

**University  
Of  
Utah**

Materials Science  
& Engineering  
122 South Central  
Campus Dr.  
CME 304  
Salt Lake City, UT  
84112-0560

Web site:  
[www.mse.utah.edu](http://www.mse.utah.edu)  
Phone:  
801-581-6863  
Fax:  
801-581-4816

# Seminar

*Materials Science & Engineering*

Presents:

**Dr. Charles Lewinsohn**

**Project Manager, ITM Oxygen, Ceramatec Inc.,  
Salt Lake City, UT**

## **“Mixed-Conducting Oxide Membranes for Advanced Energy Applications”**

Certain oxide materials conduct both electronic and ionic species and are called “mixed-conducting” materials. These materials can be used in a variety of applications ranging from air separation to sensors to fuel processing to electrochemical energy conversion. In this seminar, the principle of operation of mixed-conducting membranes for air-separation and fuel processing will be discussed. Applications in coal-gasification with carbon capture and sequestration, gas-to-liquids fuel processing, and hydrometallurgical refining will be reviewed. Desired materials properties, and methods for tailoring these properties, for both performance and lifetime requirements will be reviewed. Engineering issues related to practical device design will also be described.

**Wednesday December 2, 2009**

**4:10-5:00 p.m.**

**1230 WEB**