



**National Science and Technology Council, Committee on Technology
Subcommittee on Nanoscale Science, Engineering and Technology (NSET)**

X-rays and Neutrons

ESSENTIAL TOOLS FOR NANOSCIENCE RESEARCH

National Nanotechnology Initiative



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National Nanotechnology Initiative
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NIST

BASIC ENERGY SCIENCES -- Serving the Present, Shaping the Future

National Nanotechnology Initiative (NNI)

The goals of the NNI are to:

- Maintain a world-class research and development program aimed at realizing the full potential of nanotechnology;
- Facilitate transfer of new technologies into products for economic growth, jobs, and other public benefit;
- Develop educational resources, a skilled workforce, and the supporting infrastructure and tools to advance nanotechnology; and,
- Support responsible development of nanotechnology

Workshop Goals

- Identify important opportunities within nanoscale science that require the use of x-ray or neutron scattering techniques.
- Identify instrumentation and scattering techniques to advance nanoscale science.
- Identify short and long term **R&D needs**, such as development of beam optics, detectors and *in-situ* characterization, theory and modeling, that will be required to support these opportunities, and create a vision for next 10 years.

Projected Outcomes

Big Questions:

1. Which of the outstanding problems in nanoscale synthesis, structure, dynamics and properties can be addressed using X-ray and neutron techniques such as scattering imaging and spectroscopy, and how can these techniques help illuminate the important questions at the nanoscale?
2. How might the current resource base in X-ray and neutron scattering be augmented and used in solving outstanding problems in nanoscale science?

http://www.sns.gov/workshops/nni_05/



Workshop Chairs

Chairs

Ian Anderson (*Oak Ridge National Laboratory, Spallation Neutron Source*)

Linda Horton (*Oak Ridge National Laboratory, Center for Nanophase Materials Sciences*)

Eric Isaacs (*Argonne National Laboratory, Center for Nanoscale Materials, and University of Chicago*)

Mark Ratner (*Northwestern University*)

Organizing Committees

Scientific Advisory & Organizing Committee

Kristin Bennett (U.S. Department of Energy, Office of Basic Energy Sciences)
Al Ekkebus (Oak Ridge National Laboratory, Spallation Neutron Source)
Pat Gallagher (National Institute of Standards and Technology)
Phillip Lippel (National Nanotechnology Coordination Office)
Helen Kerch (U.S. Department of Energy, Office of Basic Energy Sciences)
Celia Merzbacher (Office of Science and Technology Policy)
Guebre Tessema (National Science Foundation, Division of Materials Research)

Ian Anderson (Oak Ridge National Laboratory, Spallation Neutron Source)
Eric Isaacs (Argonne National Laboratory, Center for Nanoscale Materials)
Mark Ratner (Northwestern University)
Linda Horton (Oak Ridge National Laboratory, Center for Nanophase Materials Sciences)

Scholarship Advisory Committee- 63 received, 18 awarded- (JINS/NSF)

Paul Nealey (U. Wisconsin)

Workshop Administration

Linda Cerrone, Peggy Anderson, Karen Talamini, NNCO Office, Vincent Turner