

Postdoctoral Position – Integrated Quantum Optical Devices

The Department of Electronics (ELEC) at Carleton University, Ottawa, Canada, together with the National Research Council (NRC) of Canada, is accepting applications for a Post-Doctoral Research Fellow position dedicated to device design and implementation of integrated quantum optical devices in a silicon nitride platform. The applicant should have research experience in experimental quantum optics, material science, and photonic device modeling, supported by a good publication record. Knowledge of nanofabrication techniques will be considered an asset. The successful applicant will work with our Carleton-NRC team at both campuses on a range of tasks. This includes the development of experimental frequency translation techniques using single photons from quantum dot nanowire-based sources. The candidate will also be responsible for modeling and experimental characterization of silicon nitride materials devices such as frequency combs and cavity resonators. These devices would be geared toward quantum communication applications such as quantum key distribution and the enhancement rates of non-classical light sources. This position is supported by an external grant and is for a period of 2 years.

Candidates must have completed a Ph.D. degree in Engineering Physics, Electrical Engineering, Physics or in a closely related field. The candidate should ideally have direct research experience and skills in the following areas:

- Nonlinear optics, Coupled-mode, optical waveguide and micro-resonator theory and design
- Quantum optics in nanostructures and quantum dots, including $g(2)$ measurements
- Solid background in optical setup design and optical characterization techniques

The successful applicant will collaborate closely and conduct research with personnel at all levels within the Carleton and NRC groups. Additionally, the Fellow is expected to assist with conference and journal publications and reports. Excellent written and oral communication skills are essential to the position. Applications should include a CV, publication history and a cover letter clearly outlining how their past research and experience provide the necessary qualifications. Additionally, contact information for 3 references should be available upon request.

Carleton University is committed to EDI and fostering diversity within its community as a source of excellence, cultural enrichment, and social strength. We therefore welcome applications from underrepresented groups including, but not limited to: women; visible minorities; First Nations, Inuit and Métis peoples; persons with disabilities; and persons of any sexual orientation, gender identity and/or expression. Carleton understands that career paths vary. Legitimate career interruptions will in no way prejudice the assessment process and their impact will be carefully considered.

Please direct applications to Professor Connor Kupchak (connor.kupchak@carleton.ca) and Dr. Khaled Mnaymneh (khaled.mnaymneh@nrc.ca).