

Research Engineer, Laser and Optics

Job Summary

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 core areas of strength is research into various condensed matter systems employing sophisticated optical infrastructure which includes optical spectroscopy, single photon generation and detection, and ultrafast laser/optics systems for time-resolved pump probe experiments.

Under the direction of the Principle Investigator(s) working with laser and optics infrastructure, the Research Engineer, Laser and Optics will support Principle Investigators and other researchers conducting experiments in areas such as Scanning Tunneling Microscopy (STM), Angle Resolved Photoemission Spectroscopy (ARPES), time resolved ARPES, Heat Trap effect in one-dimensional conductors, Photonics and Nanostructures, and in-situ optical excitation of donor/accepter pairs while being studied by STM. This includes working with the Principle Investigators and other researchers to identify questions and problems and devise new optical techniques (both source and detection development) to address these questions, and mentoring SBQMI students and other researchers with optical measurement techniques. The Research Engineer will collaborate with other institutions and industry organizations, attend conferences and workshops to gather knowledge of advances in the field and may contribute to writing and submission of grants to fund research activities.

Organizational Status

The Research Engineer, Laser and Optics reports to the SBQMI Operations Manager and the faculty member(s) whose research area most closely matches the area of expertise. Also provides support to other SBQMI Principle Investigators and Researchers as requested. The Research Engineer, Laser and Optics makes decisions regarding design, construction and maintenance of research projects and provides mentoring and coaching to students and other researchers.

Work Performed

Research, design and develop new experimental optical detection techniques in a variety of experimental research configurations; prepare reports on these, and other, research/development activities;

Operating, maintaining and further optimizing through design iterations of delicate optical equipment and infrastructure such as fibre and solid state laser systems, amplified femtosecond laser systems, optical parametric amplifiers/oscillators, and mid-infrared optical sources;

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;

Manage undergraduate students and train graduate students with laser spectroscopy systems and general optical techniques;

Maintain awareness of current and upcoming projects and experiments and provide input as requested regarding directing infrastructure and resources to those projects that are of the highest priority.

Determine suitability of laser system attributes with respect to space, vibration, temperature and humidity within proximity to existing experimental equipment;

Ensure that custom optical and laser equipment are operational, working with suppliers and contractors when necessary; ensure that processes and procedures related to safety and use of space and equipment are followed.

Provide advice, training, and mentoring to students and other researchers, assisting them during laser-based measurements;

Attend relevant conferences and workshops.

Contribute to SBQMI progress reports.

Consequences of Error

To retain its standing as a UBC Centre of Excellence, SBQMI must demonstrate its potential to move from internationally excellent to globally exceptional, both in terms of academic impact and translational impact.

Ultimately, errors in judgement that lead to the inability to complete research projects in a timely and effective manner could mean that SBQMI Centre of Excellence will not meet the required deliverables to secure additional funding and/or revenues.

Poor decisions or errors in judgement may also result in unreliable results in experiments and research, experiments being postponed or cancelled, or major damage to property and safety of persons.

Supervision Received

Works independently, in consultation with faculty members. Is called upon to use unique and highly advanced scientific and technical knowledge to resolve complex problems that have not been previously encountered and do not have established methods, principles or guidelines to for resolution – develops these as necessary and documents the process.

Supervision Given

Provides ongoing support, advice, and mentoring to students and researchers.

Qualifications

- Undergraduate degree in Engineering or Applied Science. Undergraduate degree in Electrical Engineering required, or undergraduate degree in Optics, Photonics or Physics would also be acceptable. Master's degree preferred.
- Minimum of one year experience or the equivalent combination of education and experience;
- Experience working in a research and/or research and development environment;

- Demonstrated ability to develop optical instrumentation that will assist in the resolution of a particular experimental question or problem;
- Experience with both fibre and solid-state laser design, opto-mechanical construction and alignment/optimization
- Experience maintaining facilities and equipment;
- Strong record of patents and publications.

To apply: <https://www.hr.ubc.ca/careers-postings/staff.php>

Language requirements: written and spoken English

Salary and benefits: 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.

UBC hires on the basis of merit and is strongly committed to equity and diversity within its community. We especially welcome applications from visible minority group members, women, Aboriginal persons, persons with disabilities, persons of minority sexual orientations and gender identities, and others with the skills and knowledge to productively engage with diverse communities. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority.