NORTHWESTERN UNIVERSITY'S DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING AND MATERIALS RESEARCH SCIENCE AND ENGINEERING CENTER PRESENT:

2022 MSE FUTURE LEADERS SEMINAR SERIES

Regina Garcia

Post-doctoral fellow, Cornell University

Regina García-Méndez is currently a post-doctoral fellow at Cornell University. She completed her B.S. in Chemical Engineering from UVG in Guatemala, a M.S. in Materials Science and Engineering at Michigan State University, and a Ph.D. in Materials Science and Engineering at the University of Michigan under Prof. Jeff Sakamoto in 2020. Her doctoral work focused on correlating structural and interfacial effects of ceramic solid electrolytes with the cycling stability of Li metal in solid-state batteries. Her current work is focused on the materials and interphase design for highly reversible, long-duration, cost-effective Al batteries. She is the recipient of a Cornell Energy Systems Institute post-doctoral fellowship, the SHPE community engagement award, and a Fulbright fellowship. Her research interests revolve around understanding materials behavior through multi-scale characterization to address energy and environmental-related challenges.

Rational Microstructure and Property Design of Electrolytes Toward Better Batteries

Long-term decarbonization of electricity supply and electrification of the energy economy are the most pressing energy challenges of our time. Without decisive action, energy-related emissions of CO2 will more than double by 2050. Thus, low-carbon energy technologies, such as batteries will have a crucial role in changing the current path. The need for advanced batteries that can deliver the energy required to power high-energy mobile and stationary applications with improved safety have accelerated the development of solid-state batteries and alternative chemistries from readily available raw materials. At the core of the research is the structural design of electrolytes and interfaces at the atomic and macro-scale. Therefore, in this talk, I will present different approaches to modifying the structure of solid electrolytes via synthesis and processing to achieve stable electrochemical cycling. Furthermore, I will show that a coupled multi-scale, in-situ, and in-operando characterization approach provides a mechanistic understanding of chemical, electrical and mechanical phenomena at relevant length scales and temporal resolution for future battery development.

Thursday, April 28 • 10 AM CDT • Zoom Link

Meeting ID: 958 6172 3631 • Password: mse_FLS

Questions? Contact Elena.Lindstrom@northwestern.edu

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