

OSA Incubator Nanophotonic Devices: Beyond Classical Limits

14-16 May 2014

OSA Headquarters • 2010 Massachusetts Ave. NW • Washington, DC, USA

HOSTED BY:

Volker J. Sorger, *The George Washington University, United States*; **Jung Park**, *Intel Corporation, United States*
Pablo A. Postigo, *Consejo Superior de Investigaciones Cientificas, Spain*; **Fengnain Xia**, *Yale University, United States*

AGENDA

Day 1: Wednesday, 14 May 2014

18:00 **Welcome Dinner**
Ezme, 2016 P Street, NW

Day 2: Thursday, 15 May 2014

8:00 **Breakfast**
OSA Headquarters, 2010 Massachusetts Ave., NW

8:30 **Welcome, Goals, and General Information**
Volker Sorger, The George Washington University, United States

8:45 **Welcome, & Update on National Photonics Initiative**
Elizabeth Rogan, Chief Executive Officer, OSA, United States

Session A: Understanding & Determination of Device Limits

9:00 **General Opto-electronic Device Limits & Integration**
Thomas Koch, University of Arizona, United States

9:30 **Limits of Modulators**
Juejun Hu, University of Delaware, United States

10:00 **Limits of Lasers**
Rupert Oulton, Imperial College of London, United Kingdom

10:30 **Coffee Break**

10:50 **Valleytronics: The Promise of Layered Materials**
Xiaodong Xu, University of Washington, United States

11:20 **Session A: Q&A**

Day 2: Thursday, 15 May 2014 (continued)

11:30 Breakout Session 1: Fundamental Limits and Solutions for Opto-electronic Devices

- *Group A: Electro-optic Modulators*
 - Chairs:* Juejun Hu, University of Delaware, United States;
 - Hong Tang, Yale University, United States
- *Group B: On-Chip Light Sources and Lasers*
 - Chairs:* Rupert Oulton, Imperial College London, United Kingdom;
Cun-Zheng Ning, Arizona State University, United States
- *Group C: Emerging Materials for Opto-electronics*
 - Chairs:* Ritesh Argawal, University of Pennsylvania, United States;
Han Wang, IBM Watson Research Center, United States

13:00 Lunch (provided on-site)

Session B: Solutions & Approaches to Address Limitations

14:00 Emerging Materials and Applications in Nanophotonics

Fengnian Xia, Yale University, United States

14:30 The Case for Plasmonics

Volker Sorger, The George Washington University, United States

15:00 2D Photonic Crystals for Optoelectronic Devices: Lasers & Quantum Photonics

Pablo Postigo, Consejo Superior de Investigaciones Cientificas, Spain

15:30 Coffee Break

16:00 Limits & Opportunities of Electrical & Optical Interconnects

David A. B. Miller, Stanford University, United States

16:30 Advances in Hybrid Integration

Ping Ma, ETH Zurich, Switzerland

17:00 Breakout Session 2: Methods and Materials to Address Fundamental Challenges

- *Group D: Hybrid Photonic Integration*
 - Chairs:* Jung Park, Intel Corporation, United States; Fengnian Xia, Yale University, United States
- *Group E: Plasmonics Enhanced Devices*
 - Chairs:* Ganapathi Subramania, Sandia National Laboratories, United States; Yuebing Zheng, University of Texas Austin, United States
- *Group F: Optical Interconnects & Device Limits*
 - Chair:* David A. B. Miller, Stanford University, United States

Day 2: Thursday, 15 May 2014 (continued)

18:30 **Summary of Day, Next Up**
Hosts

19:00 **Dinner**
Grillfish, 1200 New Hampshire Ave., NW

Day 3: Friday, 16 May 2014

8:00 **Breakfast**
OSA Headquarters, 2010 Massachusetts Ave., NW

Session C: Industry & Government Perspective

8:30 **Panel Session 1: Current Trends & Future Bottlenecks**

- *Speakers:* Frederick Kish, Infinera Corporation, United States; Hughes Martes, CEA-LETI, France; Jung Park, Intel Corporation, United States
 - *Moderator:* Nadir Dagli, University of California, Santa Barbara, United States

9:30 **Panel Session 2: Mission Critical Requirements & Vision**

- *Speakers:* Richard Carlson, Department of Energy, Office of Science, United States; Dimitris Pavlidis, National Science Foundation, United States
 - *Moderator:* Ganapathi Subramania, Sandia National Laboratories, United States

10:30 **Coffee Break**

Session D: Merging Nanophotonics with Classical Photonics

11:00 **Panel Session 3: Merging Current Device Solutions with Emerging Trends**

- *Speakers:* Rajeev Jagga Ram, Massachusetts Institute of Technology, United States; Marc Savanier, University of California San Diego, United States; Luke Sweatlock, Northrop Grumman Corporation, United States
 - *Moderator:* David A. B. Miller, Stanford University

12:00 **Working Lunch**
Breakout Groups Finalize Notes/Reports

Day 3: Friday, 16 May 2014 (continued)

13:30

Breakout Group Presentations

- Breakout Session 1: Devices
 - *Group A*: Electro-optic Modulators
 - *Group B*: On-Chip Light Sources and Lasers
 - *Group C*: Emerging Materials for Opto-electronics

- Breakout Session 2: Solutions
 - *Group D*: Hybrid Photonic Integration
 - *Group E*: Plasmonics Enhanced Devices
 - *Group F*: Optical Interconnects & Device Limits

14:30

Summary, Conclusion & Next Steps

Hosts of Incubator

15:00

Adjourn