

Please register with richienagi@gmail.com
 (for food estimate – last minute walk-ins are completely welcome)

Those who have registered are listed at the bottom.



Co Presidents
 Virginia Ford
 Eric Ford
 Announcements

Programs/News
 John McDonald

Secretary and arrangement
 Fred Houston

Treasurer
 John Tardif

Website, Mailing list
 Richie Nagi

Ventura OSA (VOSA) Announcement for September 10, 2019 ([Please RSVP](#))

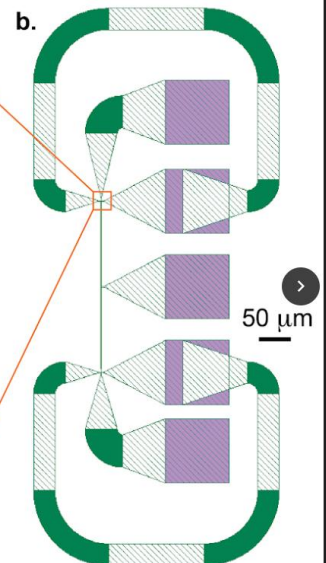
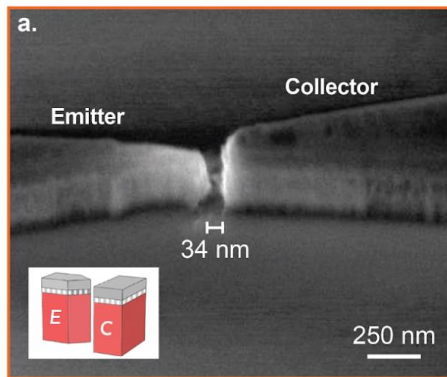
The Development & Application of Advanced Nanofabrication Techniques in the KNI at Caltech

By

Matthew Hunt
 California Institute of Technology

ELECTRON BEAM LITHOGRAPHY in the KNI

Nanoscale field emission devices promise many advantages over traditional solid-state devices, including fast switching speeds, operation at extreme temperatures, and radiation hardness. Practical field emission circuits require sharp emitter tips and sub-50 nm gaps between emitter and collector (a). This necessitates high-resolution EBL and very accurate placement of adjacent patterns, which was accomplished here with aligned patterns on multiple steps in the EBPG 5000+. The circuit at far right, an AND gate, was patterned by EBL for the smaller elements (green in the CAD layout, b) and by photolithography for the large contact pads (purple).

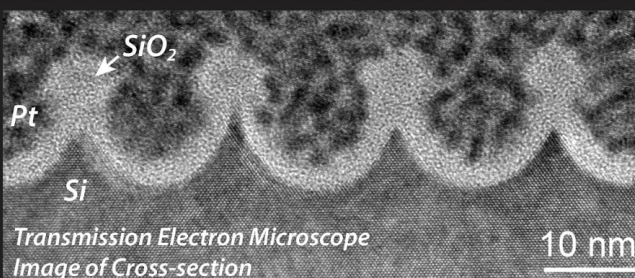
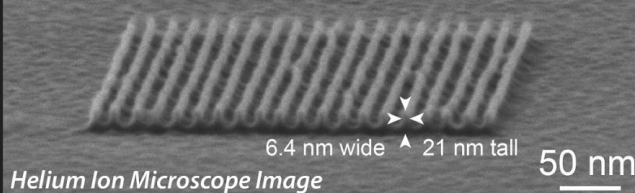


W.M. Jones, D. Lukin, and A. Scherer, "Practical nanoscale field emission devices for integrated circuits," *Appl. Phys. Lett.* 110, 263101 (2017)



SUB-10 nm ETCHED STRUCTURES

Etched Silicon



Abstract:

The Kavli Nanoscience Institute (KNI) is located at the California Institute of Technology. Through its programs and technical facilities, the KNI supports and enables fundamental research at the frontiers of electronics, photonics, quantum matter & technology, medical engineering, bioengineering, and sustainability. A core mission of the KNI is to push the state of the art beyond what is currently possible in nanofabrication. To this end, the KNI strategically acquires new instrumentation with leading edge nanofabrication and metrology capabilities for its multi-user cleanrooms and labs, enabling its members to engage in the rapid prototyping and rigorous characterization of nanodevices. Managed by full-time technical staff and available for use by researchers at Caltech and other academic, government and industrial institutions, the KNI Laboratory is equipped for — and dedicated to — exploring the limits of nanofabrication. This talk will revolve around two main components: (1) Describing the kinds of nanofabrication techniques – some conventional by the standards of the field, some innovative – that are utilized across the lab's primary areas of lithography, etching, deposition, and microscopy; and (2) Providing an overview of several devices made in the lab, showing how they are fabricated and what they are used for, to give the audience a sense for how the KNI's researchers are contributing to the many fields that intersect with nanoscience.



Mathew Hunt

Mathew Hunt is the Assistant Director of Staff Research and Lead Microscopist for The Kavli Nanoscience Institute (KNI) at the California Institute of Technology. He directs research projects that are carried out by KNI technical staff, in collaboration with Caltech & non-Caltech PIs and student researchers, with the purpose of creating new nanofabrication techniques using the KNI's leading edge instrumentation. He also manages the KNI's suite of microscopy equipment – transmission electron microscopes, scanning electron microscopes, focused ion beam systems, an atomic force microscope, and related sample preparation equipment. Matt joined the KNI in 2014 after completing his PhD at the University of California, Irvine on the subject of high temperature oxidation of turbine engine materials, through which he developed expertise in a number of electron, ion and x-ray microscopy techniques. His research interests lie in the development of new lithography and microscopy techniques that utilize various beam species (e.g. helium ions, neon ions, gallium ions, electrons) and the application thereof to the kinds of novel materials and devices that are important to users of the KNI.

Venue For Event

California Lutheran University
60 West Olsen Road
Thousand Oaks, CA 91360
Room 113 Alumni Hall

[Google map](#)

[Campus map](#)

6:00p Mixing and Stand Up Dinner

7:00p Speaker

\$25 donation on site

**(it is a donation for food, insurance and venue.
If you need a no-food, student, old age or other discount,
please give yourself one).**



From Eric & Ginny,

Looking forward to hearing about this interesting technology that is way smaller than the normal optical domain, utilizing tools that are of atomic scale. Makes an old optical guy feel dated.

Please volunteer! We need help to keep VOSA running smoothly.

The Ventura section of the Optical Society of America promotes optical science and optical engineering and facilitates communication and networking among optics professionals, students, and optics aficionados in the geography reaching roughly from Santa Barbara to Pasadena.

Upcoming meetings:

October 8th, 2019 Dr. Clair Allison McLellan

If you want to be added or removed to/from our mail list please notify us at richienagi@gmail.com

Our sibling organization OSSC Meets 2nd Wednesdays.

For our meeting (Ventura OSA) please register to richienagi@gmail.com

RSVPs:

1. Ginny Ford
2. Eric Ford