



## AIM PHOTONICS FALL 2016 MEETING

October 31-November 2, 2016

### BUILDING AN INDUSTRY: PART II NAVIGATING THE INTEGRATED PHOTONICS TECHNOLOGY TRANSITION

AIM Photonics Institute • The MIT Microphotonics Center • iNEMI

Technology Transitions are built on a foundation of i) competency,  
ii) vision, iii) prototypes, and iv) supervening applications.

#### MONDAY, OCTOBER 31

- 8:30a **Registration and Light Breakfast (MPR-674)**  
9:00a **Spring Meeting Context and Expectations** *Lionel C. Kimerling, Executive Director, AIM Photonics Academy*

#### SESSION I: COMPETENCY

The workforce originates from two industries: low volume premium photonics for communication/computing and high volume integrated circuits that migrate to new applications. What are the needs, roadblocks and solutions for building the integrated electronic-photonics technology workforce?

*Session Chair: Richard Grzybowski, Director, Research & Development, MACOM Integrated Photonic Solutions*

- 9:15a **Keynote: Building a Silicon Photonics Supply Chain** *Sanjay Pai, Supply Chain Integration Manager, Intel Corporation*  
9:45a **On-Board Interconnection: A Joint Development Consortium** *Terry Smith, Sr. Staff Scientist, 3M*  
10:10a **Wafer Singulation and Thinning Technologies** *Annette Teng, CTO, Promex*  
10:35a **Break**

#### SESSION II: VISION

A Manufacturing Ecosystem provides the tools for scaling production volume, platform performance, and cross-market applications. Can the Integrated Photonic Systems Roadmap (IPSR) align the supply chain for industry success?

*Session Chair: Gordon Snyder, OP-TEC NSF ATE National Center*

- 10:50a **Building an Industry: People, Constituencies and Technology** *Tom Hausken, Senior Industry Advisor, OIDA/OSA*



- 11:15a **The AIM Industry Workforce Needs Assessment: Skills and Timelines**  
*Yashu Kauffman, Director of Assessment and Evaluation, AIM Photonics Academy*
- 11:40a **Building the Integrated Photonics Manufacturing Ecosystem** *Michael Liehr, CEO, AIM Photonics*
- 12:05p **Attendee Lunch (Winter Garden)**  
**MIT Microphotonics Center Industry Consortium Board Meeting and Lunch (Silverman Skyline)**

### SESSION III: ROADMAP WORKSHOP

Joint breakout sessions of the Education, Workforce, Professional Society Affiliates, AIM MCE/KTMAs and IPSR TWGs: Monolithic Integration; Packaging of Electronic-Photonic Systems; Connectors; Assembly; Test; Substrates; Electronic-Photonic Design Automation; Photonic Sensors.

*Session Chair: Robert Pfahl, Director, iNEMI and IPSR*

#### **Highlights from IPSR 2016 IPSR TWG Chairs**

- 1:30p Monolithic Integration TWG *Lionel C. Kimerling, MIT*
- 1:40p Packaging of Electronic-Photonic Systems TWG *Bill Bottoms, 3MTS*
- 1:50p Connectors TWG *John MacWilliams, Bishop and Assoc., Inc.*
- 2:00p Substrates TWG *Voya Markovich, Microelectronic Advanced Hardware Consulting*
- 2:10p Assembly TWG *Richard Otte, Promex Industries, Inc.*
- 2:20p Test TWG *Richard Otte (Acting Chair), Promex Industries, Inc.*
- 2:30p Electronic-Photonic Design Automation TWG *Brett Attaway, SUNY Poly*
- 2:40p Photonic TWG *Ben Miller, University of Rochester*
- 2:50p **Workshop Charge** *Bill Bottoms, Chairman, 3MTS*
- 3:05p **Break**
- 3:15p **Breakout Group Meetings with facilitators and scribes**  
Joint breakout sessions of the Education, Workforce, Professional Society Affiliates, AIM MCE/KTMAs and IPSR TWGs
- 5:30p **Networking Reception (Winter Garden)**



## TUESDAY, NOVEMBER 1

- 8:30a **Registration and Light Breakfast (MPR-674)**  
8:50a **Lessons Learned** *Lionel C. Kimerling, Executive Director, AIM Photonics Academy*

### SESSION IV: PROTOTYPES AND PRODUCTS

Early manufacturing solutions for low and intermediate product volumes emphasize cost, risk minimization and platform opportunities for building a learning curve. What best practices are emerging and where will they lead?

