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Contents

v	<i>Authors</i>
vii	<i>Conference Committee</i>

DESIGN AND FABRICATION OF PHOTONIC INTEGRATED DEVICES I

10922 03	Performance robustness analysis in machine-assisted design of photonic devices (Invited Paper) [10922-2]
10922 04	Silicon-nitride waveguide-based integrated photonic circuits for medical diagnostic and other sensing applications (Invited Paper) [10922-3]
10922 05	Fiber grating coupler development for Si-photonics process design kits at CEA-LETI (Invited Paper) [10922-4]

SMART NANOPHOTONIC DEVICES

10922 0C	Optoelectronic integrated circuits for growing datacenters: challenge, strategy, and evolution (Invited Paper) [10922-11]
10922 0E	Investigation into the phase noise of wavelength-tunable semiconductor lasers for coherent systems (Invited Paper) [10922-13]

OPTICAL SENSING AND DETECTION

10922 0F	Direct laser writing of smart polymer photonic devices for ultrasound detection [10922-15]
10922 0I	Optical autonomous sensor module communicating with a smartphone using its camera [10922-20]

INTEGRATED PHOTONICS BASED ON NOVEL MATERIALS I

10922 0M	Integrated photonics put at full stretch: flexible and stretchable photonic devices enabled by optical and mechanical co-design (Invited Paper) [10922-24]
10922 0N	Creating integrated optics with ion-sliced lithium niobate combined with patterned silicon or silicon nitride (Invited Paper) [10922-25]

INTEGRATED PHOTONICS BASED ON NOVEL MATERIALS II

10922 0R **Towards integrated quantum photonic circuits on GaAs (Invited Paper)** [10922-29]

HETEROGENEOUS INTEGRATION AND INTEGRATED MICROWAVE PHOTONIC CIRCUITS I

10922 13 **Programmable multifunctional nanophotonic ICs: architectures, performance, and challenges (Invited Paper)** [10922-40]

HETEROGENEOUS INTEGRATION AND INTEGRATED MICROWAVE PHOTONIC CIRCUITS II

10922 17 **Monolithic integration of opto-electronics by silicon photonics foundry service (Invited Paper)** [10922-44]

HETEROGENEOUS INTEGRATION AND INTEGRATED MICROWAVE PHOTONIC CIRCUITS III

10922 1C **High-efficiency Kerr frequency combs for microwave photonics (Invited Paper)** [10922-49]

10922 1D **Dynamic and multiband RF spectral processing (Invited Paper)** [10922-50]

10922 1F **Silicon photonic integrated circuits for microwave signal generation and processing (Invited Paper)** [10922-52]

10922 1G **Hybrid plasmonic electro-optical absorption modulator based on phase change characteristics of vanadium-dioxide** [10922-14]

SMART PHOTONIC DEVICES AND STRUCTURES

10922 1R **Design and optimization of compact spot-size converters for silicon photonic devices (Invited Paper)** [10922-64]

10922 1U **Miniaturized PIC multi-color laser engines for the life sciences** [10922-66]

LIDAR TECHNOLOGIES

10922 1W **Efficient light emission and beam forming in Si photonic crystal beam steering device and its phased array configuration** [10922-68]

CMOS compatible photonic integrated circuits have gained great attentions in short haul interconnects applications because of the promises to tackle the issues of traditional copper interconnects. Towards the monolithic integration of electronics and photonics, lots of efforts have been made to decrease the device footprint by using surface plasmon polaritons (SPPs), in order to enhance Photonic integrated circuit design poses significant design challenges at the component and system level. These challenges are addressed by Lumerical's simulation tools, which include the industry's most robust optical simulators, a comprehensive set of multiphysics solvers for component optimization, a photonic integrated circuit simulation platform, and integrations with leading EDA tools and semiconductor foundries. Lumerical's optical solvers provide a comprehensive set of tools for the design and analysis of integrated photonic components.

— Huapu Pan, Staff Engineer Huawei Technologies (USA). Photonic Integrated Circuits. We provide a comprehensive PIC design flow similar to that of a traditional electronic design automation (EDA) environment. Visit the Knowledge Base. Photonic integrated circuits utilize photons, massless fundamental particles representing a quantum of light, instead of electrons. Photons move at the speed of light through the transmitting medium with almost no interference from other photons. This greatly increases the bandwidth and speed of the circuit while drastically reducing the amount of energy loss, making PICs more power efficient. The name optoelectronic integrated circuit (OEIC) is used when the components are a combination of photonic and electronic devices. Several review articles have been published on PICs and OEICs.

1 This chapter provides an overview of the technology involved and discusses the properties of some important integrated circuits. Keywords. Semiconductor Laser IEEE Photon Heterojunction Bipolar Transistor Bistable Switch Heterodyne Receiver.