

SEMINAR NOTICE

*Department of Physics and Engineering Physics
University of Saskatchewan*

SPEAKER: Professor Paul Barclay
University of Calgary

TOPIC: *Diamond Photonics: Connecting Quantum Systems with Light and Sound*

DATE: Tuesday March 7th

TIME: 3:30-4:30 p.m.

PLACE: *Physics 103*

Abstract:

Diamond is emerging as one of the most promising optical materials for implementing quantum technologies for sensing and communication. Its potential hinges upon the diamond's ability to host "atom-like" defects whose quantum states can be used to store information. Recent advances in the fabrication of nanophotonic devices--waveguides and cavities--that enhance the coupling of light to diamond defects are crucial to creating scalable implementations of these technologies. Breakthroughs in fabrication have also enabled the realization of diamond optomechanical devices. These structures have an intrinsic ability to connect to a broad range of quantum systems, further expanding the toolbox available to quantum researchers.

In this talk, I will review diamond quantum systems' fundamental properties and applications, and discuss approaches for fabricating photonic and optomechanical devices from this material. It will highlight key challenges and opportunities and discuss the physics underlying recent advances in the field, including the use of diamond optomechanical devices for creating novel interfaces to quantum memory.