

Devices fabrication for quantum technology applications based on graphene and 2D materials

Postdoctoral and PhD positions are available immediately jointly supervised between Professor Steve Maclean and Professor Raymond Laflamme. The quantum device fabrication project is in an industrial research context hosted by Infinite Potential Labs (IPL) (a Quantum Valley Investment (QVI) affiliates). The training program is part of the Institute for Quantum Computing (IQC) and the Physics and Astronomy Department at the University of Waterloo.

IPL is currently developing an experimental workstation that will investigate, for instance, the nature of Dirac fermions in momentum space in several exotic hetero-structures and devices. In this project, IPL is interested in targeted exotic properties of materials and hetero structures based on graphene, boron nitride and other 2D materials.

In particular, the project requires the fabrication and testing of devices based on these materials. The structures developed in this research will be the core of a new generation of devices exploiting exotic quantum properties. State of the art facilities from University of Waterloo and a network of both university and industrial partners will contribute to this micro-nanofabrication project.

The group seeks in particular top applicants with a background in nano-material growth/processing (nano)metrology and device fabrication and characterization. Although funds are available to support these positions, we encourage applicants to apply for their own funding. Applicants should hold a degree in physics, engineering physics, chemical physics or electrical engineering or related academic training. Preference will be given to candidates with prior research experience in micro/nano fabrication, MEMS technology and graphene and 2D material transfer. Multidisciplinary skills in device fabrication, instrumentation, surface sciences and surface chemistry and functionalization is an asset.

IQC is a collaborative research institute focused on realizing quantum technologies including sensors, actuators, quantum communication, and information processors. At present, IQC has a complement of 29 faculty members (growing to 39) from the Faculties of Engineering, Mathematics and Science. IQC's research program has theoretical and experimental components that pursue projects for advances in quantum information.

The University of Waterloo respects appreciates and encourages diversity. We welcome applications from all qualified individuals including women, members of visible minorities, Aboriginal peoples and persons with disabilities. All qualified candidates are

encouraged to apply; however, Canadian citizens and permanent residents will be given priority.

Direct your questions and applications including a curriculum vitae, a list of publications, and reference contact information to:

Pierre Lévesque, Research Director, IPL (plevesque@iplabs.ca),
Steve MacLean, Professor, IQC (steve.maclean@uwaterloo.ca) or
Raymond Laflamme, IQC (laflamme@iqc.ca).