

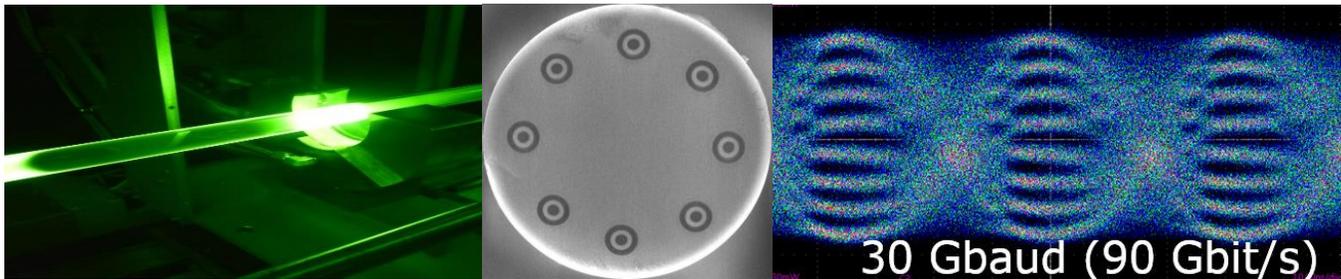
# Optical glass amplifiers for high capacity networks (PhD positions)

1 MSc/PhD position – Design of optical amplifiers and test on high speed transmission testbeds

1 MSc/PhD position – Advanced numerical techniques (AI) for optical amplifier design

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Data traffic carried by communication networks is exploding, driven by the coming era of artificial intelligence and internet-of-things. This interconnected world creates an accelerating demand for bandwidth that is fast outstripping the limits of currently available technologies. Next generation optical networks urgently need to multiply the transmission paths through optical fiber links. Optical amplifiers are at the heart of these high-speed systems, allowing information to flow through transparent networks for thousands of kilometers. We are recruiting for a new four-year research project on *Optical glass amplifiers for high capacity networks*. In this project, the team will do experimental demonstrations of optical fiber amplifier with unique performances enabled by material research and innovative designs, including optimization with machine learning.



***We are now seeking MSc/PhD students!***

Successful candidates will be responsible for the design and test of optical fiber amplifiers. The optical fibers will be fabricated in our laboratories equipped with a modified chemical vapor deposition system (MCVD) and two fiber drawing towers. The amplifiers will be tested using the most advanced optical communication transmission testbeds, with spatial division multiplexing and coherent modulation formats, also available in our facility. Interested international candidates should have a M.Sc. diploma in electrical engineering, physics engineering, physics or material sciences and apply for a Ph.D. position; Canadian students with a B.Sc. can apply for either M.Sc. or Ph.D. Previous experience in photonics or optical communications is an asset. There is no French requirements and thesis can be written and defended in English. Excellent written and oral communications skills in English is required, and learning of French will be encouraged.

***Where will you do the research?***



Université Laval is located in Québec City, Canada, a UNESCO World heritage site. More than a school, Université Laval is an entire community in the heart of Québec City, a complete university recognized for its leadership and its culture of excellence both in teaching and research. With its half a million inhabitants, Québec city boasts a lively cultural scene and offers a wide variety of cultural activities and easy access to outdoor activities.

***Who will you work with?***

Successful candidates will work in a team of elite researchers at the Centre for Optics, Photonics and Lasers (COPL), a multidisciplinary research centre comprising nearly 200 researchers including students, post-doctoral fellows, research professionals and more than 21 faculty members. Team members are Prof. Sophie LaRochelle, holder of the Canada Research Chair (CRC Tier 1) in *Advanced photonics technologies for communications*, Prof. Younès Messaddeq, holder of the Canada Excellence Research Chair (CERCP) in *Photonics Innovation*, and Prof. Leslie Rusch, holder of the Canada Research Chair (CRC Tier 1) in *Communication systems enabling the cloud*. You will work under the direct supervision and co-supervision of two of these professors who have a strong history of collaboration and research excellence. The varied background of the research team and the high quality of the laboratory provide an exceptional research and training environment for students and early career researchers.



***Join us to build your career through innovation!***

Université Laval has a long, illustrious history of innovation and education in photonics, fiber optics and optical communications. There exists enormous opportunities for innovation and research breakthrough. Our graduates are heavily recruited by leading companies and we have a remarkable record of graduates who hold faculty positions in other academic institutes in Canada and worldwide.

**Scholarships of \$24,000(\$21,000)/year for a PhD(MSc) are available to cover living expenses. In addition, scholarships for PhD foreign tuition fees are also available. Note that there are no internship positions available.**

**Please send your resume, a copy of your academic record, and the name of three references to the Optical communication laboratory mailbox. It will reach all three professors. The address is:**

[sophie.larochelle@gel.ulaval.ca](mailto:sophie.larochelle@gel.ulaval.ca)

Please also make sure to include in your email short description of your motivation for this research topic and how it fits your career development goals. Only the candidates whose applications are selected for further evaluation will be contacted. Looking forward to hearing from you!