

RESEARCH ENGINEER – NANOPHOTONICS
STEWART BLUSSON QUANTUM MATTER INSTITUTE
UNIVERSITY OF BRITISH COLUMBIA

The Stewart Blusson Quantum Matter Institute at UBC (SBQMI) is a world-leading venture into research of systems and phenomena explicitly involving quantum mechanics. One of its interests is the development of a quantum information processing platform based on silicon photonic circuits.

Under the direction of the Principle Investigator(s) working on this project, the Research Engineer, Nanophotonics (REN) will oversee all aspects of fabricating complex silicon circuits using SBQMI's Electron-Beam lithography and nanofabrication facilities and, where necessary, external facilities. This includes working with the Principle Investigators and other researchers to design and realize high-performance, fabrication-tolerant circuit elements by developing thorough process flow sequences and the underlying sub-processes. This work will be done in part by the REN, and in conjunction with students and postdocs who will receive fabrication training from the REN. The REN is expected to prepare manuscripts for articles published in top-tier journals, and to act as a mentor for SBQMI students and postdoctoral fellows. From time to time the Research Engineer will collaborate with other national and international academic institutions, government, and industry organizations, attend conferences and workshops to gather and disseminate knowledge of advances in photonic based quantum information processing, and may write portions of grant applications to fund research activities.

ORGANIZATIONAL STATUS

The Research Engineer, Nanophotonics reports to the SBQMI Principle Investigator(s) whose research area most closely matches in expertise, and provides support to other SBQMI Principle Investigators and Researchers as requested. The REN makes decisions regarding process development and process flow for a variety of projects, and gives directions for the design, construction and maintenance of equipment and infrastructure required for these projects.

WORK PERFORMED

Research

- Collaborate with the Members and Associate Members of SBQMI in defining and executing research sub-projects related to the overarching goals of the nanophotonics PIs, contributing knowledge and expertise as requested; maintain awareness of current and upcoming major projects and provide expert advice regarding infrastructure and resource requirements and deployment for those projects that are of the highest priority;
- Oversee the fabrication of complex photonic silicon circuits - from development of conceptual designs, to transfer to fabrication-ready file formats, to fabrication; develop efficient and effective processes and process flows that can be used by trained team members in support of the effort to develop silicon opto-electronic circuits for quantum based information processing;
- By staying current with international trends and developments in the field, will identify issues, opportunities, and new directions related to nanofabrication research in nanophotonics,
- Research and develop new experimental research techniques that will increase and maintain scientific excellence; prepare reports on these, and other, research activities;

- Publish findings; maintain records of research activities and outcomes; prepare official research reports and statistics to support SBQMI and UBC performance related metrics and other university related administrative requirements;

Facilities Operation

- Participate on relevant committees such as those determining infrastructure and space requirements, new projects, redevelopment of existing space, and health and safety.

Fostering Learning

- Provide scientific advice and mentoring to students and other researchers on fabrication software and hardware tools, processing techniques and strategies, and how these impact device/circuit design and testing;

- Attend relevant conferences and workshops to gather new knowledge and/or to present results of SBQMI research; build and maintain networks of experts in the field in order to further the knowledge and research activities of SBQMI;

QUALIFICATIONS

Undergraduate degree in Engineering or Applied Science. Graduate degree in Electrical Engineering or Physics preferred.

Minimum of one year experience or the equivalent combination of education and experience.

Experience in a research and/or research and development environment required;

Extensive experience and fluency in use of photonic device design, layout, fabrication and characterization tools;

Experience with photonic circuits;

Experience with characterization metrics and circuits;

Demonstrated ability to develop processes and procedures that will assist in the resolution of a particular experimental question or problem;

Excellent communication skills.

Please apply online at www.staffcareers.ubc.ca/26840

Salary range is \$47,102.00 (minimum) - \$67,853.00 annually. UBC offers a competitive benefits package including extended medical, dental, life insurance, professional development funding and pension.

Equity and diversity are essential to academic excellence. An open and diverse community fosters the inclusion of voices that have been underrepresented or discouraged. We encourage applications from members of groups that have been marginalized on any grounds enumerated under the B.C. Human Rights Code, including sex, sexual orientation, gender identity or expression, racialization, disability, political belief, religion, marital or family status, age, and/or status as a First Nation, Metis, Inuit, or Indigenous person. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority.