Abstract

High energy long life rechargeable battery is considered as key enabling technology for deep de-carbonization. Energy storage in the electrochemical form is attractive because of its high efficiency and fast response time. Besides the technological importance, electrochemical devices also provide a unique platform for fundamental and applied materials research since ion movement is often accompanied by inherent complex phenomena related to phase changes, electronic structure changes and defect generation.

In this seminar, I will discuss a few new perspectives for energy storage materials including new fast ion conductors, new intercalation compounds and their interfacial engineering. With recent advances in characterization tools and computational methods, we are able to explore ionic mobility, charge transfer and phase transformations in electrode materials in-operando, and map out the structure-properties relations in functional materials for next generation energy storage and conversion. Moreover, I will discuss a few future priority research directions for electrochemical energy storage.

Biography

Dr Y. Shirley Meng received her PhD in Advance Materials for Micro & Nano Systems from the Singapore-MIT Alliance in 2005, after which she worked as a postdoc Research Fellow and became a Research Scientist at MIT. She currently holds the Zable Chair Professor in Energy Technologies and Professor in Materials Science & Nano Engineering at University of California San Diego (UCSD). Dr Meng is the Principal Investigator of the research group - Laboratory for Energy Storage and Conversion (LESC). She is the founding Director of Sustainable Power and Energy Center (SPEC), from 2005 to 2020. She is named as the Inaugural Director of Institute for Materials Discovery and Design (IMDD) in 2020.

Dr Meng received several prestigious awards, including the Faraday Medal of Royal Chemistry Society in 2020, International Battery Association Battery IBA Research Award in 2019, Blavatnik Awards for Young Scientists Finalist in 2018, American Chemical Society ACS Applied Materials & Interfaces Young Investigator Award in 2018, C.W. Tobias Young Investigator Award of the Electrochemical Society in 2016 and NSF CAREER Award in 2011. Dr Meng is an elected Fellow of Electrochemical Society. She has authored and co-authored more than 200 peer-reviewed journal articles, two book chapters and four issued patents. She is the Editor-in-Chief for Materials Research Society MRS Energy & Sustainability.

Research Website: LESC [http://smeng.ucsd.edu/](http://smeng.ucsd.edu/)

Thursday, 7 Jan 2021 ǁ Time: 10:00 am – 11:00 am ǁ (Singapore)
Wednesday, 6 Jan 2021 ǁ Time: 6:00 pm – 7:00 pm ǁ (California)
Live streaming via Zoom Meeting: [https://ntu-sg.zoom.us/j/96111252262](https://ntu-sg.zoom.us/j/96111252262)
Meeting ID: 961 1125 2262  Passcode: 070121
Hosted by: Associate Professor Jason Xu Zhichuan