Tu4F-1 **15:00-15:15**

Optical Chiplet with 0.30-pJ/bit Receiver Using Membrane III-V Photodetector on Si

Yoshiya Shikama[1,2], Suguru Yamaoka[1,2], Tatsurou Hiraki[1,2], Tadashi Minotani[1,2], Yohei Saito[1], Takuma Aihara[1,2], Yoshiho Maeda[1,2], Toru Miura[1], Takuro Fujii[1,2], Yuichi Tsujita[1,2], Tomonari Sato[1,2], Norio Sato[1,2], Yuzo Sasaki[1], Shinji Matsuo[2]
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We demonstrate a four-channel optical receiver chiplet integrating low-capacitance, high-responsivity membrane III–V photodetectors on Si waveguides with a low-power TIA. It achieves 0.51 A/W fiber-to-PD responsivity and 64 Gbit/s PAM4 at 0.30 pJ/bit.

Tu4F-2 **15:15-15:30**

90-GHz-Bandwidth Membrane EA-DFB Laser on Si with Wide Operating Temperature Range

Hiroshi Kato[1,2], Takuma Aihara[1,2], Tatsurou Hiraki[1,2], Yoshiho Maeda[1,2], Takuro Fujii[1,2], Tomonari Sato[1,2], Shinji Matsuo[2]
[1]NTT Device Innovation Center, [2]NTT Device Technology Labs

We demonstrate wide temperature range (20-50ºC) operation of an O-band membrane InGaAlAs EA-DFB laser on a silicon photonics platform, achieving clear eye openings at 320-Gbit/s PAM4 using a 90-GHz-bandwidth EAM.

Tu4F-3 **Invited** **15:30-16:00**

Tunable Lasers with InP-Gain Regions on Si Photonic Circuits Using Chip-on-Wafer Bonding

Takuo Hiratani[1,2,5], Kento Komatsu[1,2,5], Hidenari Fujikata[1,2], Naoki Fujiwara[1,2,5], Naoko Inoue[1,2,5], Takehiko Kikuchi[1,2,5], Takuya Mitarai[1,2,5], Shun Kimura[1,2], Takuya Okimoto[1,2,5], Yusuke Sawada[1,2], Eiichi Banno[1,3], Takashi Matsui[3], Takeshi Fujisawa[4], Nobuhiko Nishiyama[2,5], Hideki Yagi[1,2,5]
[1]Sumitomo Electric Industries, Ltd, [2]Photonics Electronics Technology Research Association, [3]Sumitomo Electric Device Innovations, Inc., [4]Hosei University, [5]Institute of Science Tokyo

This paper reviews InP/Si heterogeneously integrated tunable lasers using chip-on-wafer bonding method. The single-chip tunable laser for the C and L bands with the narrow spectral linewidth (< 50 kHz) is demonstrated using this technology.

Tu4F-4 **16:00-16:15**

High-Efficient and Compact InP/Si Heterogeneously Integrated Coherent-Receiver PICs Using Chip-on-Wafer Bonding

Takuya Mitarai[1,2], Takuya Okimoto[1,2], Shun Kimura[1,2], Takehiko Kikuchi[1,2], Naoko Inoue[1,2], Naoki Fujiwara[1,2], Nobuhiko Nishiyama[2,3], Hideki Yagi[1,2]
[1]Sumitomo Electric Industries, Ltd, [2]Photonics Electronics Technology Research Association, [3]Institute of Science Tokyo

We demonstrate coherent receiver PICs with a Siphotonics-based 90◦ hybrid and four InGaAs PDs on a 1.2 mm2 chip. They exhibit high responsivity (> 0.13 A/W) with small I/Q channel imbalances (60 GHz).

Tu4F-5 **16:15-16:30**

Monolithic InAs/GaAs Quantum-Dot Laser Diodes on Si for Silicon Photonics Enabled by All-MOCVD Epitaxy: Benchmarking Against GaAs and Ridge-Engineered Functionality

HoSung Kim[1], Honghwi Park[2], Seungchul Lee[2], Dae-Myeong Geum[2], Daehwan Jung[3], Won Seok Han[2]
[1]Samsung Advanced Institute of Technology, [2]Electronics and Telecommunications Research Institute, [3]Korea Institute of Science and Technology

We report an all-MOCVD approach for monolithic InAs/GaAs QDLDs on Si(100) and benchmark key metrics with reference devices.