

UNIVERSITY OF RHODE ISLAND
Department of Chemistry

SEMINAR

Room 234 Pastore Hall
3:00 p.m, Monday, Jan. 26, 2015

Prof. Andrew Peterson

School of Engineering
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Providence, RI

***“Engineering Surface Reactions for the
Design of Energy Technologies”***

HOST

Brett Lucht
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Engineering Surface Reactions for the Design of Energy Technologies

Andrew Peterson
School of Engineering
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Abstract

Many new and important technologies for the advancement of the energy sector -- such as fuel cells, batteries, and solar fuels --- at their core involve chemical reactions at surfaces. In this talk, I will describe how we combine quantum mechanics-based calculations with laboratory experimentation in order to engineer such interactions at the atomic scale. In particular, we will focus on the understanding and development of active site expression in the context of the electrochemical reduction of carbon dioxide to produce fuels (e.g., solar fuels), in which we use electronic structure calculations to identify active sites and precise synthetic methods to express them. Also discussed will be key reactions at battery electrodes that lead to the development of the solid-electrolyte interphase, which can be understood in the context of methods developed in the electrocatalysis community.