

## Our Users at Clemson and External Public & Government Institutions

Users at Clemson EM Lab are required to have an Inter-Departmental Orders (IDO) on file prior to using the microscopes. The IDO is an official document and is considered authorization to submit a journal entry for payment of services rendered. We will work with department administrator to help internal EM Lab users setting up the IDO. Upon receipt of completed IDO, along with training, we will also provide a username and password that will remain active during existing IDO cycle. Users will be able to reserve electron microscope time remotely from their computers once they receive ID, password with an existing active IDO on file.

Please send signed IDO to **Dayton Cash** (FAX# 864-656-2466 or e-mail [ecash@clemson.edu](mailto:ecash@clemson.edu)). Phone: **(864)656-6888**. Then visit online at

<http://www.clemson.edu/electronmicroscope>

From "schedules" menu, select "Request Access."

Please fill in all of the fields listed and click send. Users will be put into the system and will gain access .

In addition to Clemson users. The facility also serves large number of users from external publicly funded institutions and government organizations. For more information, please contact ..

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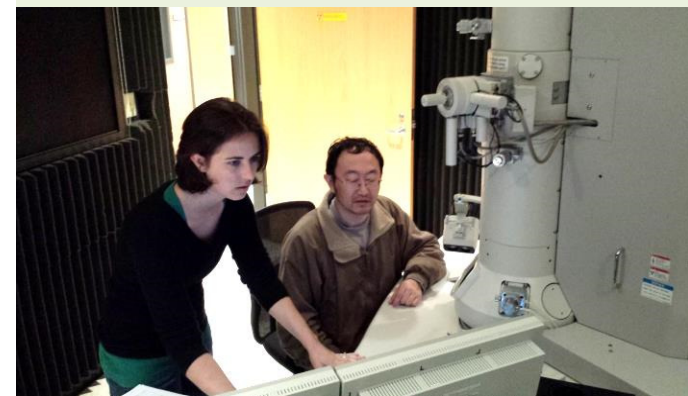
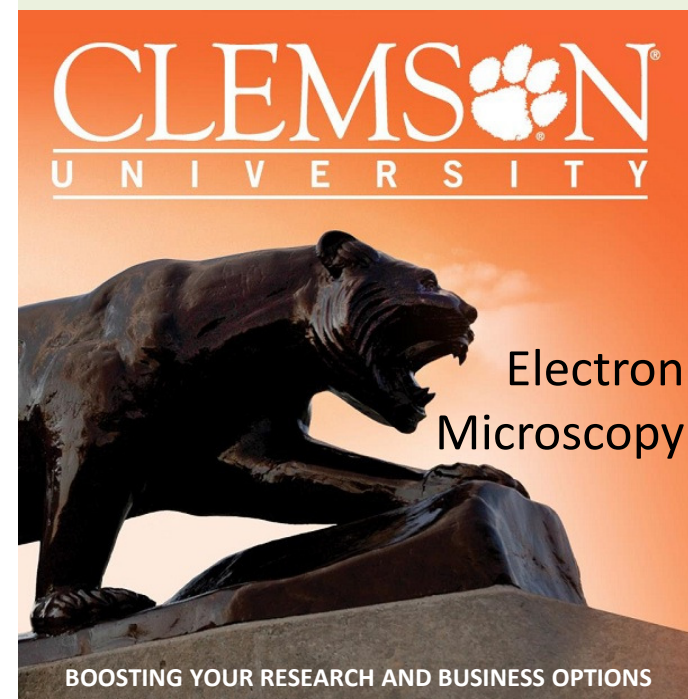
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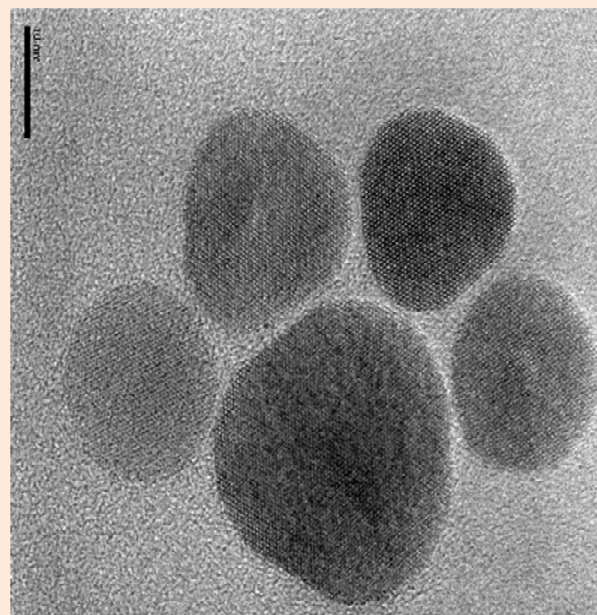
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# Professional Service for Industry Clients

