Materials Science & Engineering Seminar Series

Carnegie Mellon University
Materials Science & Engineering

presents

Anion-based Approaches to Engineering Functionality in Perovskite Oxide Heterostructures

Dr. Steven May
Associate Professor, Materials Science and Engineering
Drexel University

ABSTRACT:

Scientific interest in ABO_3 perovskite oxides remains intense due to the wide range of physical behavior present in these materials. The ability to control the position, occupation, and composition of the anion site has recently emerged as a new route to tune properties in epitaxial perovskites. This talk will focus on recent and ongoing efforts aimed at developing anion-based approaches to tailor electronic, optical and magnetic properties in oxide thin films. First, I will discuss how epitaxial heterostructures can be used to alter the positions of oxygen atoms to stabilize non-bulk-like bond angles and lengths, thereby modifying electronic and magnetic behavior in manganite films and superlattices. In the second half of the talk, I will describe efforts focused on controlling the occupation and composition of the anion site, including reversible oxidation/reduction in perovskite ferrite films and topotactic fluorination reactions to realize oxyfluoride films.

BIOGRAPHY:

Steve May is an associate professor of Materials Science and Engineering at Drexel University, having joined the department in 2009. He received a B.S. in Engineering Science and Mechanics from Penn State University and a Ph.D. in Materials Science and Engineering from Northwestern University. Following his doctorate, he was a postdoctoral researcher at Argonne National Laboratory from 2007-2009 in the Materials Science Division. He has received the NSF CAREER award, an ARO Young Investigator Award, the Ross Coffin Purdy Award from the American Ceramic Society, and the Bradley Stoughton Award for Young Teachers from ASM International.

Doherty Hall 2210, 11:30AM
Friday, October 27, 2017