



Jesse L. Rosenberger Seminar Series  
Center for Energy & Environment  
University of Rochester

Co-sponsored by the Departments of Chemical Engineering and of Chemistry

## **How to be an Alchemist: Development of Nanostructured Early Transition Metal Carbides and Nitrides**

Levi Thompson  
University of Delaware  
Department of Chemical and Biomolecular Engineering

**Friday, April 5, 2019  
10:25 am – 11:25 am  
Goergen 101, Sloan Auditorium**

The addition of carbon and nitrogen to early transition metals like tungsten and vanadium can result in interstitial compounds with properties that are similar to those of platinum group metals (PGMs). For example, in the mid-1970s it was discovered that tungsten carbides can catalyze hydrogenation reactions that previously were only known for PGMs. Since then, early transition metal carbides and nitrides have been investigated for a variety of applications. This talk will describe work in my group to design and synthesize nanostructured early transition metal carbides and nitrides for catalytic and energy storage applications. Our particular focus has been defining the genesis of the materials, unraveling the mechanisms and determining structure-function relationships that will enable the rational design of these materials.

### Biography:

Professor Thompson is the Dean, College of Engineering and Elizabeth Inez Kelley Professor of Chemical Engineering. He earned his B.ChE. from the University of Delaware, and M.S.E. degrees in Chemical Engineering and Nuclear Engineering, and a Ph.D. in Chemical Engineering from the University of Michigan (UM). Professor Thompson recently retired from the UM after serving as Associate Dean for Undergraduate Education from 2001 to 2005, Director of the Hydrogen Energy Technology Laboratory and Director of the Michigan-Louis Stokes Alliance for Minority Participation. His scholarly research focuses on nanostructured materials for catalytic and energy storage applications, and he is co-inventor on more than 10 patents. He is a Fellow of the AIChE and is recipient of awards including a 2006 Michiganian of the Year Award for his research, entrepreneurship, and teaching, National Science Foundation Presidential Young Investigator Award, McBride Distinguished Lectureship, Union Carbide Innovation Recognition Award, and Dow Chemical Good Teaching Award. He is co-founder and founding CEO of T/J Technologies, a developer of nanomaterials for advanced batteries; the company was acquired by A123 Systems in 2006. He also co-founded Inmatech to commercialize low cost, high energy density supercapacitors for automotive and military applications, and is active in the community, having served on the Board of Trustees for the Ann Arbor Area Community Foundation and the African American Endowment Fund.