DALHOUSIE UNIVERSITY 1818 2018

DEPARTMENT OF PHYSICS & ATMOSPHERIC SCIENCE

Graduate Student Positions in Bionanophotonics

The Bionanophotonics research group of Professor Kevin Hewitt at Dalhousie University is looking for eager students to join our team. In his Molecular imaging lab, novel nanoparticle probes for cancer imaging and treatment, new optical imaging approaches and a prototype medical diagnostic tool are being developed. Cutting-edge techniques are used to address questions that are fundamental (i.e., uniting optical techniques not hitherto combined), very applied (i.e., commercializing an optical diagnostic tool for liver transplantation applications), or in between (i.e., developing nanoparticle probes for cancer imaging and treatment). To create well-rounded graduates, the lab fosters the advancement of inclusive excellence, including the opportunity to participate in pathways programs for underrepresented groups.

MSc/PhD positions are open to scholarship holders and non-scholarship candidates for our NSERC-funded Molecular Holography program. Those who do not hold a scholarship will be supported in their application to the Nova Scotia Graduate Scholarship program or pending the announcement of additional funding in April 2022.

For more information about the research group, please visit hewitt-lab.com

Candidates must possess a BSc or a MSc in Physics. Experience in experimental optics methods, especially techniques in Raman spectroscopy such as SERS and CARS/SRS, characterizing sensitive detectors (e.g. CMOS, image intensifiers), designing imaging systems, conducting fluorescence microscopy for live cell studies, and nanoparticle synthesis would be an asset.

Two MSc/PhD projects are available:

1. Arriving with some experience in detector physics, the student's primary task will be to incorporate a CMOS camera and image intensifier into a surface enhanced Stimulated Raman scattering setup and characterize standard samples for imaging and conventional digital inline holography. Attention will be focused on the influence of the image intensifier's electronics and optics on molecular hologram quality.
2. Arriving with some prior experience in fluorescence microscopy of cells, the student's primary task is to incorporate a molecular holography detection system into a fluorescence microscope base for co-registered acquisition, directly comparing the two techniques. Biomedical experiments requiring high speed volumetric imaging, such as quantitative measurements of cells in flow or cell microspheroid response, will be pursued to showcase the advantages of the molecular holography technique.

To apply: Please provide by email to Kevin.Hewitt@Dal.ca :

- Curriculum Vitae
- Cover letter
- Transcript of last or current diploma
- At least 2 letters of recommendation (to be sent directly by your referees to the above email)

Applications will be considered beginning Dec. 16, 2021 until the positions are filled.

Dalhousie University is a member of the U15 group of research-intensive Canadian postsecondary institutions. The Physics and Atmospheric Science department has a vibrant research program with strong ties to industry, with 65 graduate students and over $5M of annual research funding. Members of the department are holders of prestigious research chairs including Herzberg, Canada Research Chairs, NSERC Industrial Research Chairs, and Killam Professors. The Department has a strong tradition in teaching excellence and outreach. Several faculty members have won teaching awards at the faculty, university or national level, provincial and national science promotion awards. We foster inclusiveness through initiatives such as the Imhotep's Legacy Academy and faculty-sponsored scholarships for historically underrepresented groups.

Dalhousie is committed to employment equity and diversity and strongly encourages applications from all qualified candidates, including women, people of any sexual orientation, gender identity, or gender expression; Indigenous peoples; visible minorities and racialized people; and people with disabilities. Candidates will be offered the opportunity to self-identify in support of correcting historic underrepresentation, with the aim of creating an inclusive research community.