Microscopy and Nanolmaging Facility

Iowa State University’s Microscopy and Nanolmaging Facility (MNIF) provides instrumentation, technical assistance, and training in electron and light microscopy, cryo-preservation, cytochemistry, autoradiography, in situ hybridization, tomography, X-ray microanalysis, image analysis, and photomicrography.

**Electron Microscopy**

Electron microscopy instrumentation includes a scanning transmission electron microscope (STEM) and a scanning electron microscope (SEM).

**STEM**

The 200 kV STEM provides <1.4Å resolution and has elemental analysis, cryo-imaging, tomography, and image analysis systems. The microscope includes a light-element energy dispersive x-ray spectrometer (EDS) and integrated software package for computerized control.

The digital microscope and analytical system allow elemental analysis of the composition and structure of specimens with a nanometer resolution. Special features include a darkfield/brightfield detector, hi-angle tilt holders for tomography, cryo-preparation system and holder for cryo-TEM imaging, and two digital cameras for image recording, as well as image analysis software.

**SEM**

The SEM offers 35Å resolution with digital imaging capability and image analysis. The microscope operates at either high or low kVs and at either high or low pressures to allow observation of both fixed and fresh specimens.

**Light Microscopy**

Light microscopy instrumentation includes a compound microscope with six optical modes, including fluorescence, and color and B/W digital cameras. This microscope has an Apotome for creating thin optical slices.

**Specialized Rooms and Instruction**

The facility also houses a stereomicroscope, dissecting microscopes, and compound microscopes. Microscopes with digital cameras have image analysis capabilities.

The facility maintains specimen preparation labs, a copy room with photography equipment, a computer suite, a cryo-prep lab, an autoradiography/in situ hybridization and developing lab, a propane-jet cryo-preparation lab, and more.

Facility personnel instruct an individual module training program for researchers to help them process and visualize their research materials and identify the appropriate methods and instruments for their objectives.

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