Job Description

Job Title:	Director, Quantum-Nano Core Fabrication & Characterization Facility
Department:	Office of Research
Reports To:	Vice-President, University Research
Jobs Reporting:	Nanofab Process & Characterization Engineering Manager, TEM Facility Microscopist, Senior Fabrication Equipment Technologist, RAC1 Lab Technologist & Site Lead, Manager, Finance and Administration, Cleanroom Certification & Inventory Specialist
Salary Grade:	USG 17
Effective Date:	November 2018

Primary Purpose

The Director, Quantum-Nano Core Fabrication & Characterization Facility, leads a diverse team of highly trained and skilled scientists and professionals. He/She is responsible for fostering the highest standard of professionalism and operational excellence for core research infrastructure distributed across multiple sites on campus. Through this infrastructure, the incumbent and his/her team serves the advanced research and HQP training needs of a broad range of internal and external researchers and clients spanning the sciences, engineering and beyond. The facility's unique nature and international exposure enables it to serve a large user base which includes a growing roster of academic institutions, industry and startups, and government labs from across Canada. This position requires in-depth knowledge and experience in order to set a strategic vision and direct its execution to achieve sustainable and effective operations of the Quantum-Nano core research infrastructure.

This role is uniquely challenging as it is responsible for the ongoing development and maintenance of a multi-user facility at the forefront of fabrication and characterization technologies. The core infrastructure must serve rapidly developing fields of research, including novel quantum and MEMS device fabrication, lead by very different and diverse communities from both academia and industry. The incumbent is responsible for creating a strategy that keeps the facility enabling of new research and thus fulfilling the rapidly changing process development and training needs associated with these activities. This must be done in an efficient and sustainable fashion with limited resources.

Key Accountabilities

Leadership and Strategic Direction

- Establishes, maintains and executes upon a vision for the core facility that enables high-impact quantum and nanotechnology based research, fiscal sustainability and high operational performance. The facility supports a growing base of 200+ internal and external research projects and programs.
- Achieves best-in-class standards in terms of equipment process performance and user satisfaction relative to other world-leading quantum centres with similar infrastructure capabilities.
- Advances the facility's position in the national infrastructure landscape as a valued and highly-regarded enabler of quantum and nanotechnology research and development (R&D).
- Directs staff alignment to the mission, vision, culture, values and strategic priorities of the Quantum-Nano core research infrastructure.
- Develops strategies to enable state-of-the-art UW research programs all while identifying and mitigating risks associated with possibly incompatible programs.
- Manages the risks associated with enabling both industrial and academic research programs.
- Coordinates and fosters collaborative relationships with major academic nanofabrication facilities across Canada including UBC, USherbrooke, Alberta nanoFab, etc.

- Maintains collegial relationships and his/her team's focus on high professional standards while navigating the unique challenges and sometimes competing priorities associated with research-intensive and entrepreneurial academic environments.

Expertise and Planning

- Through effective planning and application of expertise, elevates the capacity of the Quantum-Nano core facility to support high-impact quantum and nano R&D and meet the needs of the user community.
- Maintains in-depth understanding of the Quantum-Nano core research infrastructure that includes the 8,000 ft^2 Nanofabrication lab ($45M+ capital investment) and the $6M+ Transmission Electron Microscopy lab in the Mike & Ophelia Lazaridis Quantum-Nano Centre. The infrastructure extends beyond to $10M worth of additional research infrastructure located in the Research Advancement Centre Complex on the north campus. This unique infrastructure includes highly specialized fabrication, metrology and characterization capabilities which require rare technical and operational expertise to ensure their safe & effective deployment and use. Much of the equipment resides in one of Canada's top-rated clean room environments where a broad range of dangerous gases and chemicals are routinely used. The incumbent ensures that thorough HQP training programs are maintained by his/her team to ensure an ongoing safe and high performance environment throughout the core facility's distributed sites.
- Establishes, maintains and chairs a diverse user (client) community group comprised of faculty members from multiple departments and faculties.
- Consults with, and anticipates the needs of, the user community in Quantum-Nano core infrastructure planning decisions through effective engagement with the user community group and other relevant stakeholders.
- Plans new lab infrastructure, renovations and specialty nanofabrication and characterization capabilities with an in-depth understanding of how these investments may advance the strategic goals of the infrastructure and complement, connect with and/or address gaps in local/national capabilities.
- Prepares and leads justifications, acquisitions, installations and commissioning plans for new investments.
- Plans and leads major work activities through the oversight of direct and dotted line reports, including experts outside incumbent's direct scope of influence. These may include Plant Operations Maintenance and Design personnel as well as external consultants and specialized equipment vendors.
- Serves as an expert on a broad spectrum of advanced nanofabrication and characterization methods and equipment as required to serve customer R&D needs from across campus and beyond.
- As appropriate supports the evolving needs of faculty including new hires.
- As an accredited professional engineer, serves as expert and key steward for operation, maintenance and outfitting of state-of-the-art lab infrastructure according to best-in-class industry practices.

