The U.S. Army Research Laboratory (ARL) is the Army's premier in-house laboratory for fundamental and applied research. Our Mission is to provide innovative science, technology, and analysis to enable full spectrum operations. To do this, ARL conducts basic and applied research to develop and mature technologies and transition them as quickly as possible, recruits and develops and a preeminent scientific and technical workforce, maintains world class facilities, and uses innovative processes to exploit scientific or technological opportunities.

The Sensors and Electronic Devices Directorate (SEDD) serves as the principal Army organization for basic and applied research in sensors and electron devices in order to ensure U.S. military superiority. There are four major business areas in SEDD:

- Electro-Optic Sensors and Photonic Devices
- Electronic RF Sensors and Electronic Devices Technology
- Autonomous Sensors
- Power and Energy

Specialty Electronic Materials and Sensors Cleanroom

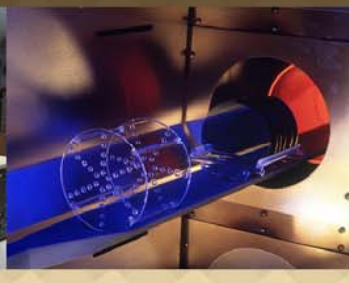
ARL has **14,800 square feet of class 10 and class 100 cleanroom** available for NEMS, MEMS, advanced specialty materials, and sensors and electron device fabrication.

- i-line Lithography
- E-beam direct write for nanoscale devices
- Metal and Dielectric Deposition
- Reactive Ion Etching
- LPCVD High-temperature Thermal Processing & Wafer Bonding
- Vapor Phase HF & XF_2 Isotropic Etching for Device Release
- In-Process Material and Device Characterization
- Piece Part to 6" Wafer Capable
- Wide range of applications and substrate materials such as: Silicon, III-V, Polysilicon, AlN, Piezoelectrics...

Molecular Beam Epitaxy and MOCVD

ARL has **eight MBE chambers** for II-VI, IV-VI, and III-V electro-optical material deposition. Applications include infrared sensors, optical emitters, thermoelectric materials and electronic components.

- Mercury Cadmium Telluride
- Lead Tin Telluride
- Gallium Arsenide
- Indium Phosphide
- Gallium Antimonide
- Gallium Nitride
- Early Ammonia crackling capability MOCVD



Microanalysis

ARL has a **fully staffed facility** available to access physical, chemical and structural properties of electronic and optical materials and devices.

- Transmission Electron Microscopy
- Atomic Force Microscopy
- Micro Raman Spectroscopy
- X-ray Diffraction
- Focused Ion Beam
- Secondary Ion Mass Spectroscopy
- Scanning Electron Microscope
- Auger/XPS Spectroscopy