Your *source* for GEM news–from the column to your inbox

The Filament

Athens, GA

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Field of View

Focusing on Upcoming Events

- Register for the 2026 SEMS meeting in Athens, GA by clicking here. The meeting will be held May 11 - 13.
- Registration for the Microscopy and Microanalysis (M&M) conference in Milwaukee, WI opens in March. Be on the lookout for early registration opportunities here.
- The next short course scheduled for Biological TEM is 13-15 July. The deadline to register is 30 June. Interested participants are asked to email Mary at maryard@uga.edu.

The Fine Print

Microscopic Notes

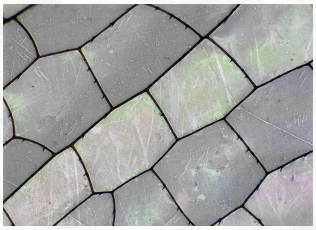
- The RMC microtome is currently down, leaving only the Reichert available. Please contact Mary Ard if you'd like to schedule time for her to section your blocks.
- Did you know GEM has a Youtube channel? Check it out here for helpful videos about scheduling time or preparing samples!

Beam Me Up, Scotty

See what's on stage at GEM

First Year Odyssey

GEM's Academic Director, Dr. Salguero, teaches a First Year Odyssey class called "UGA at High Magnification." Last fall, new students got an up-close look at GEM and what makes microscopy an amazing research tool for many of the students on campus. Having an introduction to the kinds of academic research possible makes for an exciting start to their college experience!



A Student's Entry

Correcting Astigmatism

Fixing Distortions In Understanding

Magnification and Resolution

Users often request images that are the same magnifications or resolutions achieved in papers; however, these concepts are often misunderstood. Magnification is the enlargement of an object that only applies to a specific fixed display screen and its calibrated microscope program. Therefore, images will not necessarily have the same size x2000 magnification. Additionally, magnification is not inherently tied to resolution. Resolution is dependent upon the properties of the camera, computer monitor, and microscope, and is the ability to discern two objects as being separate from the other. Instead, resolution is directly related to wavelength, and is limited to half of the wavelength of the illumination source. For light microscopy, this means a maximum resolution of ~200 nm because the wavelength of visible light is ~ 400-700 nm. To see smaller structures, you would need to shorten the wavelength of the source of illumination. This can be accomplished by using a different illumination source (electrons) or using a higher voltage (kV). Read more about magnification and resolution here and here.

The Objective Lens

Undeniably Interesting EM Topics

Contrast in TEM

Generation of contrast can come from changes in the amplitude or phase of an electron wavelength. Amplitude contrast is achieved by using heavy metal stains to increase the density of specimens and reduce the amplitude of a wave after interaction. This is why we post-stain for biological EM. However, we don't stain for cryo-EM. To get contrast, we employ a change in phase to observe specimens. Phase contrast is accomplished by applying a defocus to increase the delay of waves after interaction with a specimen. Read more about contrast here.

Fully Charged

Current Events, Literally

Women in Microscopy

Dr. Berit H. Goodge, assistant professor at Cornell University School of Applied and Engineering Physics, was the keynote speaker for the 2026 NUANCE Women in Microscopy annual conference. Her focus in superconducting nickelates utilizes electron microscopy to understand atomic structures of quantum materials. She also investigates quantum magnetism and works to understand how epitaxial strain can induce desirable properties. Some of her most-cited work can be found here and here.

Questions? Contact us! Email: gem@uga.edu Phone: (706) 542 - 4080