



Western University
Department of Physics and Astronomy

PHYSICS & ASTRONOMY COLLOQUIUM

Date: Thursday, 16 September 2021

Time: 1:30 p.m.

via Zoom: <https://westernuniversity.zoom.us/j/95868156513?pwd=d3Q0c2xUNisvOEZ1NFovK3Y2anhOQT09>

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“Interface Engineering and Understanding for the Next-generation Batteries”

ABSTRACT

Lithium-ion batteries (LIBs) have become the most widely used energy storage systems for portable electronic devices and electric vehicles. With the increasing requirements of high energy density, next-generation batteries, including Li-metal batteries, Na-metal batteries and solid-state batteries, have received huge attention in recent years. For most batteries, the interfacial issues between the electrolyte (both liquid and solid) and electrodes are critical factors affecting the performance of the batteries. Atomic and molecular layer deposition (ALD and MLD) are considered as ideal strategies for overcoming the interfacial issues for the batteries.

In this talk, I will introduce our research about interface engineering and understanding for next-generation batteries. i) The interface is one of the key factors for the Li and Na deposition behaviours and battery performances. We developed ALD and MLD approaches to fabricate the artificial interface with significantly improved electrochemical performances and reduced dendrite formation for Li/Na metal anodes. ii) We further design different ALD/MLD thin films to stabilize the interfaces for solid-state Li batteries. iii) We have also developed ex-situ and in-situ synchrotron X-ray techniques for next-generation batteries.

Host: Prof. G. Fanchini