

RESEARCH ASSOCIATE – ULTRAFAST LASER SPECTROSCOPY

The Stewart Blusson Quantum Matter Institute (SBQMI) is a venture into research of systems and phenomena explicitly involving quantum mechanics and is internationally recognized for its research into quantum materials & devices. Its vision is to: create and disseminate fundamental scientific knowledge, enabling rational design of quantum materials; equip an outstanding cadre of graduates with the skills needed to advance quantum materials innovations and strengthen the translation of research discoveries to industry.

Significant investment including \$66.5-million funding from the Canada First Research Excellence Fund (CFREF), has rapidly broadened the scope of SBQMI's research activities and has specifically allowed it to pursue several new projects in the attempt to find answers to some of the most difficult problems facing quantum physics. Resolution will yield world changing breakthroughs with applications in areas such as sustainable energy, quantum computing, and information technology. A core pillar of its research effort is strong interactions and topology in two-dimensional quantum materials.

To support its rapid intensification of research SBQMI is seeking a Research Associate on ultrafast laser spectroscopy to support the activities of its faculty members. This position plays a key role in identifying relevant research directions based on SBQMI strategic objectives, formulating theoretical and experimental approaches to exploring highly complex, as yet unresolved, scientific problems related to 2D materials, analyzing outcomes and identifying opportunities to establish intellectual property and apply for patents for potential devices, and writing and editing research articles on SBQMI work for submission to scientific journals. The position is also instrumental in furthering SBQMI's training strategy by instructing, coaching and mentoring graduate students in their research.

Work Performed

Develop and conduct new research projects, including independent research into optical properties of two dimensional materials, van der Waals heterostructures, and corresponding archetype devices.

Design, develop and maintain customized optical equipment for existing and new projects at SBQMI including time and angle-resolved photoemission spectroscopy effort; maintain and operate commercial ultrafast laser systems including parametric oscillators and amplifiers.

Supervise undergraduate and graduate students' research by providing instruction and coaching to help them formulate research questions, design experimental frameworks, and analyze final results. Train students to use scientific equipment.

Contribute to collaborative research projects and experiments; provide input as requested regarding utilizing and modifying existing equipment and acquiring new systems to meet project requirements.

Publish research findings in peer reviewed scientific journals; coach students in scientific writing and presentation skills and coach them in publishing their research findings.

Present research at relevant international conferences, workshops, and meetings.

Identify research outcomes with potential for commercial applications; lead the IPO and patent application process.

Organize records of research activities and outcomes; prepare reports and statistics to support SBQMI and UBC performance related metrics under the requirements of the university, scientific advisory board, and other funding agencies.

Qualifications

- PhD in in a related field of Physics, followed by at least one successful postdoctoral research fellowship;
- At least 10 years of experience in progressively more senior research roles in a research and/or research and development environment related to ultrafast laser spectroscopy, photoemission spectroscopy, and nonlinear optical spectroscopy;
- Extensive experience in studying two dimensional materials using a variety of optical spectroscopy methods;
- Experience with the design and use of ultra-high vacuum systems;
- Laboratory experience with fibre and solid-state laser design and operation, laser-driven photoemission spectroscopy, opto-mechanical construction and alignment/optimization;
- Strong record of relevant highly cited publications in top-tier journals with demonstrated ability to write, edit and review scientific articles;
- Experience identifying potential intellectual property and leading the patent writing and application process;
- Experience instructing and mentoring students and other scientific researchers;
- Demonstrated ability to work collaboratively in a multi-disciplinary environment with both internal and external collaborators;
- Demonstrated ability to develop and conduct independent research projects.

To Apply

Please submit applications at www.facultycareers.ubc.ca/37705

Closing date: July 22, 2020

Salary will be commensurate with qualifications and experience. UBC offers a competitive benefits package including extended medical, dental, life insurance, professional development 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 of Canada will be given priority.