



# Faculty of Engineering and Applied Science

## Chemical Engineering Seminar Series



### **Towards Solid, Flexible and Wearable Energy Storage Systems**

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Thursday, April 11, 2019, 2:30pm  
Dupuis Hall, Room 215



#### **ABSTRACT**

With the current advances in printed electronics, wearable electronics, and e-textiles, solid energy storage systems that are light-weight, thin, and flexible are facing tremendous opportunities. Supercapacitors is one of such technologies that can be stand-alone or form hybrids with batteries or solar cells to provide high performance, high power, and low maintenance energy solutions. As material researchers, our goals are to develop advanced electrodes and polymer electrolytes for the next generation solid supercapacitors. This presentation will discuss the recent development at the Flexible Electronics and Energy Lab, University of Toronto. Progresses in biochar carbon and chemical modified carbon electrodes will be introduced. The advances in proton conducting and hydroxide ion conducting, as well as neutral salt solid polymer electrolytes together with their enabled solid supercapacitors devices will be presented. The all-solid supercapacitors utilizing the highly advanced polymer electrolytes with double layer or pseudocapacitive electrodes have demonstrated the highest rate performance and the stability ever being reported.