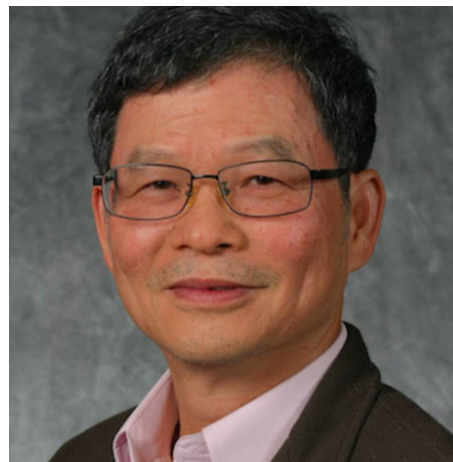


Winter 2024 Joint Colloquium

Materials Department & Materials Research Laboratory

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Technology
Sustainable Electrochemical Energy
Development Center (SEED)
Taiwan



Friday, February 2, 2024
11:00 am | ESB 1001

Recent Progress of Anode-free Lithium Metal Batteries

Anode free lithium metal battery (AFLMB) is one of the alternate choices and new system for high energy density storage system because it has no active anode material initially. In addition, the fabrication of AFLMB is simple, low-cost, safe since Li metal or other active anode material is not directly used as an anode. The energy density of AFLMB will be significantly larger, by more than ~50% relative to conventional LIBs. Since the Li amount is limited and electrolyte decomposition, consuming Li during the SEI formation, the capacity can fade quickly relative to LMB. However, AFLMB is not only provide the highest energy density but the best system to understand the interfacial phenomena and the effectiveness of the approaches to improve cell performances of LMBs. In this talk, I will present our recent progress in anode-free lithium metal batteries.

Bio

Professor Bing Joe Hwang received his PhD degree in chemical engineering from the National Cheng Kung University in 1987. He is currently the Chair Professor in the Department of Chemical Engineering and the director of Sustainable Electrochemical Development Center (SEED) at National Taiwan University of Science and Technology (Taiwan Tech). His research has spanned various subjects, from electrochemistry to spectroscopy, interfacial phenomena, materials science, and chemistry. He has established both experimental and computational strategies for the development of new materials and for understanding interfacial phenomena. He shows excellence in research activities with 500 peer-reviewed publications, 50 patents, 37000 times citations, and an H-index of 93. He is also an Adjunct Researcher of National Synchrotron Radiation Research Center, and the Associate Editor of the journal ACS Sustainable Chemistry & Engineering. Professor Hwang has received many recognitions, including Clarivate Analytics Highly-cited Researcher (2022 and 2023), Fellow of Materials Research Society-Taiwan (2023), ISE-Elsevier Prize for Experimental Electrochemistry (2022); Humboldt Research Award (2020), Lifetime National Chair Professorship (2020), Fellow of the Royal Society of Chemistry (FRSC) (2018), Academician of Asian Pacific Academy of Materials (APAM) in 2017, Fellow of International Society of Electrochemistry (FISE) in 2014, Academician of the Academy of Sciences of Lisbon in 2011, and many more. In addition, Professor Hwang served in important positions of multiply research and academic societies, including the Founder and President of The Electrochemical Society of Taiwan, Coordinator of the Program of Chemical Engineering in MOST, President of the Chinese Association of Chemical Sensors and Technology in Taiwan, and President of The Society of Hydrogen and Fuel Cells of Taiwan.

Hosted by Anton van der Ven