National Nanotechnology Coordinated Infrastructure

Penn University of Pennsylvania

2022 NNCI Etch Symposium-University of Pennsylvania

April 21-22, 2022

Advances in Micro- and Nanoscale Etching for Novel Electronic, Photonic, and Quantum Based Devices

Dear NNCI and non-NNCI member institutions:

The organizing committee invites you to attend and participate in this year's NNCI etch symposium at the University of Pennsylvania on April 21-22. The National Nanotechnology Coordinated Infrastructure (NNCI) is an NSF-sponsored network of 16 sites involving nearly 30 university shared research facilities across the USA (https://www.nnci.net). The NNCI organizes network-wide events to bring together technical experts in a particular fabrication discipline. A principal objective of this symposium is to bring together etch personnel in an interactive forum where collective knowledge on etch processes and equipment can be shared.

This 2-day symposium will include an internal meeting of NNCI technical staff and invited non-NNCI staff on day 1-Apr. 21. Member NNCI sites are invited to give updates on new etch equipment and newly developed etch processes. A portion of day 1 will be dedicated to an open discussion of any etch related equipment or process issues you may have. In addition, we have invited etch equipment vendors including Oxford Instruments, Plasmatherm, SPTS, Samco, and others to give technical presentations to highlight their latest developments in etch processes such as atomic layer etching (ALE) and those processes critical for electronic, photonic, and quantum-based devices. The vendors will also have exhibit booths available so that attendees can meet and discuss the manufacturers' most recent etch product and

ancillary equipment offerings. The agenda for day 1 includes the following technical talks from equipment vendors:

1. Russ Renzas-Oxford Instruments: ALE For Low-Loss Quantum Devices
2. David Lishan-Plasmatherm: Low Temperature Plasma Technology for Advanced Packaging Applications
3. Steve Vargo-SPTS: Endpoint Detection for Plasma Etching
4. Peter Wood-Samco: Advanced Atomic Scale Processing and Equipment

Day 2-Apr. 22 will be an open public event with invited and contributed talks by experts from academic labs. We have speakers from Penn, Stanford, USC, UCSB, Northeastern, MIT, and Penn State. The topics will discuss etching aspects in a broad range of nanotechnology, including quantum and nanophotonic device fabrication to the role of artificial intelligence (AI) in the fab. The day-2 agenda includes the following talks:

1. Troy Olsson-University of Pennsylvania: Etching of AlScN materials
2. Ben Davaji-Northeastern University: Role of Artificial Intelligence in Etching
3. Mengjie Yu-University of Southern California: LiNbO3 Nanophotonic Platform for Non-linear & Quantum Optics
4. Tony Zhou-MIT: Quantum Applications Build on Creative Nanofabrication
5. Daniil Luken-Stanford: Quantum & Non-linear Photonics in SiC
6. Christian Reimer-HyperLight Corp: Faster and Lower Power Solutions via Thin Film Lithium Niobate
7. Sid Ghosh-Northeastern University: Photonic Waveguides & Acousto-Optic Devices on AlN & AlScN

8. Lidan Zhang-Penn St. University: Fabrication of Si, Si3N4, and InGaP Optical Metasurfaces with Dry Etching
9. Demis John-UCSB: Ru Hard-Masked SiO2 Etching
10. Matteo Rinaldi-Northeastern University: Applications of AlN and AlScN Devices

Registration for the 2-day symposium is free by using the following link https://www.eventbrite.com/e/66680582417. The following is a list of nearby hotels, some within walking distance of the Singh Center for Nanotechnology.

HOTELS

A block of 20 rooms have been reserved at Sheraton Philadelphia University City Hotel (36th and Chestnut).

In addition, other hotels in walking distance to the Singh Center for Nanotechnology are:

The Inn at Penn - A Hilton Hotel: 36th and Walnut

Homewood Suites by Hilton: 41st and Walnut

The Study at University City: 33rd and Chestnut

If you stay at any Center City location listed below, take any trolley from 13th Street Station to 33rd St. Station on Market Street or the westbound busses #21 or #42 along Walnut Street and walk to the Singh Center for Nanotechnology.

Courtyard by Marriott Philadelphia Downtown

Residence Inn by Marriott Philadelphia Center City

Philadelphia Marriott Downtown

Hilton Garden Inn Philadelphia Center City

Home2Suites by Hilton Philadelphia

Please plan to join us for this very informative networking event. Please contact any member of the organizing committee for more information.

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