**Research Scientist
Materials Research Laboratory
The Grainger College of Engineering
University of Illinois at Urbana-Champaign**

The Materials Research Laboratory (MRL) at the University of Illinois Urbana-Champaign is seeking to hire a highly motivated Research Scientist to work in its electron microscopy (EM) shared instrumentation core facilities. The Research Scientist will serve as member of the MRL Central Research Facilities staff with a focus on transmission electron microscopy (TEM) and scanning transmission electron microscopy (STEM), in addition to sample preparation techniques (ion beam polishing, focused ion beam processing, etc.) and related analytical techniques such as energy-dispersive x-ray spectroscopy (EDS), electron energy loss spectroscopy (EELS), etc.

This staff position will engage in training, support, and scientific collaboration with various local and regional users on active research projects. Facilities highlights of the MRL EM core are an aberration-corrected Thermo Themis Z S/TEM with monochromator, EDS, EELS and EMPAD direct-electron detection, a Hitachi H9500 dynamical environmental TEM, a Thermo Talos S/TEM with EDS and EMPAD detectors, a Thermo Glacios cryo-TEM system with a Falcon 4 direct electron detector, and three JEOL TEM systems (models 1400, 2100 and 2010), all supported by two dual-beam focused ion beam systems from Thermo (a Scios2 with EDS and electron backscatter diffraction detectors) and a Helios 600i.

The successful candidate will become member of the dedicated staff of approximately 25 scientists and engineers, who maintain major research instruments in the MRL’s core facilities for electron microscopy in addition to other cores of shared instrumentation for scanning probe microscopy, laser and optical spectroscopy, surface, thermal and physical properties analysis, x-ray scattering and nanofabrication facilities. Approximately 1,000 researchers from across our campus as well as other academic institutions, industry, and national laboratories use the facilities, logging about 90,000 user hours annually. The lab is recognized as one of the premier mid-sized user facilities in the nation. For details, please visit us online at [mrl.illinois.edu/facilities](https://mrl.illinois.edu/facilities).

**JOB DUTIES**

* Prepare and deliver primary and advanced training on the various techniques and instrumentation available in the electron microscopy (EM) core, particularly in TEM/STEM (transmission/scanning transmission electron microscopy) techniques and related sample preparation methods (including dual focused ion beam systems).
* Formulate, compile, and distribute suitable suggestions for documentation improvements for collective staff scientist review. Incorporate approved modifications into training documents and procedures. This includes the creation of videos and multimedia tutorials.
* Actively participate in research using electron microscopy techniques in new materials, such as ceramics, metals, semiconductor multilayers and super lattices, polymer, and biological materials, etc. Actively participate in technique development and instrument improvement using those EM tools. Attendance of related technical conferences and authorship and co-authorship of scientific publications are encouraged.
* Perform routine preventative maintenance tasks which vary daily, monthly, and annually for assigned laboratory instrumentation. Examples include daily checks to ensure instruments are running correctly; monthly proactive checks to ensure no hazards are present; annual maintenance service on vacuum pumps and supporting mechanical equipment.
* Identify hazards and/or potential failure modes by comparing equipment usage and performance to establish safety protocols while conducting user training or performing maintenance. If the equipment is not operating within tolerances or any engineering safety controls are malfunctioning, determine corrective actions to hardware, operating procedures or user training in conjunction with the assigned staff scientist and implement the changes.
* Crosstrain in other facility techniques in order to act as backup for other staff members and increase knowledge and experience.
* Give oral presentations to large audiences, including recording training material for media outlets, and online, live video streaming. Actively participate in development of EM-related workshops, classroom lectures and educational instrument demonstrations.
* Conduct department or campus specified lab inspections for assigned operating areas and participate in reviews of non-assigned areas as requested.
* Assume additional responsibilities to promote the unit’s mission as needed.

**MINIMUM QUALIFICATIONS**

* M.S. degree or higher in engineering, chemical, physical sciences, or related field.
* Three years of hands-on experience in the following areas: o operation of transmission electron microscopes, including detailed knowledge of main physical principles, concepts, and applications of electron microscopy o training researchers in the use of transmission electron microscopes including data interpretation on related techniques. o troubleshooting, preventive maintenance and routine repair of transmission electron microscopes o use of advanced analytical techniques such as energy-dispersive X-ray spectrometry o sample preparation techniques for electron microscopy including polishing, coating, milling, and dual beam focusing ion beam, etc.
* Excellent interpersonal skills in order to interact with co-workers promptly and professionally, management and support the wide user community of students, post-doctoral researchers and faculty, promoting the growth of the EM core.
* Excellent oral and written communication skills. Previous experience in delivering oral technical presentations to scientific audiences.

**PREFERRED QUALIFICATIONS**

* Ph.D. degree in engineering, chemical, physical sciences or related field.
* Experience working in a multi-user academic research facility, or similar industrial laboratory.
* Three years of instructional/training experience delivering technical information.
* Previous experience in creating/developing instructional, instrument operation and training material in electron microscopy.
* Post-doctoral experience in engineering, chemical, physical sciences or related field.
* Experience with operation of advanced transmission/scanning electron microscopes using aberration-corrected optics and direct electron detection systems.
* Experience with 4D-STEM analysis.
* Experience with data collection and interpretation of electron energy loss spectroscopy (EELS).
* Experience with environmental S/TEM analysis using liquid cell holders, temperature holders, tomography and pico-indentation.

This is full-time Academic Professional position appointed on a 12-month service basis. The expected start date is as soon as possible after the closing date. The minimum salary for this position is $70,000 and is commensurate with experience and qualifications. The individual hired into this position would be expected to work onsite on a full-time basis. We are willing to support candidates who require work authorization sponsorship. For further information about this specific position, please contact Summer Redman at sredman@illinois.edu. For questions regarding the application process, please contact 217-333-2137.

**APPLICATION PROCEDURES AND DEADLINE INFORMATION**

Applications must be received by **May 13, 2024**. Apply for this position using the Apply Now button at the top or bottom of this posting. Please upload your cover letter, resume, and names/contact information for three references. Applications not submitted through [**jobs.illinois.edu**](https://jobs.illinois.edu) will not be considered. For further information about this specific position, please contact Summer Redman at sredman@illinois.edu. For questions regarding the application process, please contact 217-333-2137.

*The University of Illinois System is an equal opportunity employer, including but not limited to disability and/or veteran status, and complies with all applicable state and federal employment mandates. Please visit* [*Required Employment Notices and Posters*](https://www.hr.uillinois.edu/cms/one.aspx?portalId=4292&pageId=5705) *to view our non-discrimination statement and find additional information about required background checks, sexual harassment/misconduct disclosures, COVID-19 vaccination requirement, and* [*employment eligibility*](https://www.e-verify.gov/sites/default/files/everify/posters/IER_RightToWorkPoster%20Eng_Es.pdf) *review through* [*E-Verify*](https://e-verify.uscis.gov/web/media/resourcesContents/E-Verify_Participation_Poster_ES.pdf)*.*

*Applicants with disabilities are encouraged to apply and may request a reasonable accommodation under the Americans with Disabilities Act (2008) to complete the application and/or interview process. Requests may be submitted through the reasonable accommodations* [*portal*](https://illinois-accommodate.symplicity.com/public_accommodation)*, or by contacting the Accessibility & Accommodations Division of the Office for Access and Equity at 217-333-0885, or by emailing* *accessibility@illinois.edu**.*

**Requisition ID:** 1024037
**Job Category:** Research
**Apply at:** [jobs.illinois.edu](https://jobs.illinois.edu)