ChemE MIT Chemical Engineering

Seminar Series
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Characterizing Dynamic Materials and Systems for Sustainable Electrocatalytic Technologies

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66-110

Electrochemical processes provide a unique set of parameters to optimize catalyst material and reactor performance, while enabling operation at atmospheric temperature and pressure, producing few pollutants, and providing a mechanism for storage and conversion of vital renewable electricity sources. However, these unique reaction environments also commonly induce complex rearrangement of the catalyst electronic and geometric structures, such that the operational catalyst active sites do not resemble the pristine synthesized materials. The Seitz Lab uses controlled material syntheses and advanced spectroscopy techniques to monitor dynamic behavior of catalysts in response to electrocatalytic reaction conditions. With this work, the Seitz lab aims to exploit electrochemical processes and reaction environments to understand and harness catalyst material dynamics to achieve enhanced activity, selectivity, and stability for sustainable production of fuels and chemicals.

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