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# CAMTEC SEMINAR

**TITLE:** *Diamond nano-optomechanics: coherently storing light and probing spin systems*

**SPEAKER:** **Dr. Paul Barclay**  
University of Calgary

**DATE:** 12 December, 2019

**TIME:** 10 AM

**LOCATION:** Elliot 228

**Abstract:** Nanophotonic devices enhance light-matter interactions by confining photons to small volumes. This can enable coherent optical coupling to a wide range of quantum systems, including single "artificial atoms" that serve as qubits for quantum information processing in crystals such as diamond. They also allow coherent "cavity optomechanical" manipulation of vibrations in nanoscale resonators, leading to applications ranging from sensing to storing light and creating quantum memories. I will talk about my group's efforts to demonstrate diamond nanophotonic devices that simultaneously couple light to both artificial atom electronic spins, and to nanomechanical systems, which involves surmounting challenges ranging from nanophotonic device design and fabrication to development of new measurement techniques.

**Bio:** Paul Barclay is an Associate Professor of Physics at the University of Calgary and a former Alberta Innovates Scholar in Quantum Nanotechnology. He is a world leader in developing quantum optical devices from a wide range of materials. Important contributions include the first measurement of nonlinear effects in silicon nanocavities, development of widely-adopted fiber probing methods for sub-wavelength nanophotonic devices, and demonstration of some of the first diamond nanophotonic devices for quantum optics and optomechanics. In 2019 he was awarded the Herzberg Medal by the Canadian Association of Physicists.

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