

Taking the next step in electrocatalysis: closing gaps between lab-scale electrochemistry and electrochemical engineering

*Dr. Raul Marquez-Montes
University of Texas at Austin
Department of Chemistry*

Electrocatalytic reactions will play a significant role in developing the clean and sustainable technologies necessary to decarbonize our society. Most work on electrocatalysis focuses on understanding fundamental structure-activity relations of new materials. However, thorough stability testing is essential to improve electrocatalyst design principles and understand transformation/deactivation processes. In this talk, I will summarize my most recent findings regarding electrocatalytic testing, focusing on water electrolysis and sulfite electrooxidation. The *in-situ* transformation of the materials during long-term testing is examined by combining electrochemical methods with advanced characterization. Additionally, custom flow devices are employed to test the performance under more realistic and controlled conditions. These approaches highlight the importance of stability testing in electrocatalysis and serve as a basis for scaling up electrochemical technologies.