

Faculty Name:

Daniel Esposito

Faculty Email:

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Lab:

Solar Fuels Engineering

Project Title:

Synthesis and characterization of impurity-tolerant encapsulated electrocatalysts

Description:

This project will focus on the development and electrodes for electrochemical energy conversion applications for production of renewable fuels from electricity. High surface area particulate and porous electrodes materials are of interest for enabling high catalyst area for reduced kinetic overpotential losses. This project will be primarily experimental in nature, focusing on modifying synthesis approaches for depositing active catalysts and encapsulating them with ultrathin permeable overlayers that can be used to enhance catalyst durability, increase activity, and improve selectivity by blocking undesirable back reactions and impurities. Research will also involve the use of advanced materials characterization tools, and analysis of the performance of the fabricated electrodes using a variety of electroanalytical tools. The project requires a student with previous coursework and/or research experience in electrochemical technologies.

Location of Research:

On-Site

of hrs/week:

35

Department/Program:

Chemical Engineering

Eligibility:

BS, Third Year, BS, Fourth Year, MS

To apply, please contact:

de2300@columbia.edu