



FLEET

ARC CENTRE OF EXCELLENCE IN
FUTURE LOW-ENERGY
ELECTRONICS TECHNOLOGIES

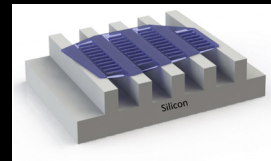
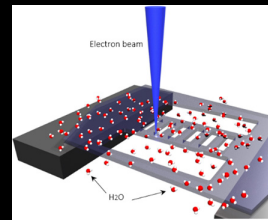
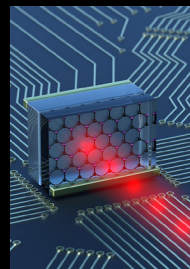
FLEET RESEARCH SEMINAR

Integrated quantum photonics based on 2D materials

MILOS TOTH

University of Technology Sydney

Abstract: Wide bandgap van der Waals materials – and particularly hexagonal boron nitride (hBN) - have emerged as promising hosts of single photon emitters. Here, I will review the current state and roadblocks in understanding the photophysical, structural and chemical properties of these emitters, as well as functional properties that make these systems appealing for integrated quantum photonics. I will also present demonstrations of coupling of the emitters to waveguides and resonators, with an emphasis on electron and ion beam techniques that have been developed to manipulate the properties of optoelectronic materials and to fabricate cavities from hBN. Finally, I will show that emitters that have nonlinear optical properties which make them suitable for applications beyond quantum photonics, such as probes for diffraction-unlimited fluorescence nanoscopy and atomic-size sensors for nanothermometry.



About the Speaker: Milos Toth obtained his PhD from University of Technology Sydney (UTS), and subsequently spent three years as a postdoctoral researcher at University of Cambridge, and seven years as a research scientist at FEI Company, U.S.A. Milos took up his current role at UTS in 2011, where he is a Professor in the School of Mathematical and Physical Sciences. His research is focused on solid state quantum photonics, 2D materials, and the development of novel nanofabrication techniques.

DATE: Tuesday 8 October
TIME: 11:00 - 12:00
VENUE: G30, New Horizons Centre
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