



Western

Western University
Department of Physics and Astronomy

PHYSICS & ASTRONOMY COLLOQUIUM

Date: **Thursday, 30 January 2020**

Time: **1:30 p.m.**

Location: **Physics & Astronomy Seminar Room 100**

Dr. Nabil Bassim

Department of Materials Science and Engineering
and Canadian Centre for Electron Microscopy
McMaster University

“Non-conventional 2-D materials synthesized in non-conventional ways: Growth and characterization”

ABSTRACT

Since the discovery of graphene in 2004, there has been tremendous interest in 2-D materials because of their unique electronic, optical and mechanical properties. Alternative 2-D materials have often been proposed theoretically with different properties (direct band gap, doping, etc.) and then attempted to be fabricated in the laboratory. Often, the growth/fabrication of these alternative 2-D materials are challenging aspects that limit their scalability for real-world applications. In this seminar, we will discuss two alternative methods for fabricating 2-D materials. The first is the use of ion implantation to fabricate 2-D materials, such as silicene (which is 2-D silicon), with a detour into the interesting surface chemistry effects that are possible from fabrication using implantation. The second is the Confined Heteroepitaxy (Chet) technique, which allows novel 2-D metals and nitrides materials to be fabricated at near wafer scale. Underlying all of this is the need for advanced characterization that relates growth to structure. All imaging was performed using aberration-corrected STEM and atomic resolution EELS in the Canadian Centre for Electron Microscopy, key infrastructure that enables atomic-scale materials science.

HOST: L. Goncharova

COFFEE + light snacks will be available in the Atrium, 2nd floor, at 1:15 p.m.