MIT Industrial Liaison Program Faculty Knowledgebase Report

2020 MIT ILP Regional Webinar Series #1

June 11, 2020 9:00 am - 10:00 am

9:00am - 10:00am

New Opportunities in Li-ion Batteries
Ju Li

Battelle Energy Alliance Professor, MIT Department of Nuclear Science & Engineering
Professor, MIT Department of Materials Science and Engineering

Ju Li

Battelle Energy Alliance Professor, MIT Department of Nuclear Science & Engineering
Professor, MIT Department of Materials Science and Engineering

Ju Li is the Tokyo Electric Power Company Professor in Nuclear Engineering and a Professor at the MIT Department of Materials Science and Engineering. Prof. Li's group investigates the mechanical, electrochemical, and transport behaviors of materials, as well as novel means of energy storage and conversion. His research has led to advances in materials with applications in nuclear energy, batteries, and electrolyzers—and near- and long-term implications for decarbonizing the planet. His group also works on various aspects of computing, from the development of the first universal neural network interatomic potential to energy-efficient neuromorphic computing hardware.

Li is a recipient of the 2005 Presidential Early Career Award for Scientists and Engineers, the 2006 Materials Research Society Outstanding Young Investigator Award, and the TR35 award from Technological Review. He was elected Fellow of the American Physical Society in 2014 and a Fellow of the Materials Research Society in 2017. Li is the chief organizer of the yearly MIT A+B Applied Energy Symposia that aims to develop practical solutions to global climate change with "A-Action before 2040" and "B-Beyond 2040" technologies.

View full bio

I will introduce new developments in hybrid anion- and cation-redox (HACR) cathodes [1,2], high Coulombic efficiency liquid electrolytes [3,4], and metallic foil anodes [5,6]. Efforts connecting to real engineering challenges (prelithiation techniques, electrode compressed density, lean electrolyte, and full cell design) are discussed, and issues related to battery management system, safety and recycling for grid-scale electrochemical energy storage will be discussed.