OSA Incubator on Flat Optics: Recent Advances and Future Opportunities

26 - 28 February 2020
Washington, DC USA

HOSTED BY:
Federico Capasso, Harvard University, United States
Wei Ting Chen, Harvard University, United States
Paulo Dainese, Corning Inc., United States

Wednesday, 26 February 2020

12:00 Lunch & Networking
OSA Headquarters, 2010 Massachusetts Ave NW

13:30 **Welcome**
Elizabeth Rogan, CEO, The Optical Society

13:45 **Welcome, Goals, and General Information**
Federico Capasso, Harvard University, United States
Paulo Dainese, Corning Inc., United States
Wei Ting Chen, Harvard University, United States

14:00 **Session 1: Flat Optics from Components to Systems I**

Flat Optics Based on Metasurfaces
Federico Capasso, Harvard University, United States

Machine-Learning Assisted Photonics: From Metasurface Device Design to Quantum Measurements
Alexandra Boltasseva, Purdue University, United States

Flat Imaging Optics
Xiangang Luo, Chinese Academy of Sciences, China

15:30 **Discussion Session**
Thomas Krauss, University of York, United Kingdom

15:45 Coffee Break

16:15 **Session 2: Flat Optics from Components to Systems II**

From Flat Optics to Flat Optical Systems
Bernard Kress, Microsoft, United States

Flat Optics for Active Wavefront Manipulation and AR/VR
Mark Brongersma, Stanford University, United States

Inverse Design of Large Area Metasurfaces
Rahul Trivedi, Stanford University, United States

Discussion Session
17:45 *Wouter Woestenborghs, PlanOpSim, Belgium*

Information & Goals for Day 2

18:00

Welcome Dinner

18:15

Del Sur Café, 2016 P Street NW

Thursday, 27 February 2020

8:00 Breakfast

8:30 **Session 3: Simulation and Optimization for Large Metasurfaces**

Global Topology Optimization of Metasurfaces Based on Machine Learning
Jonathan Fan, Stanford University, United States

3D-Printable Multi-Layered Meta-Optics by Inverse Design
Zin Lin, Massachusetts Institute of Technology, United States

Reaching the Limits of Light-Matter Interactions
Owen Miller, Yale University, United States

10:00 **Discussion Session**
Douglas Werner, Pennsylvania State University, United States

10:15 Coffee Break

10:45 **Session 4: Tunable and Multifunctional Flat Optical Devices**

Active Metasurfaces – Device Concepts and Inverse Design
Harry Atwater, California Institute of Technology, United States

Solid-State Lidar with Dynamic Optical Metasurfaces
Gleb Akselrod, Lumotive, United States

Tunable Nanophotonics Devices
Debashis Chanda, University of Central Florida, United States

12:15 **Discussion Session**
Owen Miller, Yale University, United States

12:30 Lunch

13:30 **Rapid-Fire Oral Presentations**

Cascaded Metasurface Optics
Amir Arbabi, University of Massachusetts Amherst, United States

Photonic Inverse Design for 3D Color Splitting Applications
Gregory Roberts, California Institute of Technology, United States

Two Metasurface Layers for Phase Gradient Imaging
Hyounghan Kwon, California Institute of Technology, United States

Computational Imaging with Dielectric Metasurfaces
Shane Colburn, University of Washington, United States

RGB-Achromatic Metalenses for a VR/AR System
Zhaoyi Li, Harvard University, United States

Infrared Metasurfaces
Clara Rivero-Baleine, Lockheed Martin Corporation, United States

Multiscale Inverse Design for Systems of Metasurface Optics
Adam Backer, Sandia National Laboratories, United States

Metasurface Holographic Projectors for Augmented Reality on Contact Lenses
Shoufeng Lan, Texas A&M University, United States

Additively Manufactured Freeform Gradient Index Optics
James Field, Voxtel Inc., United States

14:30 **Session 5: Advanced Nanofabrication for Large-Scale Flat Optics**

Large-area Fabrication of Flat Optical Components by Immersion DUV Lithography
*Dim Lee Kwong, A*STAR, Singapore*

Towards High-Volume Manufacturing Of Near-Infrared Metasurface Optical Devices
Robert Visser, Applied Materials, United States

Flat Optics Beyond the Wafer: Progress Towards Large Area Nanopatterned Optical Films
Martin Wolk, 3M, United States

High Volume Serial Production of Nanostructured Functional Surfaces by Roller Imprint and Injection Molding
Mike Bülters, Temicon GmbH, Germany

16:30 **Discussion Session**
Paulo Dainese, Corning Inc., United States

16:45 Coffee Break

17:15 **Session 6: Flat Optics for AR/VR and Displays**

Metasurfaces for Waveguide AR Displays: A Case Study
Pierre St. Hilaire, Magic Leap, United States

Practicality Issues Of Metalens and Meta-Hologram
Hwi Kim, Korea University, South Korea

18:15 **Discussion Session**
Giuseppe Calafiore, Facebook Reality Labs, United States

18:30 Networking Dinner
La Tomate, 1701 Connecticut Ave NW

Friday, 28 February 2020

8:00 Breakfast

8:30 **Session 7: Emerging Applications I**

Manufacturing and Applications of Wafer-Level Optics
Reinhard Völkel, SUSS MicroOptics, Switzerland

Metasurface Enabled Integrated Nanophotonic Interfaces to Quantum Systems
Amit Agrawal, National Institutes of Standards and Technology, United States

Aberrations and Efficiency of High-End Metalenses
Wei-Ting Chen, Harvard University, United States

10:00 **Discussion Session**
Martin Wolk, 3M, United States

10:15 Coffee Break

10:45 **Session 8: Emerging Applications II**

Spatial-Division Multiplexing with Metasurfaces
Paulo Dainese, Corning Inc., United States

Optical Metasurfaces: From Lab to Product
Pawel Latawiec, Metalenz, United States

11:45 **Discussion Session**
Siavash Yazdanfar, Corning Inc., United States

12:00 **Summary, Conclusions & Next Steps**

12:15 Lunch

13:30 Adjournment