Symposium Program

17th November (Monday)

Welcome Address (10:00-10:05)

Tatsuo Saitoh (*PETRA*)

Session A: Opening (10:05-11:45)

Session Chair: Shinsuke Tanaka (*PETRA, 1FINITY*)

10:05 **A-1 (Keynote)**
Progress in Photonic Electronic Convergence Technologies through National Projects in Japan
Nobuhiko Nishiyama (*Institute of Science Tokyo, PETRA*)

10:25 **A-2 (Plenary)**
Silicon Photonic Integrated Circuits with Integrated Lasers
John E. Bowers (*UCSB*)

11:05 **A-3 (Plenary)**
Membrane III-V photonic devices for short distance interconnect applications
Shinji Matsuo (*NTT*)

Lunch break (11:45-13:00)

Session B: Heterogeneous Integration I (13:15-14:30)

Session Chair: Satoshi Iwamoto (*The University of Tokyo*)

13:15 **B-1 (Invited)**
Open Market Heterogeneous III-V/Si PDK for High-Speed Optical Interconnects and LiDAR
Molly Piels (*OpenLight Photonics*)

13:50 **B-2**
Heterogeneously Integrated Platform using InP Chip on SOI Wafer Bonding Technology
Hideki Yagi, Naoki Fujiwara, Naoko Inoue, and Masaki Yanagisawa (*PETRA, SEI*)

14:10 **B-3**
Passive Silicon Building Blocks for III-V/Si Hybrid Coherent Transceivers: Broadband All-Rib PSR and Resonant-Peak-Monitorable Wavelength Filter
Kunimasa Saitoh[1], Takanori Sato[1], Yusuke Sawada[2], Takuya Mitarai[2], Takuo Hiratani[2], Takuya Okimoto[2], Tsutomu Ishikawa[2], Naoki Fujiwara[2], and Hideki Yagi[2] ([1]*Hokkaido University,* [2]*PETRA, SEI*)

Coffee Break (14:30-14:45)

Session C: Optical Transceivers and Light Sources (14:45-16:00)

Session Chair: Kunimasa Saitoh (*Hokkaido University*)

14:45 **C-1**
Making WDM colorless: comb-based coherent transmission without demultiplexers
Di Che (*Nokia Bell labs.*)

15:20 **C-2**
Demonstration of novel analog frontend prototypes and outlook for next generation coherent transceiver
Shinsuke Tanaka , Yohei Sobu, Chen Hanwei, Tomoyuki Akiyama, Jun Matsui (*PETRA, 1FINITY*)

15:40 **C-3**
Recent Progress on 1.5-μm InAs Quantum Dots on InP for On-Chip Light Sources and Dispersion-Engineered Photonic Crystal Waveguides
Satoshi Iwamoto, Jinkwan Kwoen, Yasuhiko Arakawa (*The University of Tokyo*)

Coffee Break (16:00-16:15)

Poster Session (16:15-18:15) @Media Hall

Reception (18:30-20:30) @Tsubame Terrace

18th November (Tuesday)

Session D: Computing Architecture and Middleware (10:00-12:30)

Session Chair: Kiyo Ishii (*AIST*) / Takamitsu Shioi (*NEC*)

10:00 **D-1 (Invited)**
Data Management in Edge Computing Environments
Masato Oguchi (*Ochanomizu University*)

10:35 **D-2**
Rethinking Database Architectures in the Era of Ultra-low Latency Networks
Takamitsu Shioi (*NEC*)

10:55 **D-3**
GPU-accelerated Dependency Graph Construction and Conflict Analysis for High-Performance Transaction Processing
Reo Chiyomaru and Jun Miyazaki (*Institute of Science Tokyo*)

Coffee Break (11:15-11:30)

11:30 **D-4**
Immediate Leader Election
Masahiro Tanaka and Hideyuki Kawashima (*Keio University*)

11:50 **D-5**
Developing Distributed and Replicated Indexes over RDMA-Capable Networks
Kento Sugiura and Yoshiharu Ishikawa (*Nagoya University*)

12:10 **D-6**
Adaptive Skew-Aware Distributed Joins leveraging Heavy Hitter Prediction
Makoto Onizuka (*Osaka University*)

Lunch break (12:30-14:00)

Session E: Heterogeneous Integration II (14:00-15:00)

Session Chair: Hideki Yagi (*PETRA, SEI*)

14:00 **E-1**
Heterogeneous integration of III-V membrane on Si platform for modulators and photodetectors
Mitsuru Takenaka (*The University of Tokyo*)

14:20 **E-2**
Low-loss Si waveguide-based magneto-optical isolators
Yuya Shoji (*Institute of Science Tokyo*)

14:40 **E-3**
Signal processing with microresonator frequency comb
Takasumi Tanabe (*Keio University*)

Coffee Break (15:00-15:20)

Session F: Wavelength-Division Multiplexing Networks and Devices (15:20-16:35)

Session Chair: Mitsuru Takenaka (*The University of Tokyo*)

