

LS

FIO

07:30-16:30 Registration, Galleria

08:00-10:00

FF1E • Symposium on Integrated Photonic Manufacturing I
 Presider: Stefan Preble; Rochester Inst. of Technology, USA

FF1E.1 • 08:00  **Invited**

AIM Photonics – Manufacturing Challenges for Photonic Integrated Circuits, Michael Liehr^{1,2}; ¹AIM Photonics, USA; ²SUNY Polytechnic Inst., USA. The recently established American Inst. for Manufacturing Photonics is a manufacturing consortium headquartered in NY, to advance the state of the art in the design, manufacture, testing, assembly, and packaging of integrated photonic devices.

08:00-10:00

FF1F • Strongly Confined Nanoscale Waveguides, Photonic Crystals and Resonator Devices
 Presider: Andrew Poon; Hong Kong Univ of Science & Technology, Hong Kong

FF1F.1 • 08:00  **Invited**

High-Q Photonic Crystal Resonators for Nonlinear Optics, Aude Martin¹, Gregory Moille¹, Sylvain Combrié¹, Gaëlle Lehoucq¹, Thierry Debusschert¹, Allard P. Mosk², Alfredo De Rossi³; ¹Thales Research & Technology, France; ²Laboratoire de Photonique et de Nanostructures, CNRS UPR 20, France; ³Physics of Light in Complex Systems(LINX), Debye Inst. for Nanomaterials Science., Utrecht Univ., Netherlands. Small volume cavities and cavity arrays made of III-V semiconductor with large electronic gap allow very large optical fields to be established. The spectral alignment of a triplet of resonances results into ultra-efficient four-wave-mixing.

08:30-10:00

FF1G • Wavefront Sensing and Phase Retrieval
 Presider: Len Zheleznyak, Univ. of Rochester, USA

FF1G.1 • 08:00  **Invited**

Withdrawn.

08:00-10:00

FF1H • General Optical Sciences I
 Presider: To be Announced

FF1H.1 • 08:00

KALEXUS - a Potassium Laser System with Autonomous Frequency Stabilization on a Sounding Rocket, Aline N. Dinkelaker¹, Max Schlemang¹, Vladimir Schkolnik¹, Andrew Kenyon¹, Markus Kuziak¹, Achim Peters^{1,2}, Institut für Physik, Humboldt-Universität zu Berlin, Germany; ²Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik, Germany. Autonomous laser frequency stabilization is a prerequisite for future space-borne atomic physics experiments. The KALEXUS experiment performed frequency stabilization of two 767 nm extended cavity diode lasers onboard the TEXUS 53 sounding rocket.

FF1H.2 • 08:15

Controlling the Direction of Optical Power Flow in an Active Photonic Cavity, Ali Kazemi Jahromi¹, Ayman Abouraddy¹; ¹Univ. of Central Florida, CREOL, USA. We demonstrate experimentally that the direction of Poynting's vector and thus power flow in an optical cavity provided with net gain can be controllably reversed by modulating a passive intra-cavity loss element.

FF1H.3 • 08:30

Optical Characteristics of Bio-Inspired Lasers Based on Fluorescent Biomaterials and Biotinjugates, Jose A. Rivera¹, James G. Edeen¹; ¹UIUC, USA. Changes in the chemical environment of a biolaser were detected by analyzing spectral, temporal, and polarization properties. Such detailed characterizations are fundamental for biolasers to realize their potential as diagnostics tools.

08:00-10:00

LF1I • Nanophotonics II
 Presider: Yichen Shen; MIT, USA

LF1I.1 • 08:00  **Invited**

Enhanced Lasing Through Tailoring of Photonic Density of States, Marin Sojicic¹; ¹Massachusetts Inst. of Technology, USA. Nanophotonics offers unprecedented opportunities for tailoring photonic density of states. Weyl and Dirac dispersions could thus enable single-mode lasing for substantially larger lasers. Novel gain media can be enabled as well.

LF1I.2 • 08:30  **Invited**

Recent Progress in Photonic Crystals, Susumu Noda¹; ¹Kyoto Univ., Japan. I will report on recent progresses in manipulation of photons by photonic crystals. They include (1) ultrahigh-Q nanocavities and their applications, (2) thermal emission control with a very fast modulation speed, and (3) broad-area coherent photonic crystal lasers with a high output-power.

FF1E.2 • 08:30  **Invited**

Silicon Photonics Platforms: to Standardize or to Diversify?, Roel G. F. Baets^{1,2}; ¹Photonics Research Group, Ghent Univ., Belgium; ²IMEC, Belgium. Silicon photonics has emerged as a major PIC technology because it builds on the maturity and infrastructure of the CMOS world. But where is the middle ground between yield- and cost-driven standardization and application-driven diversification?

FF1G.2 • 08:30

Multi-plane Phase Retrieval in Generalized Two-Path Interferometry, Wesley Farris¹, James R. Fienup¹, Tanya Malhotra¹, A. Nick Vamvakas¹; ¹Univ. of Rochester, USA. Generalized interferometry is a novel technique that decomposes fields into transverse basis set components and weighting coefficient magnitudes. Nonlinear optimization phase retrieval algorithms using multiple intensity planes are developed.

FF1G.3 • 08:30

Optical Characteristics of Bio-Inspired Lasers Based on Fluorescent Biomaterials and Biotinjugates, Jose A. Rivera¹, James G. Edeen¹; ¹UIUC, USA. Changes in the chemical environment of a biolaser were detected by analyzing spectral, temporal, and polarization properties. Such detailed characterizations are fundamental for biolasers to realize their potential as diagnostics tools.

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