

MATERIALS SCIENCE AND ENGINEERING (MS&E) SEMINAR SERIES

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Registration is required

Novel approaches for advancing energy storage and fuel cells

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Abstract: There has been increasing interest in using new nano-structured materials for advanced energy storage and conversion devices, particularly for increasing the energy density, power density and cycle life. In this presentation, we will report our recent progresses of using novel approaches and nano-structured materials for advancing electrochemical systems. The presentation will include: 1) development of high energy density lithium-ion capacitors using pre-lithiated anodes; 2) development of internal hybrid lithium-ion battery and lithium-ion capacitor energy storage cells; 3) demonstration of a new structure of lithium-air flow battery which consisted ordinary lithium-air battery and an aqueous electrolyte recycling system; and 4) explored and demonstrated a novel nano-engineered electrode technology to meet and exceed the DOE's targets for platinum group metal utilization and electrode durability for membrane electrode assemblies in fuel cells.



Dr. Jim P. Zheng is Empire Innovation Professor at the Department of Electrical Engineering of State University of New York at Buffalo. He was Sprint Eminent Scholar Chair Professor at the Department of Electrical and Computer Engineering of Florida State University. He is the recipient of National Academy of Inventors Fellow, National Research Council Fellow, Army Research & Development Achievement Award, NASA Faculty Research Award, and Progress Energy Professional Development Award. He has published more than 160 articles in scholarly journals, and 140 papers in conference proceedings in the fields of energy storage, fuel cells, nano-sensors, photonics, and thin film growth, and been awarded 21 patents, and 5 patents have been licensed by private companies.

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