

Battery Storage Systems for Mobility and Electrification

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Abstract:

This talk will focus on the energy storage systems designated for mobility and electrification in relation with the R&D performed at the US. Department of Energy Battery Manufacturing Facility (BMF) at Oak Ridge National Laboratory (ORNL). BMF receives funds from the US. Government and Industry to sponsor innovations in advanced battery materials research, battery manufacturing science and cell prototyping that enable low-cost, high-power and high-energy, safer and long-life cells capable of fast charging. Being one of the largest open access battery R&D facilities in the United States, the facility houses equipment and instrumentation necessary to research every step in the battery manufacturing process with an emphasis on advanced materials, electrode formulation chemistry, innovative coating technology, and high-performance electrode architectures. Resources include three coating lines, a dry room, and a cell assembly line for construction of large-format pouch cells. Collaborations across ORNL strengthen manufacturing science with state-of-the-art materials characterization including advanced microscopy and neutron sciences. BMF research bridges the gap between fundamental materials discovery and requirements for automotive cells with a primary emphasis on integrating next-generation active materials and novel processing methods.

Biography:

Dr. Ilias Belharouak is a Distinguished Scientist and the Group Leader of the Battery Roll-to-Roll Manufacturing in the Energy and Transportation Science Division at Oak Ridge National Laboratory (ORNL), in Tennessee. Dr. Ilias also serves as a Professor of the Bredesen Center for Interdisciplinary Research and Graduate Education at the University of Tennessee Knoxville. At ORNL, Dr. Ilias leads and oversees multidisciplinary R&D programs sponsored by the US. Department of Energy on works relating to battery energy storage, fuel cells and advanced manufacturing. Before joining ORNL in 2017, Dr. Ilias was the Research Director and Founding Chief Scientist of the Electrochemical Energy Storage Center in Qatar Foundation (QF). Before joining Qatar Foundation in 2013, Dr. Ilias was a Material Scientist and Battery Expert in the Chemical Sciences and Engineering Division at Argonne National Laboratory (ANL), in Illinois, 2001-2013. Dr. Ilias was recognized with several awards including four R&D 100 innovation awards and two U.S. Federal Laboratory Consortium Awards. He published more than 150 peer-reviewed papers, 30 U.S. Patents and Applications and 5 books. He is currently the Editor of the Elsevier's Journal of Power Sources, hold an h-index of 55 and was as invited more than 60-times around the globe. He received a Ph.D. degree (1999) and Master's degree (1996) in Materials Science and Solid-State Chemistry from the Institute for Solid State Chemistry (ICMCB), National Center for Scientific Research, Bordeaux 1 University, France.



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