Chemistry Invited Faculty Seminar
Tomorrow (Friday) January 25 at 3:30 PM in HEC 125
Please note the room.

Dr. Lisa McElwee-White
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Host: Cherie Yestrebsky

A Physical Organic Chemist's Approach to Precursors for the Deposition of Inorganic Nanostructures

Abstract

Nanostructured materials can be deposited from organometallic and inorganic precursors by a variety of techniques including chemical vapor deposition (CVD) and focused electron beam induced deposition (FEBID). Precursor choice requires consideration of the reaction conditions and possible decomposition mechanisms for the particular method. Mechanism-based design of precursors for CVD will be presented in case studies for contrast with strategies for design of FEBID precursors. The examples for CVD will be low temperature deposition of tungsten carbonitride (WN_xC_y) and tungsten oxide (WO_x) films and nanoparticles. In contrast, the conditions for FEBID are surface reactions under high electron flux, necessitating different precursor design rules. Strategies for adapting selected CVD precursor types for FEBID and efforts to identify privileged ligand classes and optimal coordination spheres for FEBID precursors will be discussed in the context of studies on Ru, Pt and Au complexes.

Education

1979 B.S., Chemistry, University of Kansas
1983 Ph.D., Chemistry, California Institute of Technology

Professional

2017-present	Chair, Department of Chemistry
2016-present	Affiliate Professor of Chemical Engineering
2015-present	Colonel Allan R. and Margaret G. Crow Professor of Chemistry

1998-2002	Professor and Associate Dean, University of Florida
1997-present	Professor, University of Florida
1993-1997	Associate Professor, University of Florida
1985-1993	Assistant Professor, Stanford University
1983-1985	Postdoctoral Research Affiliate, Stanford University