

Job Description

Job Title:	Quantum Device Fabrication Scientist
Department:	CFREF - Transformative Quantum Technologies (TQT)
Reports To:	Principal Investigator, TQT
Jobs Reporting:	N/A
Salary Grade:	USG 9
Effective Date:	June 1, 2018

Primary Purpose

This position contributes to TQT shared infrastructure and technology development at the University of Waterloo. The candidate will be responsible for research into the fabrication of quantum devices, support the maintenance of tools for growth of quantum materials, and for SOP's as directed by Prof. David Cory. The successful candidate will work closely with students to train them on fabrication methods, and work closely with early adopters in the TQT project to help develop a fabrication pathway for new applications of quantum technologies. The incumbent will act as the technical lead on molecular beam epitaxy (MBE) growth.

Key Accountabilities

Fabrication Scientist

- Plan fabrication processes for quantum devices
- Carryout and validate fabrication processes, improve and iterate where appropriate
- Develop SOP's for successful fabrication
- Develop testing procedures for quantum components
- Validate testing procedures, improve and iterate where appropriate
- Develop SOP's for successful testing
- Maintain SOP's and update as needed

Early Adopter Projects

- Support the fabrication needs of early adopters. This includes connecting to researchers from industry, other academics, national labs and medical centers. Note, early adopters will not have fabrication and device testing experience; thus, there is a need to lead the development, engage with a broader community and teach new skills to early adopters.
- Support the development of quantum technologies to be deployed outside of a lab setting.

Technical Laboratory Support

- Support and participate in technical training for researchers, including senior researchers, postdocs, graduate and undergraduate students.
- Develop new laboratory technology and processes for quantum devices.
- Help develop the IP around these new developments.
- Working closely with TQT researchers, including the overseeing and training where necessary of students working with the instrumentation/equipment and ensuring that all users adhere to university and government health and safety guidelines.

Contribute to Research Outcomes

- Contribute to preparation of scientific reports and articles (scientific and administrative)
- Conduct literature searches, reviews and prepares manuscripts and makes informal and formal presentations

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- Provide technical expertise for academic, industrial research or contract projects

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

- PhD connected to materials growth (particularly MBE), testing of superconducting films, and clean room practices

Experience

- Previous experience In an academic laboratory environment
- In depth knowledge of materials growth
- In depth knowledge of thin film superconductors, growth and characterization
- In depth knowledge of lithography
- In depth knowledge of standard clean room processes

Knowledge/Skills/Abilities

- Exceptional time-management, communication and interpersonal skills
- Detail oriented
- Works well as part of a team
- Effective at communicating complex scientific concepts
- Able to design, implement and follow critical process procedures

Nature and Scope

- **Contacts:** Multidisciplinary team within the TQT program.
- **Level of Responsibility:** Lead the development of new processes and train others in their effective application
- **Decision-Making Authority:** Problem solving for fabrication and device testing
- **Physical and Sensory Demands:** Typical lab environment.
- **Working Environment:** Typical lab environment, occasional travel to early adopter locations.