

Research Project and Supervisory Team

Supervisory Team	<u>Dr. Mengxia Xu</u>
Short Introduction & Description of Research Project	<p>Research Project Title: High Performance Catalysts for CO₂ Electroreduction</p> <p>Global warming caused mainly by CO₂ emissions is a pressing issue of global concern. As one of the technologies to mitigate CO₂ emissions, the electrochemical CO₂ reduction reaction (CO₂RR) offers a promising environmentally benign strategy to utilize CO₂ and convert it into value-added chemicals (e.g., C₂H₄) under ambient conditions (i.e., aqueous solutions) using the intermittent renewable energy such as solar and wind. However, this technology is still in its infancy and continued efforts are needed to boost its performance towards commercialization. Hence, this research project aims to develop high performance Cu-based catalysts for CO₂RR with commercialization potential and gain an in-depth understanding of its reaction mechanisms with the aid of <i>in situ</i> spectroscopy (e.g., FTIR and Raman) and <i>ab initio</i> density function theory (DFT) calculations. The successful implementation of this project will contribute to the mitigation of CO₂ and meanwhile provide an efficient means to the energy storage from intermittent sources.</p>
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