

Job Description



Job Title:	Supervising Technologist, Research Advancement Centre (RAC 1/2)
Department:	Office of Research
Reports To:	Director, Quantum Nano Fabrication and Characterization Core Facility (QNFCF)
Jobs Reporting:	RAC1 Lab Technologist
Salary Grade:	USG 10
Effective Date:	September 2024

Primary Purpose

Reporting to the Director, QNFCF, the RAC 1/2 Supervising Technologist is accountable for overseeing operations in the QNFCF labs located in RAC 1/2. These labs house equipment and processes essential to the fabrication, assembly, characterization and application of quantum devices. Engaging a staff team for these science and engineering activities we elevate the professionalism of the final product, and the staff will be capable of maintaining a long term record of process performance to ensure optimal use of the toolset and to recognize both new opportunities for further improvements and new challenges to process robustness.

The proliferation of quantum science projects and associated QNFCF lab spaces in RAC1 and RAC2 requires the technical leadership of a senior technologist with multiple practical and managerial skillsets, the RAC1/2 Supervising Technologist. The incumbent is involved directly in research activities and interacts on a day-to-day basis with laboratory technical staff and research personnel as well as graduate students in providing thorough and consistent cleanroom and equipment operator training and guidance.

Key Accountabilities

Management of operations

- Manage daily operations for Inert Atmosphere Fabrication Lab, RAC1 Cleanroom Assembly Lab, RAC2 Growth Lab and other lab spaces under QNFCF administration in RAC1/2 buildings.
- Supervise technologist staff for all QNFCF labs in the RAC1/2 buildings
- Enforce all lab safety and access requirements and take immediate action to remedy non-compliance, including the removal of access privileges consistent with existing QNFCF policies. The latter is done with support from incumbent's immediate supervisor.
- In conjunction with his/her immediate supervisor, may be tasked with performing monthly safety inspections of QNFCF labs in the RAC1/2 buildings as required by provincial legislation.
- Responsible for ensuring safe handling, storage and disposal of chemicals used in the QNFCF labs located in RAC1/2 buildings.
- Responsible for establishing and maintaining a detailed record of Safety Data Sheets (SDS) for all chemicals in use in all QNFCF labs located in RAC1/2 buildings.
- Responsible for lab safety orientation and granting of physical access for new lab members in RAC1/2 labs.

Training and Service

- Draft, test and publish revision-tracked equipment standard operations procedures (SOPs) including the documentation of specialty chemical, surface preparation, treatment, thin film deposition and mechanical assembly processes

- Develop and document comprehensive hands-on-training plans for these SOPs and specialty processes
- Provide ongoing equipment operator and specialty process training programs to graduate students, postdoctoral fellows and other researchers, including review of specific associated hazards and safety considerations
- Where appropriate, devise equipment operator tests to ensure new users have a good understanding of equipment operation before being granted the right to operate equipment independently.
- Assign lab user equipment access privileges on a per-equipment basis.
- On occasion perform hands-on work for lab members and remote users who may require access to resources located in the QNFCF labs located in RAC1/2.
- Incumbent may on occasion be asked to participate in equipment acquisitions and installations located outside of his/her immediate scope of responsibility (ie., equipment to be installed in other QNFCF sites or affiliated sites such as the QNC building).
- Provide technical expertise and consultation for remote users of QNFCF equipment in RAC1/2.

Equipment maintenance and performance

- Oversee equipment performance monitoring in assigned lab spaces and organize response to observed performance degradation. This response would include organizing work with local or remote support personnel.
- Responsible for overseeing all maintenance tasks (preventative and responsive) in assigned lab spaces.
- Perform “quick response” repair/troubleshooting service if lab members experience minor issues with equipment operation.
- Organize continuous improvements on equipment and processes to improve safety, improve equipment utility and reduce equipment downtime.
- Establish and maintain policies for equipment operation and handling of materials to ensure high quality results and maintain equipment health.
- Maintain an inventory of parts and supplies to enable productive equipment operation.

