



IPSR-INTERNATIONAL 2018 FALL MEETING

November 29-30, 2018

MIT, Samberg Conference Center, E52 7th Floor, Salon MIT

THE PATH TO COMMERCIAL SUCCESS

The commercial foundation for photonic functionality is fragmented and unprepared for supporting a common high-volume platform for scaling system performance at constant energy and cost. The platform will be driven by a network architecture based on advances in components and software. This 2018 Fall Meeting will formally launch IPSR-International: Integrated Photonics System Roadmap to promote synchronous, self-consistent solutions for the manufacturing supply chain.

THURSDAY, November 29, 2018

7am – 6:00pm

7:00 Registration and Light Breakfast (E52 Samberg Conference Center, Salon MIT; 7th Floor)

Keynote Session I: Markets and Applications

Commercial Success: Opportunities and Challenges

Session Chair: Rich Grzybowski, MACOM

7:50 **Welcome**

Lionel C. Kimerling, MIT

8:00 **The Data Center: Integrated Photonics Manufacturing and Technology Challenges**

Robert Blum, Intel

8:30 **Scaling Networks is Driving Bandwidth Density**

David Nielson, Nokia Bell Labs

9:00 **The ADI Sensing Platform**

Shrenik Deliwala and Bill O'Mara, Analog Devices, Inc.

9:30 **Break**

Keynote Session II: System Solutions

The Technology and Economics of Integrated Photonics Manufacturing and Adoption

Session Chair: Madeline Glick, Columbia University

10:00 **Communication Photonics on the InP and Silicon Platforms**

Shinji Matsuo, NTT

10:30 **Systems-Driven Photonics Technology Innovation**

Paul Juodawlkis, MIT Lincoln Laboratory

11:00 **Video Data Acquisition and Distribution**

Chris Chambers, British Broadcasting Corporation (retired)

11:30 **Large-Scale Photonic Integrated Circuits for Quantum Networks**

Dirk Englund, MIT

12:00 **Attendee Lunch** (Dining Rooms 3 and 4; 6th Floor)

MIT Microphotonics Center Board Meeting (Dining Room 5; 6th Floor)

Session III: Technology Vision

Technology Needs and Solutions for Today and Tomorrow

Session Chair: Ajey Jacob, GlobalFoundries

1:30 **Commercial Solutions in the Optical Interconnection Hierarchy**

Drew Guckenberger, Luxtera

2:00 **Manufacturable Solutions for Wafer-level Laser and SOA Integration on Silicon**

Roel Baets, Ghent

2:30 **Challenges for Foundry-Based Manufacturing: Foundry Perspective**

Frank Shepherd and Michael Davison, NRC Canadian Photonics Fabrication Centre

3:00 **Challenges for Foundry-Based Manufacturing: Customer Perspective**

Sanjay Patel, Nokia Bell Labs

3:30 **Grand Challenges for PIC Packaging**

Tom Brown, U Rochester

4:00 **Break**

Session IV: PIC Design Innovation Workshop

*AIM Future Leaders: award of three Lockheed Martin Fellowships
Adapting EDA to EPDA: Education, Training Simulators and Demonstrator Chips*

Session Chair: Sajjan Saini, AIM Photonics Academy

- 4:30 **The AIM Virtual Design Lab**
Erik Verlage, AIM Academy Education Team
- 4:50 **The AIM Academy Education Design and Test Chip**
Stefan Preble, RIT
- 5:10 **AIM Design Services**
Kevin McComber, AIM Academy
- 5:30 **Design Workshop - Virtual Lab Interactive Exhibit, PIC Education Chip, Design Services**
- 6:30 **Networking Reception** (Dining Rooms 5 and 6; 6th Floor)

FRIDAY, November 30, 2018

7am – 4:10pm

- 7:00 **Registration and Light Breakfast** (E52 Samberg Conference Center, Salon MIT; 7th Floor)
- 7:50 **Lessons Learned**
Lionel Kimerling, MIT

Session V: PIC Process Frontiers on Silicon

Implementing a Foundry R, D & M Infrastructure

Session Chair: Dick Otte, Promex Industries

- 8:00 **AIM Photonics Institute Update**
Frank Tolic, AIM Photonics Institute, SUNY Poly
- 8:05 **Integrating with Interposers**
Colin McDonough, AIM Photonics Institute, SUNY Poly
- 8:25 **Integration and Laser Reliability**
Wolfgang Parz, MACOM
- 8:50 **Design for Manufacturing in the Integrated Photonics Foundry**
Duane Boning, MIT
- 9:15 **The new AIM PDK 2.5**
Erman Timurdogan, Analog Photonics
- 9:40 **Break**

Session VI: PIC Research Frontiers on Silicon

Disruptive Advances in Devices, Circuits and System Applications

Session Chair: Tremont Miao, ADI

- 10:00 **The Integrated Photonics Marketplace**
Andrew Bowd, AIM Photonics Institute
- 10:25 **An Optical Spectrometer based on Integrated Photonics**
J.J. Hu, MIT
- 10:50 **Silicon and III-V Mid-IR PICs for On-Chip Spectroscopic Sensing**
Jerry Meyer, NRL
- 11:15 **Integrated Optical Isolators on the Silicon Platform**
Caroline Ross, MIT
- 11:40 **Attendee Lunch** (Dining Rooms 3 and 4, 6th Floor)

Session VII: AIG Workshop

An Application Interest Group is an industry-led, precompetitive collaborative project among industry, academia and government to provide solutions to technology roadblocks. Each project has three phases: i) define system requirements; ii) assess technology gaps; iii) prototype potential solutions.

Session Chair: Yi Qian, MRSI Systems

- 1:00 **Overview of AIG Projects**
Bob Pfahl, iNEMI
- 1:15 **On-Board Photonics**
Terry Smith, 3M
- 1:35 **RF Microwave Photonics for 5G**
Dennis Prather, U Delaware
- 1:55 **Photonic Sensor Systems**
Jerry Meyer, NRL
- 2:15 **Break**

Session VIII: AIG and TWG Breakouts

Session Chair: Bob Pfahl, iNEMI

2:30 **IPSR-I TWG and AIG Breakouts**

AIG Teams

- **On-Board Photonics:** *Terry Smith, 3M* (Dining Room 3, 6th Floor)
- **RF Microwave Photonics for 5G:** *Dennis Prather, UDel and Sajan Saini, MIT* (Salon West, 7th Floor)
- **Photonic Sensor Systems:** *Jerry Meyer, NRL, Anu Agarwal, MIT and Ben Miller, URochester* (Salon I, 7th Floor)

Technology Working Groups

- **Light Sources:** *Jan Mink, VTEC* (Dining Room 4, 6th Floor)
- **MZI Interferometers:** *Sylwester Latowski, TU Eindhoven* (Salon M, 7th Floor)
- **Photonic Integrated Circuits:** *Meint Smit, TU Eindhoven* (Salon T, 7th Floor)

4:00 **Lessons Learned**

Lionel Kimerling, MIT

4:10 **Adjourn**