15:20 **F-1**
Open-Source Platform for Automated Control and Management of Elastic Optical Networks in Datacom Applications
Kiyo Ishii, Kazuya Kunita, Hiroyuki Matsuura, and Kenji Mizutani (*AIST*)

15:40 **F-2**
Silicon photonic multi-wavelength coherent transmitter using micro-ring modulators
Takuo Tanemura, Shuntaro Maeda (*The University of Tokyo*)

16:00 **F-3 (Invited) Online**
Photonic WDM Switches for Optical Metro-Access Networks
Nicola Calabretta (*TU/e*)

Closing Address (16:35-16:45)

Kazuhiro Ikeda (*AIST*)

Poster session (Monday)

P-01 Resolving Band-rate Limitations in Optical DAC Transmitters with Novel Time-Interleaving
Hanwei Chen, *Photonics Electronics Technology Research Association*

P-02 Photonic Spiking Neural Network with Magnetic Material of CoFeB based on Magneto-Optic effect
Gaku Takagi, *Institution of Science Tokyo*

P-03 Scatter and backsactter behavior in silicon waveguides observed by OFDR
Tsuoyoshi Horikawa, *Institute of Science Tokyo*

P-04 Development of Optical Switch Based on III-V/Si Hybrid Integration Technology
Tomohiro Akazawa, *The University of Tokyo*

P-05 High-power and single-mode operation of 1.3 μm wavelength InP-based PCSELs with in-plane hetero photonic crystal structure
Makoto Ogasawara, *Sumitomo Electric Industries, Ltd.*

P-06 Mosaic-Based Power Splitters Using Silicon Nitride Waveguides
Keigo Fujimoto, *Hosei University*

P-07 An Ultra-Small Three Mode Exchanger Based on Mosaic Structures
Shizunari Aomori, *Hosei University*

P-08 High alignment tolerant light coupling structure between III-V and Si waveguides for Crystal Film Bonding Technique
Hideaki Okayama, *Oki Electric Industry Co., Ltd.*

P-09 3D printed field assembly optical fiber ferrule connector to waveguide coupling solution
Titinai Chinggungval, *Shibaura Institute of Technology*

P-10 Optimization of Photonic Integrated Circuits Using Quantum-Inspired Optimization
Yamato Misugi, *Mitsubishi Electric Corporation*

P-11 InP/Si External-Cavity Laser with an Integrated Multi-Step Long-Period Grating Mounted on a Stepped Submount
Junichi Suzuki, *Mitsubishi Electric Corporation*

P-12 Polarization splitter rotator using mosaic-based TE0/TE1 mode demultiplexer for compact coherent receivers
Takuya Mitarai, *Photonics Electronics Technology Research Association*

P-13 Heterogeneously integrated p-i-n type Mach-Zehnder modulator using InP chips on SOI wafer bonding technology
Naotaka Kasuya, *Photonics Electronics Technology Research Association*

P-14 InP/Si heterogeneously integrated SOAs with gain configurable technology towards large scale photonic integrated circuits
Takehiko Kikuchi, *Photonics Electronics Technology Research Association*

P-15 Demonstration of Error-Free Transmission in Si Micro-Ring Modulators Using SiN Perfect Soliton Crystals
Ryo Sugano, *Keio University*

P-16 Investigation of Binary Optical Crossbar Arrays Based on Ge2Sb2Te3S2 Microring Resonator Switches
Kenji Kobayashi, *The University of Tokyo*

P-17 32 Gbps Operation of a High-Efficiency InGaAsP MOSCAP Microring Modulator
Hiroya Sakumoto, *The University of Tokyo*

P-18 InGaAs MSM Photodetector with Narrow-Gap Parallel Electrodes on Si Waveguide
Kentaro Komatsu, *The University of Tokyo*

P-19 Experimental Verification of Multi-Wavelength Silicon IQ Modulator Assisted by Microring Resonators
Shuntaro Maeda, *The University of Tokyo*

P-20 Ge-on-Si photodetector with 4-port evanescent coupling for high saturation current and large bandwidth
Zhang Chao, The University of Tokyo

P-21 Frequency Response Shaping of Si Photonic Crystal Slow-Light Modulator using Electro-Optic Equalizer
Keisuke Kawahara, *Institute of Science Tokyo*

P-22 Amorphous-Si Strip-Loaded Thin Film Lithium Niobate on Insulator Waveguide Devices
Moataz Eissa, *Institute of Science Tokyo*

P-23 High Efficiency Layer-to-Layer Coupler between Si and SiON Waveguides using Low Index(~1.6) SiON
Haoyu Chen, *Institute of Science Tokyo*

P-24 C/L/U-band InAs Quantum Dot Lasers on InP
Jinkwan Kwoen, *The University of Tokyo*

P-25 Investigation on suppression of reflection in silicon waveguides by trench width
Kaibin Yao, *Institute of Science Tokyo*

P-26 Demonstration of a SiN-rib InP membrane waveguide with a low loss taper
Jinchi Pan, *The University of Tokyo*