

# A VIBRANT RESEARCH COMMUNITY

## CONTACT US

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### FOR MORE INFORMATION

<http://nanolabs.stanford.edu>

# NANO@ STANFORD

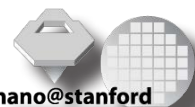
## ABOUT US

Located in the heart of Silicon Valley, nano@stanford serves academic, industrial, and governmental researchers across the U.S. and around the globe. We offer a comprehensive array of advanced fabrication & characterization tools, as well as staff expertise in nanoscale science and engineering.

Every year, more than 1,200 lab members participate in a rich research culture where staff offer specialized expertise in energy, electronics, earth sciences, environmental sciences, life sciences, and medicine. More than a lab, it's a vibrant community that enables multidisciplinary research and educates tomorrow's scientists and engineers.



Stanford



nano@stanford is supported by the National Science Foundation as part of the National Nanotechnology Coordinated Infrastructure under award ECCS-1542152.



National Nanotechnology  
Coordinated Infrastructure



# OUR FACILITIES

## STANFORD NANOFABRICATION FACILITY (SNF)

SNF consists of a cleanroom equipped to support electronic device fabrication, the MOCVD lab for Metallo-Organic Chemical Vapor Deposition, and the ExFab for Experimental Fabrication methods beyond silicon electronics.

## STANFORD NANO SHARED FACILITIES (SNSF)

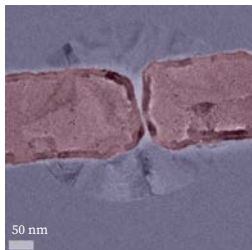
SNSF is comprised of four core facilities: Nanofabrication, Electron & Ion Microscopy, X-Ray & Surface Analysis, and Soft & Hybrid Materials that encompass high-end fabrication and characterization methods.

## STANFORD MATERIALS ANALYSIS FACILITY (MAF)

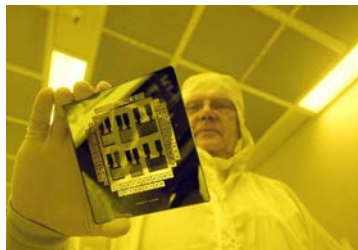
MAF hosts several instruments used to characterize minerals, rocks, and the solid products of laboratory experiments on inorganic materials of interest in geosciences, materials science, and applied physics.

## STANFORD ICP-MS/TIMS FACILITY (ICPMS/TIMS)

The ICPMS/TIMS Facility within Stanford University's School of Earth Sciences is a state-of-the-art facility for the analysis of isotopes and trace elements using mass spectrometry.



TEM image of lateral RRAM device with < 10 nm gap.  
Image by Michal Mleczko



Our experienced staff not only train our researchers on how to use equipment, but also provide expert consultation.

## EDUCATION & OUTREACH

nano@stanford supports the education of students, educators, and researchers through tours, professional development programs, online educational materials, and outreach programs serving the local communities and beyond.



For a complete listing of tools & capabilities, visit:  
<http://nanolabs.stanford.edu>

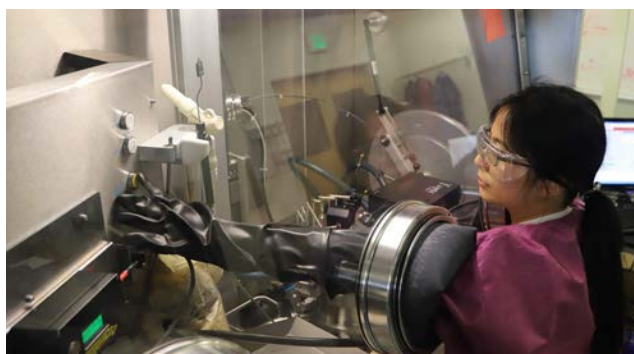
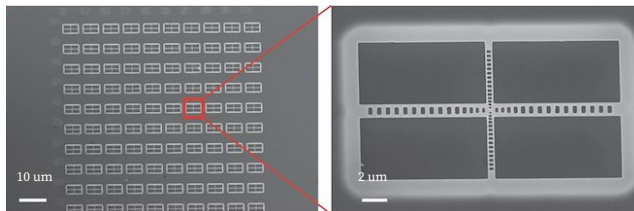
# CAPABILITIES & RESEARCH EXAMPLES



## JEOL JBX-6300FS ELECTRON BEAM LITHOGRAPHY

The JEOL JBX-6300FS is a 100 keV high-brightness field emission electron beam lithography system capable of < 10 nm patterning.

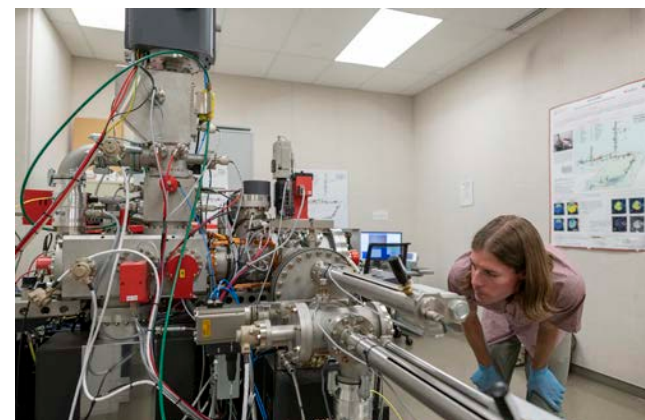
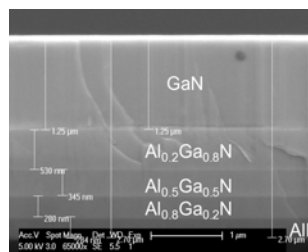
Image: SEM image of photonic crystal crossbeam structures in GaAs. Prof. Vučković Group, DOI:arXiv:1408.6567



## AIXTRON METAL-ORGANIC CHEMICAL VAPOR DEPOSITION

The MOCVD Lab has equipment and expertise for growing films of III-V and III-N (Ga/In/Al arsenides, phosphides, and nitrides) used in structures with applications ranging from electronics and optics to biology and space.

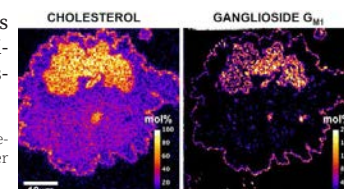
Image: SEM image of group III-nitride multilayers deposited on a planar silicon substrate. Prof. Senesky Group, DOI:10.1063/1.4967816



## CAMECA NANO SECONDARY ION MASS SPECTROMETER

The Cameca NanoSIMS maps nanoscale elemental composition down to 50 nm spatial resolution with ppm sensitivity.

Image: NanoSIMS images of a freeze-dried supported lipid bilayer. Prof. Boxer Group, DOI:10.1021/ja310831m



## FEI TITAN TRANSMISSION ELECTRON MICROSCOPE

The FEI Titan is an aberration-corrected environmental TEM featuring high image (0.7 nm) and energy resolution (0.1 eV). The instrument can provide researchers with unique capabilities to study materials through a variety of in-situ holders.

Image: High-resolution TEAM images of pristine and strained Pt NPs with (111) lattice compression and tension. Prof. Cui Group, DOI:10.1126/science.aaf7680