Staff Development and Management of Consultants and Contractors

- The incumbent attracts, trains and retains top talent PhD-level scientists and engineers, professional technologists and dedicated administrators.
- Identifies and authorizes training opportunities for all staff members including the attendance of on-site and off-site technical training programs and scientific conferences as required to maintain scientific and operational excellence.
- Leads the acquisition of a broad range of services, including contractors and consultants, for the development of advanced nanofabrication and characterization processes and training programs.
- Establishes and fosters effective relationships with internal and external technical staff and consultants crucial to the ongoing maintenance and stability of lab infrastructure.

- Fosters exceptional collaboration and a positive team culture across the core infrastructure's multiple sites in support of customer service objectives at each site.

Compliance with University and Infrastructure Policies

- Partners with University Secretariat, Safety Office, Police Services and other governing bodies to develop and implement policies including lab user agreements, safety and operating policies, etc.
- Communicates and enforces compliance of infrastructure and university policies. Monitors compliance performance and executes course-correction measures as appropriate.
- With the participation of his/her team, the incumbent ensures thorough understanding of safety and operating policies & regulations to a constantly evolving user base of 300+ graduate, post-graduate and industrial users. This is achieved via online and classroom-based mandatory training programs which must be completed by all new users prior to obtaining facility access.
- Issues of non-compliance are acted upon quickly as required to maintain a safe, fair and collegial work environment for all users and clients of the core infrastructure.
- Maintains the core facility as an accessible lab while fostering a culture of respect.

Budget and Resource Management

- Develops and monitors metrics to ensure operational efficiency and effectiveness and servicing client needs.
- Plans and controls the unit's operating budget which is in excess of $2 million per year.
- Administers an annual capital equipment budget which will range from a few $100k to over $2M.
- Reports on and balances accounts by ensuring accounts receivables from service fees (in excess of $1 million annually) are collected in a timely and consistent manner.

**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

- Minimum BEng degree or BSc in Engineering Physics (or comparable) degree must be complemented by PhD degree (in Engineering) or Masters degree (in Engineering) and equivalent experience in industry.
- Professional Engineering (P.Eng.) designation from *Professional Engineers Ontario* (PEO) is required.

Experience

- Minimum 10 years of experience leading multidisciplinary teams including Highly Qualified Personnel (HQP).
- Must have substantial experience in both industry and academic settings.
- Demonstrated professional experience in state-of-the-art semiconductor and/or MEMS production and academic lab environments with senior leadership experience leading the design, implementation and operation of advanced semiconductor and/or MEMS fabrication laboratories.
- Process design and management experience both in industry as well as in research-intensive academic institutions where diverse and multiple stakeholders are involved.

Knowledge/Skills/Abilities

- In-depth understanding of laboratory planning and operations.
- Demonstrated ability to foster excellent teamwork and to build consensus.
- Outstanding technical, analytical, financial management, communication, presentation, organizational and interpersonal skills.

Nature and Scope

- **Contacts:** This role requires a very high level of leadership and influencing skills, and the ability to apply them in highly varied and sometimes difficult and stressful situations, from dealing with highly specialized contractors to specialty equipment vendors to senior and junior faculty members to high level administrators both within and outside the university.
- **Level of Responsibility:** This role involves direct management of multiple staff members listed above as well as the hiring and management of new HQP and professional staff as operations continue to grow. Problems from individual conflicts to systemic process problems will be resolved by the incumbent. Potential risks include damage to complex, dangerous and expensive infrastructure, loss of substantial research efforts and programs, failed experiments and R&D efforts, compromised student safety, staff member safety and conflict, lack of staff productivity, and reputational risk for the University.
  The role is accountable for staffing, equipment, safety and financial stewardship of ongoing operations and substantial capital expenditures which will at times exceed $1M - $3M per acquisition. The incumbent approves staff travel expenses and signs off performance evaluations and ratings for indirect reports. Internal contacts range from Pnat Operations, Safety Office and other staff members to HQP, faculty and senior administrators including Deans and Vice Presidents. External contacts include heads of other similar infrastructure across Canada and internationally, as well as senior members of specialty equipment vendors and contractors.
- **Decision-Making Authority:** This position has significant decision-making authority for all items outlined above. Decisions that would be made in consultation with the VPUR include issues of severe non-compliance of policies by faculty members whom continually overstep the bounds of fair or ethical use of the core infrastructure.
- **Physical and Sensory Demands**: This role requires exertion of physical or sensory effort resulting in slight fatigue, strain or risk of injury.
- **Working Environment:** Exposed to stress and pressure associated with senior level responsibilities. Involves moderate psychological risk resulting from unavoidable exposure to hazardous, disagreeable or uncomfortable environmental conditions. The incumbent deals with challenging and stressful people situations including managing team and individual performance, managing people through change, and resolving student or client complaints. There may be multiple and/or tight deadlines beyond one's control, and constant interruptions.