UNIVERSITÉ LAVAL

Canada Research Chair in Silicon Photonics

COPL Centre d'optique, photonique et laser

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.

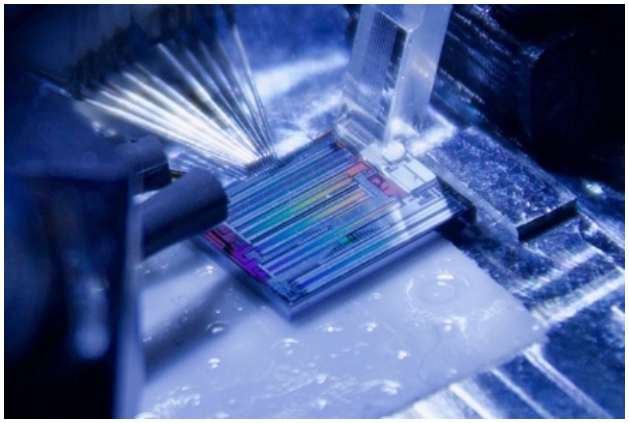
Leveraging this disruptive technology, Prof. Wei Shi, the Canada Research Chair in Silicon Photonics, is exploring nanophotonic devices and their large-scale integration on a microchip. Energy-efficient sensor networks are essential to a sustainable modern society. Smart sensors will track everything 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.



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