C. Wang, *National Chiao Tung University*

Break (10:30-10:45)

10:45-12:30 Session G: Microoptics for Imaging

Chairs: Z. He, *Shanghai Jiao Tong Univ.*
K. Kuroda, *Utsunomiya Univ.*

G-1 MEMS based micromirror arrays (Invited)

10:45 H. Hillmer, A. Tatzel, B. Al-Qargholi, M. M. Khan, and S. Akhundzada, *University of Kassel*

G-2 Three-dimensional all-fluidic imaging systems

11:15 D. Kopp, T. Brender, A. Dorn, L. Lehmann, and H. Zappe, *University of Freiburg*

G-3 Biomimetic optical systems - strategies for miniaturization of optics

11:30 R. Voelkel, *SUSS MicroOptics SA*

G-4 Electro-optic spatial light modulator/deflector using multi-stage polarization-reversed structure

11:45 Y. Hayashi¹, T. Inoue¹, H. Murata¹, A. Sanada¹, M. Okazaki², M. Ishino³, and K. Yamamoto³, ¹Graduate School of Engineering Science, *Osaka University*, ²SCREEN Holdings Co., Ltd., ³Photon Pioneers Centre, *Osaka University*

G-5 Imaging of topologically protected elastic mode in silica 1D phononic crystal via photoelastic effect

12:00 I. Kim¹, S. Iwamoto^{1,2}, and Y. Arakawa^{1,2}, ¹IIS, *University of Tokyo*, ²NanoQuine, *University of Tokyo*

G-6 Terahertz wave beam steering by optical phase control

12:15 Y. Zhou, G. Sakano, K. Tsugami, H. Kanaya, and K. Kato, *Kyushu University*

Technical Sessions

Lunch (12:30-13:30)

13:30-15:15 Session H: Microoptics for Sensing

Chairs: H. Hillmer, *Univ. Kassel*
K. Maru, *Kagawa Univ.*

- H-1** 13:30 **Opto-mechanical ferrule-top devices in life science research (Invited)**
D. Iannuzzi, *Vrije Universiteit Amsterdam*
- H-2** 14:00 **Ultrasensitive fiber-optic refractive index sensor based on multimode interference with fiber-loop technique**
M. Naora, S. Taue, and H. Fukano, *Okayama University*
- H-3** 14:15 **Sensing the earth with micro-optics (Invited)**
Z. He¹, Q. Liu¹, J. Chen¹, and T. Tokunaga², ¹*Shanghai Jiao Tong University*, ²*The University of Tokyo*
- H-4** 14:45 **Detection of world's shortest hot spots in silica and plastic optical fibers by slope-assisted Brillouin optical correlation-domain reflectometry**
H. Lee, Y. Mizuno, and K. Nakamura, *Tokyo Institute of Technology*
- H-5** 15:00 **Mach-Zehnder interferometer with Fabry-Perot cavities in silicon-on-insulator for biosensing**
M. Mendez-Astudillo¹, H. Okayama^{1,2}, and H. Nakajima¹, ¹*Waseda University*, ²*Oki Electric Industry Co., Ltd.*

Break (15:15-15:30)

15:30-16:30 Postdeadline Session

Chairs: O. Sugihara, *Utsunomiya Univ.*
H. Takahashi, *Sophia Univ.*

- PD-1** 15:30 **Metasurface-based ultra-thin circular polarization analyzer integrated with semiconductor photodetectors**
J. Park and K. Yu, *KAIST*
- PD-2** 15:45 **Compact structured-light projector for 3D surface profiling**
P. Zhao, P.-H. Cu-Nguyen, and H. Zappe, *University of Freiburg*
- PD-3** 16:00 **Optimizing the design of trefoil phase plates for wavefront coding**
J.M. Olvera-Angeles¹, A. Padilla-Vivanco¹, J. Sasian², J. Schwiegerling², J. Arines³, and E. Acosta³, ¹*Tulancingo University*, ²*The University of Arizona*, ³*University of Santiago de Compostela*
- PD-4** 16:15 **Experimental observation of depolarized GAWBS in partially uncoated optical fibre**
N. Hayashi, S. Y. Set, and S. Yamashita, *The University of Tokyo*

(PD-5,6,7,8 are accepted for poster presentation and listed in the poster page)

16:30-16:45 Award Ceremony

16:45-17:00 Closing Remarks

Program Co-chairs:
O. Sugihara, *Utsunomiya Univ.*
H. Takahashi, *Sophia Univ.*