

School of Engineering Distinguished Workshop Electrochemical Energy Storage Technologies

Date 17 – 18 June 2024
Venue Padma and Hari Harilela Lecture Theater (LT-C)
The Hong Kong University of Science and Technology

Day 1

17 June 2024, Monday

IAS Distinguished Lecture

15:00 – 16:30 **Future Society Engendered by Lithium Ion Battery**
Dr. Akira Yoshino
Honorary Fellow, Asahi Kasei Corporation
Nobel Laureate in Chemistry 2019

Day 2

18 June 2024, Tuesday

Electrochemical Energy Storage Technologies

14:00 – 14:05 **Welcome**
Prof. Hong Kam Lo
Dean of Engineering, HKUST

14:05 – 14:10 **Group Photo**

14:10 – 14:40 **Room Temperature Solid-State Batteries by Tailored Materials, Structures, and Interfaces - from Li to Na**
Prof. Eric D Wachsman
University of Maryland, USA

14:40 – 15:10 **Tailoring Sulfide and Halide Solid Electrolytes for Practical All-Solid-State Batteries**
Prof. Yoon Seok Jung
Yonsei University, South Korea

15:10 – 15:40 **Advanced Electrolyte Designs for Lithium Metal Batteries**
Prof. Jang Wook Choi
Seoul National University, South Korea

15:40 – 16:00 **Tea Break**

16:00 – 16:30 **Halide-Based Solid State Electrolytes: From Lithium to Sodium**
Prof. Andy Xueliang Sun
University of Western Ontario, Canada

16:30 – 17:00 **Key Technologies for Intelligent Batteries**
Prof. Yunhui Huang
Huazhong University of Science and Technology, China

17:00 – 17:30 **Applying Interfacial Engineering to Lithium Batteries**
Prof. Stacey Bent
Stanford University, USA

17:30 – 17:35 **Closing**



Eric D Wachsman

**Director of the Maryland Energy Innovation Institute
University of Maryland, USA**

Prof. Eric D Wachsman, is the Director of the Maryland Energy Innovation Institute, the William L. Creutz Centennial Chair in Energy Research and a Distinguished University Professor with appointments in both the Department of Materials Science and Engineering, and the Department of Chemical Engineering at the University of Maryland. He received his Ph.D. in Materials Science & Engineering from Stanford University, and his B.S. in Chemical Engineering from the University of California at Berkeley.

Dr. Wachsman is Past President of The Electrochemical Society (ECS) and Editor-in-Chief of Ionics. He is a Fellow of ECS, the American Ceramic Society, the National Academy of Inventors, and the World Academy of Ceramics; the recipient of the 2017 Carl Wagner Award from ECS; the 2014 Sir William Grove Award from the International Association for Hydrogen Energy; the 2014 Pfeil Award from The Institute of Materials, Minerals, and Mining; the Outstanding Invention of 2013 award from the University of Maryland Office of Technology Licensing; the 2012 Fuel Cell Seminar & Exposition Award; and the 2012 HTM Outstanding Achievement Award from ECS.

His research is focused on solid ion-conducting materials and electrocatalysts, and includes the development of solid-state batteries, solid oxide fuel cells, ion-transport membrane reactors, and solid-state gas sensors, using advanced ion conducting materials. He has more than 280 scientific publications and 40 patents/patent applications on ionic and electronic transport in materials, and their catalytic properties, and device performance, and to date four companies have been founded based on these technologies.



Yoon Seok Jung

Professor

**Department of Chemical and Biomolecular Engineering
Yonsei University, South Korea**

Prof. Yoon Seok Jung is a Professor of Department of Chemical and Biomolecular Engineering at Yonsei University, South Korea. He received his B.S. and Ph.D. degrees (2008) in Chemical Engineering from Seoul National University, having trained as an electrochemist and materials scientist. He conducted postdoctoral research at University of Colorado Boulder, the University of Texas at Austin, and NREL (2008-2011). He was an Associate Professor at UNIST (2011–2018) and Hanyang University (2018-2020). His research interests cover solid electrolytes and electrodes for rechargeable batteries. He published over 100 papers, about half of which are dedicated to solid-state batteries. He served as a Guest Editor of Energy Storage Materials and is also an Editorial Board Member of Batteries & Supercaps and Scientific Reports. He has been awarded as a Yonsei Underwood Distinguished Professor.



Jang Wook Choi

Professor

Seoul National University, Korea

Prof. Jang Wook Choi is currently a Professor in the School of Chemical and Biological Engineering at Seoul National University, Korea. His research programs span material and cell design in diverse lithium-ion and post-lithium-ion batteries, along with health diagnosis of battery cell.