Clemson University Electron Microscopy Laboratory is a multi-user service and scientific user laboratory that provides instrumentation and scientific expertise for electron/ion microscopy based integrated experimental analysis resources significantly contributing in to the discovery and technological innovation needs at Clemson, state of South Carolina, private industries and the nation. Our capabilities attract clients from automotive, pharmaceutical, textile, electronics, environmental and medical industries. The economical cost, our expertise, minimum wait time and easy access make it attractive to industry researchers. There are many advantages for industry clients, including the following:

- State-of-the-art electron microscopy equipment under one roof
- A team of professional microscopists available to assist
- Competitive pricing and quick turnaround time
- Confidentiality
- A convenient location, just 3.5 miles from I-85, midway between Atlanta and Charlotte & near Greenville SC



**Directions: EM Facility From I-85 (Driving from Greenville SC, Charlotte NC OR Atlanta GA):** Exit at exit #14 and take Hwy 187 North for 3.5 miles. Turn left on Bainbridge Rd or Clemson Research Park. Turn left Technology Drive. At next intersection, follow Technology Drive by making a left turn. Then almost immediately, take another left turn at first driveway into the parking area.



## Our Electron Microscopes

### nanoDUE'T double beam microscope – NB5000:

**Ion beam** – Ga ions Energy – Selected kV up to 40kV & 60-100 nA Resolution – 5 nm @ 40 kV

**E beam** – Schotkey diode Energy Variable kV up to 30kV Res. 1.2 nm @ 30 kV

TEM Detector Resolution – 0.8 nm @ 30kV

Analysis: Structural (EBSD), Chemical (EDX)

### High-res Transmission Electron Microscope – H9500:

Source – LaB6 , Resolution – 0.1 nm at 300 kV

Best resolution at Clemson University

Magnification – X 1,500,000; Camera allows 10 fold increase

Analysis: Diffraction, in-situ heating stage

### Scanning Transmission Electron Microscope - HD2000:

Source – Cold FE, Resolution – 0.24 nm at 200 kV

Magnification – X 5,000,000 , Analysis: EDX and Diffraction

### Transmission Electron Microscope – H7600:

120 kV TEM, Imaging Range: 50x - 600000X

High-Res Lattice Observation > 0.204nm @ 120 kV

Analysis: Tomography, Sample Tilt – +60 to -60 deg.

Cryostage Present (-175°C)

### High-res Scanning Electron Microscope - S4800:

Resolution – 1.0 nm @ 30 kV, 1.4 nm @ 1 kV

Source – Field Emission, Analysis – EDX

Has a low kV YAGBSE and TEM Detector

### Variable Pressure SEM – SU6600:

Resolution – 1.2 nm @ 30 kV, Source – Schottky diode

Variable Pressure – 10 – 270 Pa

Analysis: Structural (EBSD), Chemical (EDX)

Cryostage Present (-30°C)

### Variable Pressure SEM – S3400:

Source – Tungsten filament , Resolution – 3 nm @ 30 kV , 10 nm @ 3 kV, 4 nm @ 30 kV (BSE)

Analysis: Structural (EBSD), Chemical (EDX, WDX)

### Table Top SEM – TM3000:

15 kV SEM with EDX capability, Mag: up to 30kX