

## PDF and PhD/MSc Openings in Silicon Photonics <http://www.photon.ulaval.ca/en>

We have immediate openings for fully funded postdoctoral fellows and PhD/MSc students in silicon photonics at the Centre for Optics, Photonics and Lasers ([COPL](#)), Université Laval, Québec, Canada, a world-class research center in optics and photonics.

### Research topics:

- Silicon photonics for Terabits transmissions
  - Ultra-high-speed, low-power coherent optical transceivers
  - Programmable photonics for wavelength and space division multiplexing
  - On-chip generation and multiplexing of optical vortex
- Chip-scale photonic devices and systems for advanced sensing
  - Multi-dimensional detection of photons for quantum and classical applications
  - Chip-scale LiDAR

Qualified candidates should be strongly motivated and have a solid background in optics or electrical engineering. If you are interested, please send your CV to Prof. Wei Shi [wei.shi@gel.ulaval.ca](mailto:wei.shi@gel.ulaval.ca).

### *About the group:*

The research group is led by Prof. Wei Shi, the Canada Research Chair in Silicon Photonics, with 10+ graduate students and research fellows. Our research portfolio is a mix of experimental and theoretical investigations on integrated photonics for greener, smarter sensor and communications systems.

We have extensive collaboration with industry. Our students are highly recruited by industry in Canada and US. All our recently graduated students found a job before graduation.

Over the last few years, we have received 11+M\$ research funds. We are proud to work in one of the most advanced optical communications labs in Canada and around the world. It features a Terabits coherent transmission testbed and state-of-the-art photonics characterization systems. We also have access to \$10M+ facilities for fabrication of silicon photonic and glass-based materials and devices.

### *About Université Laval (UL):*

Established in 1663, the University is ranked 7<sup>th</sup> among [Canada's Top 50 Research Universities](#) holds four Canada Excellence Research Chairs (26 in total in Canada). UL is located in the beautiful Québec city that hosts 52 companies in the optics-photonics industry and the National Optics Institute (INO). UL is a member of the [U15 Group of Canadian Research Universities](#).



## About the Canada Research Chair in Silicon Photonics

Just as microelectronics first changed the world by manipulating electrons, silicon photonics is driving another technology revolution by manipulating photons. Silicon, this magic material from simple sand, is evolving into a versatile platform for extreme miniaturization of optical devices. With features on a scale 1,000 times smaller the width of a human hair, silicon brings us complex photonic systems on a chip the size of a fingernail.

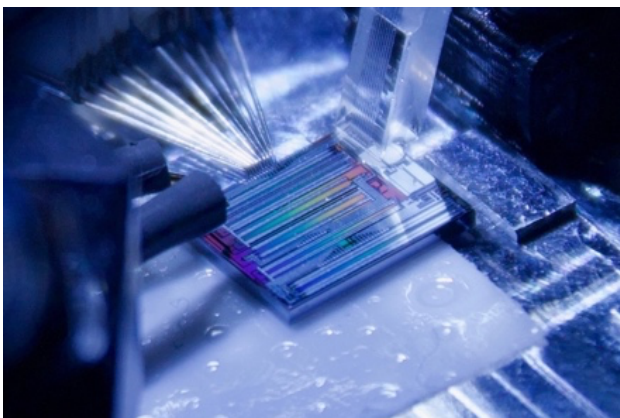
Leveraging this disruptive technology, Prof. Wei Shi, the Canada Research Chair in Silicon Photonics, is exploring nanophotonic devices and their large-scale integration on a microchip. Energy-efficient sensor networks are essential to a sustainable modern society. Smart sensors will track everything from climate change to heartbeats and feed data to the Internet of Things (IoT).

Rapidly expanding networks of sensors contribute to the ever-increasing stream of data over the global Internet, demanding high-speed, ubiquitous communications. This expansion is taxing our energy resources and requires solutions that increase capacity while reducing the carbon footprint. Today, we already use more energy to move bytes than we do to move planes across the globe.

To address this challenge, Prof. Shi guides research to realize the potential of silicon photonics as an enabler of ultra-high-speed communications at lower energy. His research will allow us to allocate our precious optical resources more dynamically and intelligently. His research will also examine affordable optical sensors for real-time monitoring of air and water so that scientist can understand the impact of human-environment interaction.

Ultimately, this Canada Research Chair contributes to large-scale microphotonic systems as sustainable solutions for greener, smarter sensor and communications systems.

If you are interested in joining us, please send your CV to [wei.shi@gel.ulaval.ca](mailto:wei.shi@gel.ulaval.ca).



A silicon photonic chip under test: the first Tb/s (100 Gbaud) coherent optical transmission enabled by an all-silicon modulator (OFC Postdeadline 2019).