



**Development and understanding of catalysts for
electrochemical CO₂ conversion**
Dr. Drew Higgins/McMaster University
Thursday, March 10, 2022, 2:30pm
Dupuis Hall, Room 215

For electrochemical energy conversion and storage technologies to become viable component of future sustainable energy infrastructures, the development of catalysts that are active, selective, stable and inexpensive is required. This talk will focus on electrochemical CO₂ conversion into fuels and chemicals that are essential to life as we know it. Particularly, the talk will discuss an exciting class of catalyst materials — atomically dispersed nickel-nitrogen-carbon catalysts (Ni-N-C) catalysts that have active site structures that mimic those of molecular (homogeneous) catalysts but are immobilized within a conductive graphitic support material. Ni-N-C catalysts can provide excellent activity and selectivity for the electrochemical conversion of CO₂ into CO, however elucidating the structures and properties of the catalyst that governs performance has been challenging owing to the heterogeneous structure and chemical species present in the materials. This talk will discuss research efforts on the synthesis and advanced characterization to gain insight into the specific active site structures and properties of Ni-N-C catalysts, as well as highlighting performance capabilities of these materials.