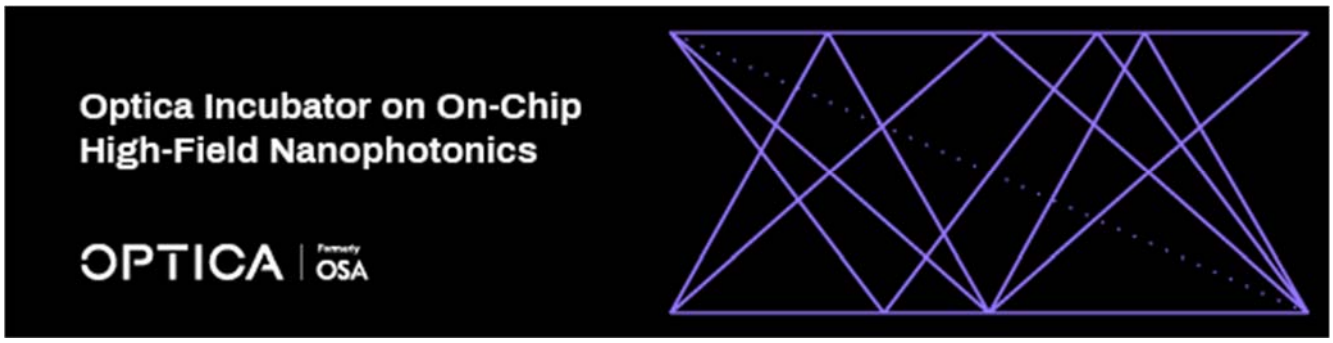

Optica Incubator on On-Chip High-Field Nanophotonics

06 - 08 July 2022

Hosted by:

Giulio Vampa, National Research Council of Canada, Canada
Gennady Shvets, Cornell University, United States
John Petersen, Imec, Belgium
Esben Witting Larsen, Imec, Belgium

Wednesday, 06 July 2022

Afternoon **Attendees arrive in DC and check in to hotel**

18:00 EDT **Welcome Dinner**

Thursday, 07 July 2022

08:00 EDT **Breakfast at Optica Headquarters**

08:30 EDT **Welcome**
Elizabeth Rogan, CEO, Optica

08:45 EDT **Program Overview & Goals**
Hosts

09:00 EDT **Reaching for the highest field and efficiency**
Chair: Louis Di Mauro, Ohio State University

15 min: *Title to be announced*, David Reis, Stanford University
15 min: *Accessing the regime of strongly-driven solids using dielectric metasurfaces,* Gennady Shvets, Cornell University
15 min: *Harmonic Generation and Ultrafast Photoluminescence Steering in Metasurfaces,* Igal Brener, Sandia National Lab
15 min: *Title to be announced,* Paul Corkum, University of Ottawa
30 min: Moderated discussion

10:30 EDT **Coffee Break**

11:00 EDT **Reaching for the smallest size & fastest speeds**
Chair: Murat Sivis, University of Gottingen

15 min: *Nano-scale focusing of XUV high harmonics,* Giulio Vampa, National Research Council of Canada
15 min: T*itle to be announced,* Enam Chowdhury, Ohio State University
15 min: *On-Chip Petahertz Electronics: From Science to Technology,* Phillip Keithley, MIT
15 min: *On-chip and on-tip attosecond currents,* Peter Hommelhoff, Friedrich-Alexander-Universität Erlangen
30 mins: Moderated discussion

12:30 EDT **Lunch**

13:30 EDT **Nanophotonics platforms**

15 mins: T*itle to be announced,* Natalia Litchinitser, Duke University
15 mins: *Electron acceleration on a chip,* Joel England, SLAC National Accelerator Laboratory
15 mins: *Physical limits and scaling laws in nanophotonics*, Alejandro Rodriguez, Princeton University
15 mins: T*itle to be announced,* Alex Gaeta, Columbia University
30 mins: Moderated discussion

15:00 EDT **Coffee Break**

15:30 EDT **Brainstorming session: state of chip-scale high-field photonics**
Chair: Philip Bucksbaum, Stanford University

In this moderated discussion, attendees will debate what are the most promising fundamental and application outcomes and how the strengths of high-field nonlinearities and, separately, of nanostructured surfaces, can augment each other to achieve these outcomes. A review of the past work will also identify potential common strengths and challenges.

16:30 EDT **Industry trends and needs**
Chair: Amelle Zair, Kings College London

15 mins: *Solid state HHG source fabrication and application potentials*, Xavier Rottenberg, IMEC
15 mins: T*itle to be announced,* Bruno Figeys, IMEC
15 mins: *Application of XUV radiation in semiconductor manufacturing*, Peter Smorenburg, ASML
20 mins: *Attosecond Metrology 2.0 for Health Probing,* Nick Karpowicz & Mihaela Zigman, Max Planck Institute for Quantum Optics
15 mins: *How high harmonics pulses might change elemental imaging of biological objects at nanoscale,* Sasha Loboda, FLUIDIGM

18:00 EDT **Rapid fire (3 mins/person)**
Chair: Esben Witting Larsen, Imec, Belgium

18:30 EDT **Networking Dinner**

Friday, 08 July 2022

08:00 EDT **Breakfast at Optica Headquarters**

08:30 EDT **Next-generation modeling of nanoscale high-field physics**
Chair: Lora Ramunno, University of Ottawa

15 min: T*itle to be announced,* Thomas Fennel, University of Rostock
15 min: *Synthetic chiral light & chiral topological light for efficient chiral light matter interaction,* Olga Smirnova, Max Born Institute
15 min: T*itle to be announced,* Angel Rubio, Max Planck Institute for the Structure and Dynamics of Matter
15 min: *Influence of nano-scale effects and fundamental material parameters on ultrafast nonlinear optical response of photonic nanostructures*, Vitaly Gruzdev, The University of New Mexico
15 min: *High harmonic generation from a Wannier perspective,* Rui Silva, Instituto de Ciencia de Materiales de Madrid
30 mins: Moderated Q&A

10:30 EDT **Coffee Break**

11:00 EDT **Breakout Sessions: Roadmap to functional chip-scale high-field phenomena**
Chairs: Giulio Vampa, National Research Council of Canada, Canada; and Gennady Shvets, Cornell University, United States

Smaller groups will be tasked with identifying how to reach the outcomes and targets identified during the brainstorming session. Breakout topics and division of participants will be determined based on the outcome of Day 1.

12:00 EDT **Lunch**

13:00 EDT **Wrap-up and Next Steps: Summary of Breakout Sessions**

14:00 EDT **Adjourn**