



**Western University**  
**Department of Physics and Astronomy**

## **PHYSICS & ASTRONOMY COLLOQUIUM**

**Date:** **Thursday, 26 September 2019**  
**Time:** **1:30 p.m.**  
**Location:** **Physics & Astronomy Seminar Room 100**

### **Dr. Ranjith Divigalpitiya**

Senior Specialist / Physicist  
3M Canada Company

### ***“Two-Dimensional Materials @ 3M: A retrospective of an industrial physicist”***

#### **ABSTRACT**

The past decade has seen an international resurgence in research on two dimensional materials after the discovery of graphene; however, application development has not been commensurate with the hype. I will describe some early, pre-graphene, work we have done on self-assembly of a classic two-dimensional material, single molecular layers of molybdenum disulfide, at liquid interfaces. Self-assembly was used to fabricate a large class of interesting materials that is not available in nature, now known as van der Waals heterostructures. Some recent efforts at 3M to take advantage of the unique properties of other two-dimensional materials such as graphene-like-carbon (GLC) as an interfacial layer in two different commercial applications will be then discussed. These applications include a novel nano-scale coating on current collectors of Li ion batteries to improve battery performance, and an optically transparent static dissipative coating for protecting semiconductor components from static damage. Finally, I will discuss how a new form of graphitic material, termed scrolls, is used in a collaborative project with the University of British Columbia for showing the feasibility of rapid heating and cooling via radiation alone. We hope that this line of investigation will lead to applications of two-dimensional materials in new areas.

**HOST:** G. Fanchini

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