*Session Chair: Madeleine Glick, Sr. Scientist, University of Arizona*

- 9:00a **Keynote: Intel Silicon Photonics** *Ling Liao, Principal Engineer, Intel Corporation*  
9:30a **High Volume Manufacturing of Silicon Photonics Transceivers** *Peng Sun, Senior Engineer, Luxtera Inc.*  
9:50a **Si Photonics for Telecommunication at NTT** *Hiroshi Fukuda, Senior Engineer, Supervisor, NTT*  
10:10a **Monolithic Electronic-Photonic Integration: Microprocessor with Optical Communication Network** *Milos Popovic, Boston University*  
  
10:30a **Break**

### SESSION V: SUPERVENING APPLICATIONS

Data Centers – HPC – Automotive – IoT: What are timelines and prospects for cross-market platforms?

*Session Chairs: Tremont Miao, Director-Retired, ADI and Nick Usechak, AFRL, Government CTO, AIM Photonics*

- 10:40a **Photons in the Automobile** *Kazumi Wada, Visiting Professor, MIT*  
11:00a **Tutorial I: Waveguide Integration of Germanium Photodetectors** *Jifeng Liu, Associate Professor, Dartmouth College*  
11:30a **Tutorial II: Emerging Materials for Silicon-Photonics Hybrid Integration** *Volker Sorger, Director OPEN, George Washington University*  
  
12:00p **Attendee Lunch (Winter Garden)**  
**Integrated Photonic Systems Roadmap (IPSR) Executive Board Meeting and Lunch (Silverman Skyline)**

### SESSION VI: THE AIM PHOTONICS FOUNDRY PROGRAM

*Session Chair: Peter Goetz, NRL Optical Sciences and Government Chief Scientist, AIM Photonics and Tom Koch, University of Arizona, TRB Executive, AIM Photonics*

- 1:30p **The AIM Photonics MPW Program** *Doug Coolbaugh, Chief Operating Officer, AIM Photonics*



- 1:50p **Connecting through the AIM Photonics Design Center** *Brett Attaway, Director, EPDA Solutions, AIM Photonics*
- 2:10p **The AIM Test, Assembly and Packaging Facility** *Tom Brown, University of Rochester*
- 2:30p **Break**

## **SESSION VII: INTEGRATED PHOTONIC SYSTEMS ROADMAP UPDATE**

Roadmap Workshop Breakout Report Back

*Session Chair: Bill Bottoms, Chairman, 3MTS*

- 2:45p **IPSR TWG Breakout Updates**

## **SESSION VIII: SUMMARY PANEL DISCUSSION**

Summary Conclusions: Navigating the Integrated Photonics Technology Transition

*Session Chair: Lionel C. Kimerling, MIT, Executive Director, AIM Photonics Academy*

- 4:00p **The Integrated Photonics Supply Chain Preparedness Panel Discussion**

- 5:00p **Adjourn**

## **WEDNESDAY, NOVEMBER 2 (Room 6-104)**

- 8:00a **Registration**

### **MORNING SESSION**

- 8:30a **The Massachusetts Integrated Photonics Manufacturing Supply Chain**  
*Local Companies in MA/New England interested in business opportunities in integrated photonics.*

- 12:00p **Lunch**

### **AFTERNOON SESSION**

- 1:30p **AIM Academy Advisory Council Kickoff Meeting**