

POST-DOCTORAL RESEARCH FELLOWSHIP

Advanced antifogging thin films produced by homogenous atmospheric pressure plasma for advanced laparoscopy.

Endoscopic surgical intervention technologies have grown considerably over the years (projected turnover of 51.7 billion dollars in 2022) leading the development of new cutting-edge miniaturized medical tools. However, the use of these instruments is limited due to a natural phenomenon occurring on endoscope lenses: fogging. This project is born from the desire to solve in the long term this problem. The developed product is an unprecedented anti-fog treatment using an innovative solution in the field of endoscopy and protected today by a patent. This process is the result of more than 15 years of research and development. The proposed treatment works on transparent surfaces, and it guarantees a less polluting process, easy transferable to the industry.

The postdoctoral fellow who will work on this project will be responsible for studying the synthesis of thin films using atmospheric pressure plasma for the deposition of anti-fog layers. The objective of this work will be to analyze the growth modes. In this context, the candidate will have the opportunity to use a wide range of equipment (XPS, AFM, SEM, FTIR) for surface characterization. He will also be responsible for evaluating the effectiveness of the optical and anti-fog properties for the synthesized layers.

Your profile:

- You have clear experience in plasma, optical analysis of thin films as well as material characterization (SEM, XPS, FTIR, AFM, etc.).
- You have a Ph.D. in physics, chemistry, materials, mechanical-, electrical engineering, or a related discipline.
- You have excellent theoretical and practical knowledge within one or more of the following fields: plasma physics and diagnostics, optical applications of thin layers, plasma processes relevant for material synthesis.
- You have outstanding scientific track record demonstrating well-organized design and execution of research. Your excellent grades should allow you to apply for grants under Canadian funding schemes.
- You have strong communication skills (oral and written English) and ability to work independently as well as in a collaborative team. Your CV and the cover letter should highlight your leadership and how this research project will contribute to your professional career.
- You have strong motivation to collaborate with researchers and the industry. Also, you are interested in technology transfer activities in collaboration with startups.

The candidate will be responsible for supervising graduate students, presenting and discussing the results with the international research partners involved in the project.

This project will develop an innovative strategy for the synthesis of anti-fog coatings to meet the needs of surgeons using laparoscopic techniques. You will be employed at Laval University, a Francophone University in Québec. You will interact with colleagues within the engineering materials department, the centre d'optique, photonique et laser (COPL, <https://www.copl.ulaval.ca/accueil/>) and the Institut National d'Optique (INO, <https://www.ino.ca/en/>).

Admission Department

Mineral, Metallurgical, and Materials Engineering

Research Director

Gaétan Laroche, ULaval

Profile of the candidate PhD in science of engineering of materials, chemistry, physics (or equivalent)

Requirements

Autonomy in research, writing, and supervision of research staff

Start date

Fall 2022

Additional information

35h/week, holidays: 20 days

Salary

Between 22\$/h and 27.5\$/h depending on the experience

To apply

Send your cover letter describing research interests and goals (max. 2 pages), list of publications highlighting your most relevant peer reviewed works, CV, and academic transcript to:
Gaetan.Laroche@gmn.ulaval.ca

For this project we will encourage applications of members of equity seeking groups.

The postdoctoral fellow will carry out this innovative multidisciplinary project as part of a collaboration with industrial partners. The candidate will have the opportunity to be trained within an internationally renowned team in the fields of biomaterials, plasma and surface characterization. In addition, the student will also be called upon to participate in national and international conferences. During the hiring process, particular attention will be paid to the values of equity, diversity and inclusion to promote the recruitment of under-represented groups in the scientific community.