ChemCatBio Webinar Series

"An Introduction to Programmable Catalysis for Chemical Energy Technology"

Paul J. Dauenhauer, Professor, University of Minnesota

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2–2:45 p.m. ET
Webinar Registration: https://nrel.zoomgov.com/webinar/register/WN_99GLKPdQSqm7HfNcPieeSA

Catalysis enables new frontiers in energy such as converting biomass to high-value products and storing energy from abundant renewable energy. However, challenges remain when using catalysts that are slow, expensive, or which produce too many side products. To address such challenges, researchers have created a new class of programmable catalytic materials that oscillate in electronic state at the natural frequencies of elementary reactions and catalytic cycles using external perturbation (i.e., a program). By manipulating the charge of the active site for chemistry, it becomes possible to dynamically change the chemical energy landscape, leading to faster and more controllable reactions. Surface electronic oscillations in devices such as a "catalytic condenser" can accelerate reactions at resonance conditions leading to thousand-fold rate enhancement, even beyond the Sabatier catalytic rate limit.

In this Chemical Catalysis for Bioenergy Consortium webinar, Paul Dauenhauer—a University of Minnesota Distinguished McKnight University Professor, MacArthur Fellow, and director of the Center for Programmable Energy Catalysis, a U.S. Department of Energy, Energy Frontier Research Center—will introduce concepts of programmable chemistry. He will also present experimental and computational results, the design of experimental catalytic devices, and the principles associated with this emerging field of chemistry.

For more information, please visit https://www.chemcatbio.org/home or email Contact@ChemCatBio.org.
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