

## **RESEARCH ENGINEER – VACUUM**

### 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. Research in the institute's core interests require sophisticated Ultra-High Vacuum (UHV) design.

Under the direction of our principal investigators, and in support of our [Grand Challenges research program](#), the Research Engineer will design and construct novel custom-built UHV systems required to conduct our experiments. The engineer's responsibilities will also include testing, troubleshooting and installing systems that are required for monitoring and automating. The Research Engineer will work with SBQMI staff and trainees in building and assembling infrastructure, and will assist them in achieving a thorough understanding of their experiments at a technical level.

### **Organizational Status**

The Research Engineer will report directly to the Operations Manager. As required, will also provide support and take direction from SBQMI Principal Investigators whose research work involves vacuum systems, and who will rely on the Research Engineer's expertise in this area.

### **Work Performed**

#### *UHV design and construction*

- Design and construct UHV vacuum systems using Computer Aided Design (CAD) software - Autodesk Inventor mainly, may also be required to work with Solidworks;
- Understand researchers' projects and systematically work to create the necessary systems;
- Take a concept from design to finish and deliver a working solution;
- Solve design and assembly problems, and develop and improve assembly techniques and documentation;
- Work closely with SBQMI technical design team;
- Ultrasonic cleaning and assembly of UHV vacuum systems, may also include pumps, valves, gauges, detectors and sensors;
- Optimization and upkeep of existing fully functioning UHV systems – leak detection of equipment as required. Designing and testing, as well as logging of vacuum related data (pressure, temperature, outgassing rates) to fully characterize each UHV system;
- Careful bakeout of UHV systems; maintenance of bakeout equipment; remote monitoring of bakeout temperatures and logging such data; maintain records of system performance;

- Other tasks as requested

### *General*

- Work closely with vendors, suppliers, and contractors in general and in obtaining equipment quotes for various projects;
- Identify research opportunities into new equipment that will allow researchers to broaden the scope of their work; prepare and write proposals to rationalize allocation of funds to the project;
- Research and develop new experimental design techniques that will increase and maintain scientific excellence; prepare reports on these, and other, research activities;
- Maintain a clean and safe working area, adhere to all safety procedures and rules;
- Work closely and effectively with research groups and other members of the SBQMI community;
- Other tasks as requested

### *Fostering Learning*

- Provide engineering advice and mentoring to students and other researchers related to vacuum systems as required;
- Prepare and present UHV/HV related workshops for SBQMI members as required;
- Attend tradeshow and other technical events; visit experts, or host visitors, who can further the knowledge and research activities of SBQMI, including from academia, industry and government agencies;
- Other tasks as requested

## **Supervision Received**

Works independently, in consultation with SBQMI's Operations Manager and 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.

## **Minimum Qualifications**

Undergraduate degree in Engineering or Applied Science. Minimum of one year of related experience, or the equivalent combination of education and experience.

## **Preferred Qualifications**

- Related experience working with UHV systems
- Demonstrated proficiency with AutoDesk Inventor and UHV design
- Working knowledge in safe use of power tools and hand tools

- Knowledge in use of computer programs such as MS Word and Excel
- Knowledge in Autodesk Inventor is essential
- Good verbal, writing and communication skills

Please apply at: <https://ubc.wd10.myworkdayjobs.com/ubcstaffjobs>

- Job Posting number: JR1626
- Application deadline: April 21, 2021 at 11:59pm

This is a two-year term appointment, with an expected end date of August 31, 2023.

Compensation range: \$4,964.42 - \$7,151.50 CAD monthly

UBC offers a competitive benefits package including extended medical, dental, life insurance, professional development and pension.

For more information about the Stewart Blusson Quantum Matter Institute: [gmi.ubc.ca](http://gmi.ubc.ca)

For more information about Vancouver: <http://www.tourismvancouver.com/>

*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.*