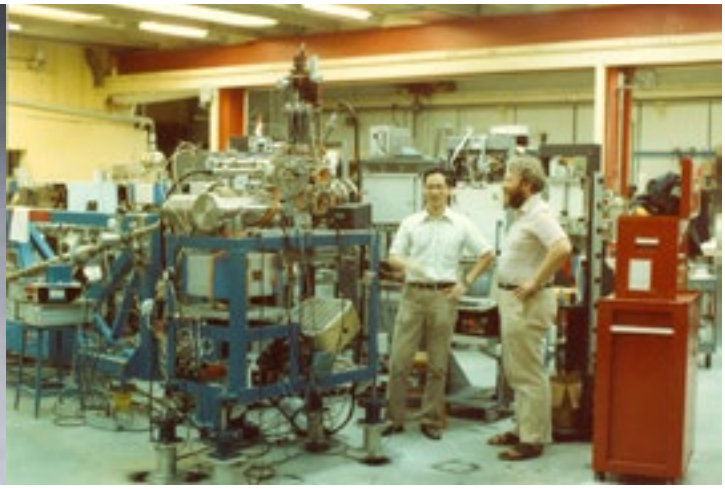
Department of Physics Colloquium



Tai Chang Chiang

University of Illinois Urbana-Champaign

Scientific advances at Tantalus

World's First Dedicated Synchrotron Radiation Facility, and Beyond

Tantalus, a 240 MeV electron storage ring, began operation in 1968 as the world's first dedicated synchrotron radiation user facility. This revolutionary idea of using synchrotron radiation for broad support of science and technology proved a resounding success, and it subsequently led to worldwide development of ever more powerful light sources for R&D. The main areas of research at Tantalus covered atomic and molecular spectroscopy, optical properties of solids, and electron spectroscopy (photoemission). Many of the early experiments were "the first," focusing on source and detector development, technical refinement, and exploration using the newly available tunable VUV and soft x-ray radiation. Major breakthroughs encompassed high-resolution gas phase measurements, band structure determination of solids, core level spectroscopy, surface chemistry, photoelectron diffraction, many-body excitations, etc. In this talk, I will review some key ideas and developments at Tantalus that paved the way for modern research in a variety of novel materials and systems. I will also make a few comments about the successor of Tantalus, the 1 GeV storage ring Aladdin, which began in 1986 and ended operation in 2014, where applications of synchrotron radiation including the IR spectral range covered diverse topics including superconductors, strongly correlated materials, graphenes, ultrasmooth thin films and epitaxial stacks, topological insulators, bio and medical systems, geological samples, historical and artistic artifacts, and extraterrestrial specimens. I will end with a brief perspective on the future of research using light source facilities.

WISCONSIN

Friday, November 13, 2015

3:30 pm | 2241 Chamberlin Hall

Coffee & Cookies at 3:15 pm

Please Post