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Battery Safety Science Symposium

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Session I

Recent Advances: Safety Perspective

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Battery Safety Physics and Analytics at Scales

Widespread adoption of electric vehicles is predicated upon safe operation of lithium-ion batteries under operational extremes including extreme fast charge and untoward abuse scenarios that may lead to thermal runaway catastrophes. In this regard, it is imperative to understand the implications of underlying thermo-electrochemical interactions at hierarchy of scales in the resulting thermal safety consequences. This talk will center on thermal safety analytics which includes mechanism-driven modeling in synergy with experimental data for thermal stability signatures.

About the speaker

Dr. Partha P. Mukherjee is a Professor of Mechanical Engineering at Purdue University. Before moving to Purdue as an Associate Professor in 2017, he was an Assistant Professor and Morris E. Foster Faculty Fellow of Mechanical Engineering at Texas A&M University (TAMU). Prior to starting his academic career at TAMU in 2012, he worked for four years at the U.S. Department of Energy Labs, a staff scientist (2009-2011) at Oak Ridge National Laboratory, and a Director's research fellow (2008-2009) at Los Alamos National Laboratory. He received his Ph.D. in Mechanical Engineering from the Pennsylvania State University in 2007. Prior to PhD studies, he worked as an engineer for four years at Fluent India Pvt. Ltd, a fully-owned subsidiary of Fluent Inc., currently Ansys Inc. He received the Scialog Fellow recognition for advanced energy storage, College of Engineering Faculty Excellence award for Early Career Research and University Faculty Scholar award from Purdue University, TMS Young Leaders award, emerging investigator distinction from the Institute of Physics, invited lectureship at the International Center for Theoretical Physics (Trieste, Italy), to name a few. His research interests are focused on mesoscale physics and stochastics of transport, chemistry, and microstructure interactions, including a broad emphasis in energy storage and conversion.