He received his B.S degree from Seoul National University in 2002 and Ph.D. from California Institute of Technology in 2007 in the area of molecular electronics and electrochemistry. He conducted postdoctoral research at Stanford University in the field of lithium-ion batteries from 2008 to 2010. He has initiated his independent research at Korea Advanced Institute of Science and Technology (KAIST) from 2010, after which he relocated to Seoul National University in 2017. He is currently the Director of Hyundai Motor Group-Seoul National University (HMG-SNU) Joint Battery Research Center (JBRC).



Xueliang (Andy) Sun

Professor

University of Western Ontario, Canada

Prof. Xueliang (Andy) Sun is currently a Chair Professor at Eastern Institute of Technology (tentative), Ningbo, China, and a former Distinguished University Professor at the University of Western Ontario, Canada. Dr. Sun is a Foreign Member of the Chinese Academy of Engineering, a Fellow of the Royal Society of Canada and a Fellow of Canadian Academy of Engineering. His research interests are focused on all-solid-state batteries and fuel cells. He is an Editor-in-Chief of "Electrochemical Energy Review" (IF=31) under Spring-Nature. Dr. Sun received his Ph.D degree in Materials Chemistry at the University of Manchester, UK, in 1999. Dr. Sun is a Vice Chairman of the International Academy of Electrochemical Energy Science (IAOEES).

Dr. Sun's research is focused on advanced materials for energy conversion and storage including Li batteries and fuel cells. Dr. Sun is an author and co-author of over 650 refereed-journals (e.g. Nature Energy, Nature Communications, Advanced Materials, J. Am. Chem. Soc., Angew. Chem., Nano Letter, Energy & Environmental Science, Chemical Reviews and Chemical Society Reviews) with citations of over 70,000 times and H-index of 139. Dr. Sun was named as one of "Highly Cited Researchers". He edited 4 books and published 20 book chapters as well as filed 30 patents. He has given more than 200 plenary/key-note/invited talks in international conferences, symposia and workshops. Dr. Sun received various awards such as Professional Achievement Awards from Cross-cultural Professionals Association of Canada (CPAC, 2016), Award for Research Excellence in Materials Chemistry Winner from Canada Chemistry Society (2018), Award of Merit of the Federation of Chinese Canadian Professionals (2018), Western Hellmuth Prizes (The highest Research Achievement Award in the University, 2019) and IBA Battery Technology Award (2021).



Yunhui Huang

Professor

Huazhong University of Science and Technology, China

Prof. Yunhui Huang, chair professor of materials science in Huazhong University of Science and Technology, deputy director of the academic committee of the university, Changjiang scholar, the winner of the National Science Fund for distinguished young scholars, and the standing director of the China Materials Research Society. He received his bachelor, master and doctoral degrees from Peking University with supervision of Prof. Guangxian Xu (the winner of the 2008 National Supreme Science and Technology Award). From 2002 to 2008, he worked as JSPS researcher at Tokyo Institute of Technology and a postdoctoral researcher at the University of Texas at Austin with Prof. John B. Goodenough (the winner of 2019 Nobel Prize in Chemistry). He has been engaged in the research of new energy materials and devices such as lithium-ion batteries and next-generation rechargeable batteries. He has published more than 600 papers in academic journals such as Science and Joule with total citation of more than 64,000 times and H-factor 128, and has been selected as a highly cited scientist in the world and a highly cited scholar in China for many consecutive years. He owns more than 100 authorized patents. His group has developed some important technologies such as lithium iron phosphate composite cathode materials, battery fast charging, and battery ultrasound scanning imaging, which have been widely used. He has won the second prize of National Natural Science Award and the first prizes of provincial and ministerial natural science awards.



Stacey Bent

**Jagdeep and Roshni Singh Professor
Stanford University, USA**

Prof. Stacey F. Bent is the Jagdeep and Roshni Singh Professor at Stanford University, where she is Professor of Chemical Engineering, Professor of Energy Science and Engineering, and Professor, by courtesy, of Chemistry, of Materials Science and Engineering, and of Electrical Engineering. Bent obtained her B.S. degree in chemical engineering from UC Berkeley and her Ph.D. degree in chemistry from Stanford, and she was a postdoctoral fellow at AT&T Bell Laboratories. Bent's research interests are in the understanding of surface chemistry and materials synthesis and the application of this knowledge to a variety of problems in sustainable energy, semiconductor processing, and nanotechnology. Bent was elected to the U.S. National Academy of Engineering in 2020. She is a Fellow of the American Chemical Society (ACS) and the American Vacuum Society (AVS).