



CHEMISTRY/PHYSICS SEMINAR SERIES

Dr. Christopher Barrett

**Professor & Associate Member, McGill University, Montreal
Neurological Institute**

**Wednesday, March 13, 2024
11:00 a.m. to 11:50 a.m. in ENW 115**

Light-Responsive Soft Materials for Bio-Inspired Brain-Machine Interfaces

ABSTRACT

Exciting applications in interfacing biology with technology require new advanced materials to mediate this communication, especially challenging for the interface between brain and machine. There is an effort underway for next-generation materials that rely on soft, wet biomaterials that more closely resemble real biological tissue than metals or inorganics, and to employ more natural signal communication pathways involving optical photons similar to the human eye, instead of electrical current. This talk will attempt to summarize some of these recent efforts at developing new biopolymers that improve biocompatibility with various parts of the human body, and that also allow transduction of neural signal processing using light at low intensities and visible wavelengths. This talk will be broadly interdisciplinary with, one hopes, a 'little something for everyone' at Trent.

BIOGRAPHY – CHRISTOPHER BARRETT

Christopher Barrett spent the first year of his life in Scott House, Traill College in 1969, and later studied at Queen's University for B.Sc., M.Sc., and PhD. degrees in Physics and in Chemistry, '92, '94, and '97. Christopher then joined the Harvard-MIT Program in Health Sciences and Technology in '97, and the Centre for Materials Science and Engineering at MIT for 2 years postdoctoral study '98-'99, working on the water-based self-assembly of biopolymer layers and multi-layers to bio-camouflage surfaces for improved implants and bio-interfaces. Prof. Barrett joined the McGill Chemistry Faculty in 2000, establishing Polymer BioMaterials and Laser Optics labs, in collaboration with McGill's Centre for Physics of Materials, School of Environment, Institute for Advanced Materials, and the Montreal Neurological Institute.