

THE MATERIALS SCIENCE AND ENGINEERING DEPARTMENT COLLOQUIUM SERIES PRESENTS:

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Nanomaterials Design for Energy Storage and Catalysis

Nanomaterials and interfacial design affords a powerful approach in addressing the problems in energy conversion and storage. Here I will present a decade long research in my group in the area of energy storage and catalysis, including 1) materials design for overcoming volume expansion and interfacial instability of high capacity lithium battery materials including Si anodes, Li metal anodes and S cathodes; 2) new battery chemistries (Mn-H₂ aqueous batteries and solid-state molten batteries) for grid scale energy storage with low cost and long cycle life; 3) electrochemical and strain tuning of catalysts for HER, OER and ORR. 4) The development of cryogenic electron microscopy for materials science to unravel long-standing important materials science questions.

Yi Cui is a Professor in the Department of Materials Science and Engineering at Stanford University. He received B.S. in Chemistry in 1998 at the University of Science and Technology of China (USTC), Ph.D in 2002 at Harvard University. After that, he went on to work as a Miller Postdoctoral Fellow at University of California, Berkeley. In 2005 he became an Assistant Professor in the Department of Materials Science and Engineering at Stanford University. In 2010 he was promoted with tenure. His current research is on nanomaterials for energy storage, photovoltaics, topological insulators, biology and environment. He has founded three companies to commercialize technologies from his group: Amprius Inc., 4C Air Inc. and EEnovate Technology Inc.

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