



**Synthetic Redox Active Compounds for
Renewable Energy Storage**
Dr. Marc-Antoni Goulet/Concordia University
Thursday, March 13, 2025, 2:30pm
Dupuis Hall, Room 217

Reducing the overall CO₂ emissions of our energy supply can be achieved by developing inexpensive energy storage to regulate the supply of electricity from intermittent wind and solar power technologies which often fail to align with market demand. Flow batteries are well suited for this grid storage application due to their decoupled energy and power costs. To overcome the limitations and geopolitics of conventional natural resources, researchers have begun to synthesize the energy carriers dissolved in flow battery electrolytes from low cost and widely available chemical precursors. Whether organic molecules or coordination complexes, the performance, cost and stability of these redox active compounds are the key metrics behind the success of this technology. This presentation will provide a brief overview of the history and development of flow battery technology followed by a more detailed account of the current state of the art with particular emphasis on aqueous chemistries. Original results on the electrochemical properties and cycling stability flow battery electrolytes will be presented, while highlighting recent efforts to improve their lifetime.