New Mexico State University

COE Distinguished Lecture
for the Chemical Engineering Department
Shires Graduate Seminar Series

Decarbonization, Electrification, and Hydrogen Production: An emerging horizon for electrochemistry

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Abstract:
In this talk, I will first provide a techno-economic overview of decarbonization, electrification, and hydrogen production. Then, I will discuss challenges and opportunities for electrochemical systems in reaching net-zero carbon emissions. Three electrochemical systems will be used as examples: (1) electroconversion of CO_2 to fuels, (2) solid oxide fuel cells, and (3) solid-state batteries. In the electrochemical conversion of CO_2 part, I will elucidate the importance of the interfacial chemistry on the activity and selectivity towards the formation of C_2H_4 or other fuels. In solid oxide fuel cells, focus will be on the understanding the origin of the conjugation between activity and durability in electrodes, which still remains obscure. A thermodynamic analysis will be presented to study the durability of batteries.

Biography

Professor Xiao-Dong Zhou is the Stuller Endowed Chair in the Chemical Engineering Department and the Director of the Institute for Materials Research and Innovations at the University of Louisiana at Lafayette. Dr. Zhou received *J. B. Wagner Jr. Young Investigator Award* in 2007 from the Electrochemistry Society (ECS) - High Temperature Materials (HTM) Division. He is the recipient of 2011 US DOD – DARPA Young Faculty Award. He currently serves as the Technical Editor of the Journal of The Electrochemical Society, an Associate Editor of the Journal of the American Ceramic Society, and the International Journal of Ceramic Engineering and Science of the American Ceramic Society. He is a Fellow of the Electrochemical Society.

His research interests span theoretical and experimental studies of materials and interfaces for energy systems, including batteries, fuel cells, and electrolyzers.

Please join us at Jett Hall Room 259 or by Zoom, Friday, November 19, 2021 at 1:30pm

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