Job Description:

The Research Specialist title is an SRS technical staff position within MIT.nano. This position reports to an Assistant Director (AD) of MIT.nano.

MIT.nano is an approximately 214,000 gsf state-of-the-art laboratory complex that contains a fully equipped 40,000 sf cleanroom, as well as an additional 60,000 sf of facility-intensive specialty research spaces, dedicated imaging & characterization spaces, prototyping laboratories, additional clean spaces, a subfab, and staff-supported spaces. In addition, the building contains approximately 114,000 sf of highly complex facilities space for supporting the programmed spaces as described above. The facility serves a large research and development community of faculty, students, businesses, and staff by providing a mostly shared environment for fabrication, study, and imaging of novel nanostructures, materials, devices, and processes.

The primary goal of MIT.nano is to enhance and enable the research and educational goals of the Institute. A secondary goal is to promote the shared use of tools, instruments, and facilities to optimize the utilization of resources. This position will support laboratory operational functions to provide services and research facilities to multiple communities inside and outside of MIT. The following outlines the responsibilities of this position in more detail:

The Research Specialist (RS) is primarily responsible for operation, training and maintenance of research equipment within the MIT.nano facility. Each RS has an area of specific expertise, but also requires broad knowledge of general laboratory and cleanroom protocols and operation. The RS will work as a part of a team in their area of expertise, and with other Research Specialists and Domain Experts of other areas to enable successful research within the lab.

We are seeking a Research Specialist who will focus on Wet Chemical Processing and Safety. Equipment in this area will include flammable and corrosive hoods and wet benches, heated tanks, sonicators, chemical spinners, spin-rinse-dryers, liquid chemical pumps, electroplating and more. Expertise will include hazard identification and communication, proper chemical handling and safety, chemical storage, and hazardous material disposal. This requires being comfortable working independently in a lab environment, as well as regularly interfacing with colleagues and users in a collaborative manner.

Equipment Operation

1. Full ownership for equipment / tooling / instrumentation as assigned ensuring up-time, safety, and performance metrics are achieved. Typical tasks / responsibilities include:
a. read and understand electrical and mechanical drawings for various systems and subsystems,
b. trouble-shoot (electro-mechanical root-cause analysis),
c. disassemble / reassemble (with and without formal documentation, schematics, blueprints, or manuals),
d. repair (with and without support from the OEM),
e. perform routine and preventative maintenance (cleaning, calibrating, or servicing),
f. create routine and preventative maintenance cadence schedules,
g. develop back-up plans to reduce tool downtime for common tool problems,
h. create inventory control methodologies (spares, consumables, and ancillary support equipment),
i. develop clear and concise documentation, including video documentation, [best-known-methods (BKM’s) and standard operating procedures (SOP’s)], and
j. formalize / share / publish performance metrics.

2. Establish and maintain effective training protocols and documentation to enhance the user communities’ access to tooling and instrumentation. Support efforts of MIT.nano to assure the user community has easy access to both training materials and staff.

3. Run process qualification, at meaningful intervals, to enable tracking and documentation of equipment / tool / instrument performance over time.

4. Interfacing with equipment / tool / instrument vendors which will demand a thorough knowledge of the technical details associated with the equipment.

5. Attend off-site training at equipment / tool / instrument vendor sites which could involve travel stateside and overseas and utilize this formal training to provide users with enhanced training programs (scheduled and unscheduled). Training could include formal presentations (classroom), hands-on at the tool / instrument, and the creation of training materials.

**Facility Operation and Safety**

1. Establish and maintain appropriate levels of knowledge and proficiency with building systems.

2. Exhibit and practice safe working and housekeeping practices at all times.

3. Establish and maintain effective procedures for the safe handling and storage of hazardous production materials (gases, chemicals and waste) as well as ensuring the proper engineering and administrative controls are established and maintained for all other potential hazards (mechanical, electrical, and radiation) associated with assigned equipment / tooling / instrumentation.

4. Establish and maintain appropriate levels of knowledge and proficiency regarding BKM’s for laboratory cleanroom and non-cleanroom protocols which involve multi-user and multi-project environments.
5. Participation in all forms of safety process and procedures which include, but are not limited to:
   a. lock-out tag out programs,
   b. EHS training,
   c. chemical inventory,
   d. emergency response team training sessions,
   e. responding to emergencies including gas leaks, chemical spills, etc.

User Interactions

1. Engage the user community, MIT.nano staff and outside resources in a meaningful and productive manner such that the users’ process needs are met and well matched to the capabilities of the facility and the equipment within it.
2. Train and supervise student and industry users and staff in proper equipment use.
3. Maintain an appropriate and significant presence in the cleanroom to be available to assist users with their day-to-day processing challenges.
4. Contribute to or assist with the undergraduate educational mission of MIT.nano.

Other Responsibilities

1. Foster an environment of teamwork and cooperation with fellow staff members, faculty, DoF staff, and the user community.
2. Establish and maintain contacts with peer institutions with similar facilities in order to coordinate collaborations and mutual best-known methods (BKMs) for operations of similar facilities.
3. Establish and maintain appropriate computer literacy skills regarding both hardware and software for PC-based and PLC-based computer systems as assigned. Develop recipes, programs, and processes (workflows). Sustain the appropriate level of proficiency.
4. Duties as assigned or necessary.

Minimum Requirements:

1. BS in Chemical Engineering, Chemistry, or related discipline; or an equivalent combination of education and experience.
2. Experience working with hazardous materials including wet corrosive chemicals, solvents and polymers. Knowledge of chemical compatibilities and reactivity. Knowledge and experience with safe working practices for working with hazardous materials. Proficiency in hazard communication and learning/understanding safety information (e.g. Safety Data Sheets, PubChem, etc).
3. Excellent written and oral communications skills as well as strong interpersonal skills and ability to work alone or within a team environment. Must demonstrate a keen interest in training the user community.
4. Maturity of judgement, goal-oriented, and a personality that will allow the candidate to function in a highly research-oriented yet disciplined environment that requires strong interaction with faculty, students, and research staff.

5. Ability to regularly lift and transport up to 50lbs.

6. Ability to wear respiratory protection, including air-purifying respirator and self-contained breathing apparatus.

7. Demonstrated ability to recognize and respond to unsafe conditions or dangerous situations.

Preferred Qualifications:

1. 2 or more years of experience working in a semiconductor process facility.
2. Experience with photolithography processes and materials.
3. HAZWOPER certification.
4. Working knowledge of established and emerging research processes, with ability to assist researchers in experimental design.
5. Experienced trainer in one-on-one interactions or in large groups (20-30 people), with the ability to convey complex ideas to personnel with diverse backgrounds and education experience.
6. Experience with program logic controllers.
7. Proficient in document and data management tools (e.g. Microsoft SharePoint sites, Wikis, Quickbase, Dropbox).

MIT is an equal employment opportunity employer. We value diversity and strongly encourage applications from individuals from all identities and backgrounds. All qualified applicants will receive equitable consideration for employment based on their experience and qualifications, and will not be discriminated against on the basis of race, color, sex, sexual orientation, gender identity, religion, disability, age, genetic information, veteran status, ancestry, or national or ethnic origin. Read MIT’s full policy on nondiscrimination. MIT considers equivalent combinations of experience and education for certain jobs. All candidates who believe they possess equivalent experience and education are encouraged to apply.