Opportunities for scientific research at the OPAL research reactor

by Dr Shane Kennedy

Date: 07th August 2007 (Tuesday)
Time: 12:00pm to 1:00pm
Venue: E5-02-32 (Seminar Room)

Abstract

Neutron scattering techniques have evolved over more than ½ century into a powerful set of tools for determination of atomic and molecular structures. Modern neutron beam facilities offer the possibility to determine complex structures over length scales from ∼0.1 nm to ∼1 m. They can also provide information on atomic and molecular dynamics, on magnetic interactions and on the location and behaviour of hydrogen in a wide variety of materials. Thus these facilities provide opportunities for research in a wide range of scientific disciplines, including materials science, condensed matter physics, structural chemistry, engineering, biological and medical sciences.

The OPAL Research Reactor is a 20 MegaWatt pool type reactor using low enriched uranium fuel, and cooled by water. OPAL is a multipurpose neutron factory with modern facilities for neutron beam research, radioisotope production and irradiation services. The neutron beam facility has been designed to compete with the best beam facilities in the world. After six years in design and construction, the reactor and neutron beam facilities are now being commissioned, and we will commence scientific experiments later this year.

He presentation will include an outline of the strengths of neutron scattering and a description of the OPAL research reactor, with particular emphasis on it’s scientific infrastructure. It will also provide an overview of the opportunities for research that will be possible at OPAL, and mechanisms for scientists to access the facilities. The discussion will emphasize how researchers from the Asian region can utilize these exciting new facilities.

Dr. Shane Kennedy

Dr. Shane Kennedy is Technical Director at the Bragg Institute of the Australian Nuclear Science and Technology Organisation (ANSTO) with more than 20 years of research expertise in neutron beam instrumentation, neutron scattering techniques, powder diffraction, polarization analysis and hard-condensed matter physics. At the Bragg Institute he has been in charge of scientific infrastructure development for the neutron beam lines at the new OPAL research reactor with responsibilities for coordinating design, manufacturing, installation and commissioning of neutron-beam facilities and neutron-beam transport systems. After his PhD in Condensed Matter Physics from Monash University, Dr. Kennedy spent three years at the Imperial College of Science and Technology, London, before accepting a position with the Australian Institute of Nuclear Science and Engineering to build and operate neutron beam instruments for powder diffraction and polarization analysis. Since 1993 he is working for ANSTO. In 2005 he has been awarded the Gold Medal Award by The Australian Institute of Nuclear Science and Engineering for outstanding achievement in neutron scattering research and development.

Dr Xue Jun Min

ALL ARE WELCOME!