

THE MATERIALS SCIENCE AND ENGINEERING DEPARTMENT COLLOQUIUM SERIES PRESENTS:

Linsey Seitz

Assistant Professor of Chemical and Biological Engineering
Northwestern University

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Developing Enhanced Electrochemical Catalysts using Spectroscopic Insights

Renewable sources, such as wind and sun, supply more than enough energy to meet the increasing global demand and are promising solutions to shift our dependence away from fossil fuels as long as challenges with intermittency, scale, and cost effectiveness can be overcome. While recent developments have improved capture efficiencies for these sources, effective processes to convert and store this energy are needed. Chemical storage of energy using optimized catalytic reactions can produce high energy density fuels and commodity chemicals while allowing for spatiotemporal decoupling of the energy production and consumption processes. This talk will cover some recent work pursuing fundamental understanding of such catalytic reactions towards production of renewable fuels and chemicals as well as the vision for future activities of the new Seitz Lab at Northwestern. This work includes studies of controlled catalyst surfaces with an emphasis on determining intrinsic catalyst activity coupled with insights from advanced characterization techniques, such as x-ray absorption and x-ray emission spectroscopy, which are invaluable for investigating electronic, chemical, and geometric structure of materials.

Linsey Seitz received her B.S. (2010) in Chemical Engineering from Michigan State University supported with a full ride from the Alumni Distinguished Scholarship. Linsey received her M.S. (2013) and Ph.D. (2015) in Chemical Engineering from Stanford University under the guidance of Professor Thomas Jaramillo. During her graduate studies, Linsey was a National Science Foundation Graduate Research Fellow and a Stanford DARE Fellow; the latter is a fellowship program for advanced doctoral students who want to pursue academic careers and whose presence will help diversify the professoriate. Her research at the interface of catalysis and spectroscopy has taken her to a number of synchrotron facilities to conduct in situ studies, including the Stanford Synchrotron Radiation Lightsource in Menlo Park, CA, the Advanced Light Source in Berkeley, CA, and the KARA Synchrotron Radiation Source in Karlsruhe, Germany. In September 2018, Linsey joined Northwestern University's Chemical and Biological Engineering Department as a new Assistant Professor.