

UNIVERSITY OF RHODE ISLAND
Department of Chemistry

SEMINAR

Room 234 Pastore Hall
3:00 p.m, Monday, April 20, 2015

Prof. Ronald Grimm

Department of Chemistry & Biochemistry
Worcester Polytechnic Institute
Worcester, MA

**“Methyl-terminated silicon microwire arrays
for solar fuels applications:
Surface structure, stability, and
performance”**

HOST

Jason Dwyer
Department of Chemistry
401-874-4648

Abstract

Methyl-terminated silicon microwire arrays for solar fuels applications: Surface structure, stability, and performance

Prof. Ronald Grimm

*Department of Chemistry & Biochemistry
Worcester Polytechnic Institute
Worcester, MA*

Silicon microwire arrays for solar energy applications are grown perpendicular to the Si(111) leading to questions regarding the stability and density of defect states. Covalent attachment strategies exist for functionalizing Si(111) while retaining high electronic quality while minimizing defects and oxidation. Herein, we apply the covalent functionalization strategies for Si(111) both to silicon microwire arrays and to model surfaces and characterize the surface science and photoelectrochemical properties of these surfaces. We find the formation of stable, sub-monolayer coverages of silicon oxide that interestingly does not degrade the solar energy conversion performance.