Project management and infrastructure development

- Oversee the installation, testing and commissioning of new lab equipment under the incumbent's direct responsibility. Where appropriate, incumbent may be tasked with installing and running required services to simple pieces of lab equipment such as microscopes, electrical probe stations, ovens, vacuum deposition systems, etc.
- Perform scope of work assessment and prepare work requests for construction tasks to enable installation of new lab equipment. This requires the interpretation and distillation of equipment documents and active communication with appropriate technical contacts on campus and external to the university.
- Coordinate construction and renovation work to enable successful installation of new equipment
- Where appropriate, perform custom mechanical design to enable new lab capabilities.
- Interface with stakeholders and prospective users of new lab capabilities to ensure the technical and scientific suitability of new and modified lab infrastructure.
- With guidance from the Director, identify required pieces of lab equipment for installation in the QNFCF labs located in RAC1/2. As required, work with Principal Investigators to help them ensure, to the extent requested, that equipment specifications will meet their research needs. In all cases incumbent is responsible for ensuring the equipment of interest can be suitably accommodated in the RAC1/2 lab spaces.
- With guidance from the Director and Principal Investigators, identify potential equipment vendors and work directly with these to obtain detailed budgetary quotes.

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- As required, participate in the creation and evaluation of Requests for Proposals (RFPs) by working with UWaterloo Procurement & members of the proposal evaluation committee.

Outreach, communication and community building

- With support from the Director and other QNFCF personnel, participate in local community outreach lectures and events to communicate RAC1/2 lab capabilities.
- Assist in written and visual communications activities to build awareness of QNFCF's RAC1/2 toolset.

**All employees of the University are expected to follow University and departmental health and safety policy, procedures and work practices at all times. Employees are also responsible for the completion of all health and safety training, as assigned. Employees with staff supervision and/or management responsibilities will ensure that assigned staff abide by the above, and actively identify, assess and correct health and safety hazards, as required.*

Required Qualifications

Education

- College-level degree in a relevant 3-year engineering technology program (mechanical, electrical or controls)

Experience

- 5+ years of experience working in a technical lab environment is required.
- Some experience working with chemicals in a wet process lab & excellent understanding of safe lab practices.
- Solid practical experience troubleshooting ultra-high vacuum deposition systems.
- Experience with design software such as Solidworks, AutoCAD, etc.

Knowledge/Skills/Abilities

- Service oriented. Exceptionally positive, diplomatic and constructive attitude as required to effectively work with a large number of people with a broad range of experience, educational and cultural backgrounds both within and outside the university.
- Excellent time management
- High level of attention to detail and good organizational skills
- Effective team player with good interpersonal skills
- Excellent mechanical assembly skills complemented by basic electronics and control systems knowledge.
- Excellent grasp and use of common software platforms including MS Word and Excel.
- Excellent written and oral communication and interpersonal skills.
- Ability to be firm in the application of lab protocols & policies while exhibiting exemplary tact & diplomacy in dealing with people from a broad range of educational and cultural backgrounds.

Nature and Scope

- **Contacts:** Internally, works with graduate students and with his/her peers on the QNFCF team. Interacts with other university departments such as Procurement, Plant Operations Maintenance group, Environmental Waste, Chemistry Stores, etc. Works occasionally with Principal Investigators. Externally, works with equipment and supplies vendors.
- **Level of Responsibility:** As manager of this site, this position is responsible for the safe operation of the RAC1 Cleanroom lab, RAC1 Inert Atmosphere Fabrication Lab, RAC2 Growth Lab and other QNFCF managed labs in the RAC1/2 buildings. Incumbent influences all lab construction/renovation, capital equipment and consumables acquisitions. Incumbent provides leadership and guidance to all users of the lab, including the authority to grant and restrict lab user access as a function of eligibility,

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minimum training and safety policy requirements. Site manager devises equipment training plans and executes these plans consistently across the entire lab user base.

- **Decision-Making Authority:** The incumbent is expected to work independently in carrying out all tasks under their scope. In complex or unusual situations the incumbent is expected to seek assistance both within and outside the QNFCF team as required.
- **Physical and Sensory Demands:** Extensive time may be spent sitting in front of various thin film growth or characterization tools. Working at these consoles sometimes requires prolonged, focused observation. In the course of receiving / shipping / installing new machine components this position may occasionally require the lifting of objects up to 40lbs.
- **Working Environment:** Some of the time is spent working in a cleanroom environment where cleanroom gowning (head to toe) must be worn this may also be under yellow lighting conditions. Some time will be spent wearing personal protective equipment (PPE) such as face shields, Tyvek aprons and thick nitrile gloves when training people on the safe use of fume hoods and/or assisting in the development of new chemical processes or procedures. There are some deadline pressures, while at the same time there is a constant demand for thoroughness, accuracy and acute attention to detail.