Room I (203)

Session Title 25I1 / [T10] Plasmonic Devices
Date & Time Tuesday, 25 August, 11:00 ~ 12:00
Session Chair Bumki Min (KAIST, Korea)

[25I1-1] 11:00~11:15

Connecting Deep Sub-Wavelength Plasmonic Waveguide to Si Photonics Waveguides

Masaaki Ono[1,2], Hao Xu[1,2], Masato Tsunekawa[2,3], Eiichi Kuramochi[1,2], Kengo Nozaki[1,2], Hideaki Taniyama[1,2], and Masaya Notomi[1,2,3]

[1]Nanophotonics Center, Japan, [2]NTT Corporation, Japan, [3]Tokyo Institute of Technology, Japan

We achieved three-dimensional mode conversion between a Si-wire waveguide and a deep sub- λ plasmonic slot waveguide (60×50 nm^2) for the first time. The coupling loss was only about 2 dB.

[25I1-2] 11:15~11:30

Tunable Plasmonic Multi-channel Demultiplexer with Graphene Sheets and Ring Resonators

Xiuye Liang, Shinian Qu, Ci Song, Xiushan Xia, Baojie Tang, and Jicheng Wang

Jiangnan University, China

The actively tunable plasmonic multi-channel wavelength demultiplexer (WDM) based on graphene sheets and ring resonators is proposed and numerically investigated by utilizing finite element method (FEM) simulations.

[25I1-3] 11:30~11:45

Phase Characteristics of Broadband Mach-Zehnder Directional Coupler with Quasi-Decoupled Hybrid Plasmon

Shih-Hsiang Hsu, Kuo-Wei Chuang, and Ci-Syu Chen

National Taiwan University of Science and Technology, Taiwan

The phase from quasi-decoupled hybrid plasmon and coupled bending regions of Mach-Zehnder directional couplers was characterized for broadband optical power dividers. The splitting ratios demonstrated within 8% variation across 200-nm bandwidth using400-nm quasidecoupler spacing.

[25I1-4] 11:45~12:00

Nondiffracting Bloch Surface Wave: 2D Quasi-Bessel-Gauss Beam

Myun-Sik Kim, Elsie Barakat, Richa Dubey, Toralf Scharf, and Hans Peter Herzig

Ecole Polytechnique Fédérale de Lausanne, Switzerland

2D Bessel-Gauss beam, which is known as nondiffracting beams in 3D space, is demonstrated in the domain of Bloch surface wave. Its self-healing capacity is verified by using cylindrical obstacles in the diffraction-free beam path.

Room J (204)

Session Title 25J1 / [T12] Silicon Photonics Interconnection
Date & Time Tuesday, 25 August, 11:00 ~ 12:30
Session Chairs Hiroshi Fukuda (NTT, Japan)
Dong Jae Shin (Samsung Electronics Co., Ltd., Korea)

[25J1-1] 11:00~11:30 Invited Talk

Silicon-Photonics Devices for Chip to Chip Communications

Ken Morito, Seok-Hwan Jeong, Shinsuke Tanaka, Takasi Simoyama, Shigekazu Okumura, Yohei Sobu, and Yu Tanaka

Photonics Electronics Technology Research Association, Japan

Recent progress of silicon-photonics devices developed for chip-to-chip communications is presented. WDM MUX/DEMUX filters, multi wavelength light sources, 1D and 2D grating couplers and 25 Gbps interchip transmission experiment with low driving power are detailed.

[25J1-2] 11:30~11:45

Design of Low Loss Crossing of Si Waveguides

Yugao Deng, Kazumi Wada, Naoyuki Kawai, Ziyi Zhang, and Motoki Yako

University of Tokyo, Japan

A novel waveguide crossing structure is proposed, where Si waveguides are tapered off at the crossing. Two-dimensional finite difference time domain simulation indicates that the presented crossing has low insertion loss of 0.01dB/crossing around 1550nm.

[25J1-3] 11:45~12:00

Apodized Amorphous Silicon Grating Coupler with Metal Mirrors for 3D Optical Interconnection

Yuki Kuno, Joonhyun Kang, Kazuto Itoh, Yusuke Hayashi, Junichi Suzuki, Tomohiro Amemiya, Nobuhiko Nishiyama, and Shigehisa Arai

Tokyo Institute of Technology, Japan

Inter-layer coupling between multilayer waveguides was demonstrated using hydrogenated amorphous silicon (aSi:H) grating couplers with metal mirrors. The fabricated device which has the inter-layer distance of 2 μm successfully showed wider bandwidth compared with uniform grating structure.

[25J1-4] 12:00~12:15

Tunable Grating Coupler Based on Thermo-Optic Effect in Silicon

Jong-Hun Kim[1], Sun-Kyu Han[1], Min-Jung Bae[1], Ji-Hwan Park[1], Dong-Eun Yoo[2], Dong-Wook Lee[2], and Hyo-Hoon Park[1]

[1]KAIST, Korea, [2]National Nanofab Center, Korea

We demonstrate an efficient tunable grating coupler using thermo-optic heater in silicon. Tuning of the central wavelength from 1537nm to 1573nm is achieved with an increased 1 dB-bandwidth up to 59nm.

[25J1-5] 12:15~12:30

Non-blocking 8×8 Silicon Electro-optic Switch

Lei Qiao, Weijie Tang, and Tao Chu

Chinese Academy of Sciences, China

A re-arrangeable non-blocking 8×8 silicon electro-optic switch was demonstrated. It had extinction ratios of 18.3~25.5dB on all “Cross” status and 13.3~19dB on all “Bar” status at 1550nm.