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- working on small scales

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Keynote Speaker of Session 01

LITHIUM ION BATTERIES

Dr. Wei Lu（吕炜）is Professor of the Mechanical Engineering Department at the University of Michigan (UM) and Director of the research center: GM/UM Advanced Battery Coalition for Drivetrains. He earned his Ph.D. from Princeton University in 2001 and joined the faculty of UM in the same year.

Dr. Lu uses multi-scale and multi-physics modeling and experimental approaches to address emerging challenges in energy and nanomechanics across multiple scales. Examples include mechanical electrochemical processes in Li-ion battery systems, self-assembled nanostructures and their applications in materials, mechanics, and energy systems, morphological evolution and properties of nano/micro scale structures. His research has led to an integrated analysis of the complex Li-ion battery fading process. His studies have revealed the collective actions of multiple fading mechanisms and generated a realistic 3-D mechanical, thermal and electrochemical framework for predicting and optimizing battery performance, which is critical to electrical vehicles. Dr. Lu has over 100 publications in top peer-reviewed scientific journals and gave over 100 presentations and invited talks in international conferences, universities and national labs. He also has plenty of publications in conference proceedings, encyclopedias and book chapters.

Dr. Lu is a Fellow of the American Society of Mechanical Engineers. Among his many honors include the Gustus L Larson Memorial Award by the American Society of Mechanical Engineers; the UM's Faculty Recognition Award, Department's Achievement Award, Robert M. Caddell Memorial Research Achievement Award; the National Science Foundation's CAREER Award; the Robert J. McGrattan Award by the American Society of Mechanical Engineers; the U.S. Air Force Summer Faculty fellowships. He was also invited to the National Academies' Keck Futures Initiative Conference multiple times.