

UNH Materials Science Seminar

11:00-12:00, Thursday, March 24, 2005

DeMeritt Hall 209B

University of New Hampshire

Materials Analysis Using Advanced Synchrotron Sources

Professor James E. Krzanowski
Mechanical Engineering Department
and Materials Science Program
University of New Hampshire

Synchrotron radiation sources offer exciting new opportunities for materials analysis and characterization. This seminar will provide an introduction to using synchrotron facilities for conducting x-ray absorption studies. The fundamentals of XAFS will first be reviewed, including measurement methods, data reduction, modeling and interpretation of the data. Examples of XAFS studies from the literature will be presented. We will then examine the basic principles of operation for a synchrotron facility, with a description of the BESSY II facility. This will be followed by a review of the speaker's recent experiences at BESSY II, including the description and operation of the beamline, sample preparation and handling, and an evaluation of the results that were obtained.

James E. Krzanowski is a Professor in the Mechanical Engineering Department and member of the Materials Science Program at the University of New Hampshire. He received a Ph.D. in Materials Science from M.I.T. in 1983, and subsequently worked at the Army Research Laboratory

in Watertown, MA for two years. In 1985, he joined the faculty at UNH, and teaches courses in the areas of materials science, thin films, materials characterization, and electronic properties of materials. He has maintained active research programs in the areas of materials joining, thin films, phase transformations, hard coatings and tribology.