



OU MICROFABRICATION RESEARCH & EDUCATION CENTER



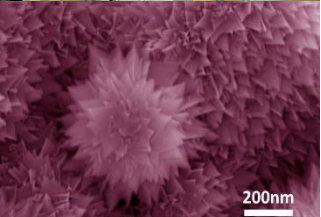
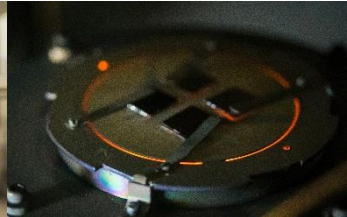
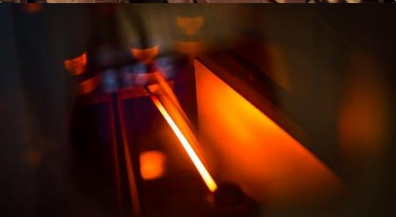
MREC MISSION: STEERING & POWERING SCIENTIFIC INNOVATIONS IN OKLAHOMA

Welcome to the Microfabrication Research & Education Center (MREC) at the University of Oklahoma! The mission of OU-MREC is to provide a professional, safe, sustainable, and high-quality cleanroom facility in which the University community and its collaborators compete internationally by conducting innovative research and graduate-level education.

This state-of-the-art cleanroom facility offers over 3360 sq. ft. of Class 10,000 general and Class 1000 photo lab cleanroom space located in Devon Energy Hall on the University of Oklahoma campus. The equipment toolsets provide full turnkey solutions for ongoing research projects and enable fabrication of advanced electronic & optoelectronic devices using innovative compound semiconductor materials.

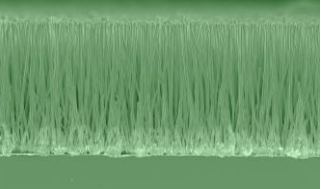
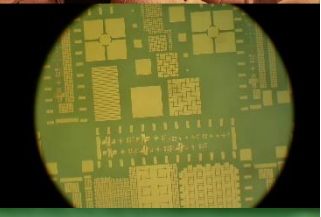
The OU-MREC has adopted a world-class level of safety protocols in

both facilitation and operational standards. All equipment tool set operations are conducted with certification & qualification standards provided by university staff who are semiconductor industry veterans.



ADDRESS CENTER'S IMPORTANT SCIENTIFIC RESEARCH TOPICS

- ❖ Mid-Infrared Semiconductor Lasers (III-V, IV-VI etc.)
- ❖ Infrared & Mid-Infrared Photodetectors
- ❖ Thermal Imaging Focal Planar Array (FPA)
- ❖ Advanced Solar Cell Materials & Devices (IV-VI, II-VI etc.)
- ❖ Thermal Energy Harvesting Devices
- ❖ Micro-scale Heat Transport and Conversion
- ❖ Photonic-Crystal Microsensor for Health Monitoring
- ❖ Nanostructure (Forrests, Flowers etc.) Enhanced Optoelectronic Devices
- ❖ Nanostructure Enhanced Carbon Fiber Enforced Composites
- ❖ Silicon-based Photonics
- ❖ Thin-Film Optics
- ❖ Waveguide Optics
- ❖ High Speed Micron Switches
- ❖ High-frequency Radar Components & Advanced packaging
- ❖ Nano-Fluidics Research for Targeting Proteins



OFFERING STATE-OF-THE-ART ACADEMIC RESEARCH & INDUSTRIAL TOOLS

MATERIAL DEPOSITION

- Parylene Coater
- Chemical Vapor Deposition
- Atomic Layer Deposition
- Thermal Evaporator
- E-beam Evaporator
- Pulsed E-beam Deposition
- Magnetron Sputtering System

DEVICE PROCESSING & TESTING

- MJB3 Mask Aligner
- Westbond Wirebonder
- Rapid Thermal Annealer
- ICP-RIE Etcher/Plasma Asher
- Wafer Dicing Platform
- KLA Tencor Profiler
- Scanning Electron Microscope

DIRECTING EDUCATION TO INDUSTRY NEEDS

Starting in 2013, a course "Integrated Circuit Fabrication Technology" was created to offer students an education opportunity to gain hands-on experience on some of the "workhorse" clean-room technologies of the semiconductor industry. The class is offered every spring semester. It has attracted significant interest from students. A senior undergraduate student said: "IC Fabrication Technology is more about process flow and uses of the technology within the clean-room than the theory behind the device. I feel like this is a great course work, I got lots of hand-on experience, and learn the technologies people actually use. This class did a very good job to bring together what we learnt to perform the product."

