

MIT Industrial Liaison Program Faculty Knowledgebase Report

2020 MIT ILP Regional Webinar Series #1

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

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New Opportunities in Li-ion Batteries

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Professor of Materials Science and Engineering

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Ju Li has held faculty positions at the Ohio State University and University of Pennsylvania, and is presently a chaired professor at MIT. His [group](#) investigates the mechanical, electrochemical, and transport behaviors of materials, as well as novel means of energy storage and conversion. 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. Thomson Reuters/Clarivate included Li in its Highly Cited Researchers list in 2014/2018 in Materials Science category. In 2016, he co-founded one of the MIT Energy Initiative (MITEI) Low-Carbon Energy Centers, the Center for Materials in Energy and Extreme Environments (CME).

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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.