Update:
Joint Institute for Neutron Sciences

Lee Magid

Acting Director, JINS

March 16, 2004

Oak Ridge, TN

Recent JINS Activities

JINS programs will be known nationally and internationally for their role in scientific discoveries, the strength of their scientific ideas, their contributions to development of extraordinary tools, and their education of the next generation.

Major activities from September 2003 through March 2004:

- **JINS role in the proposed Neutron and Education Technology Institute (NETI):**
  an NSF-STC proposal submitted 2/10/04
- **Novel Instrumentation Concepts:**
  a proposed component of JINS as intellectual center
- **JINS and JINS-assisted workshops**
- **Proposal-inciting activities:**
  follow-ups to the workshops and the work of the Structural Biology Taskforce
- **Graduate Fellowships**

SNS Campus

Neutron Education and Technology Institute - NETI

Lead Universities: Indiana U. – John Cameron, PI
PSU – Paul Sokol **UT – Lee Magid**

Other members of the Executive Committee: Baxter, Snow (IU); Robertson (UNL); Burger (Fisk)

Other universities participating: UIUC, Purdue

UT share: $3.75M/5 yrs ($2.8846M req. of NSF; $0.8654M cost-share)

UT participation in developing enabling technologies that have great potential for scientific impact in neutron scattering:

- **Optics and imaging – Egami, Kamyshkov**
- **Instrumentation – Egami**
- **Detectors – Larese**
- **Source and Moderators – Kamyshkov, Handler**

Neutron Education and Technology Institute – NETI, cont.

UT participation in education, diversity and outreach programs:

NETI Assistant Director for Education:
JINS Deputy Director for Education is proposed to take this role

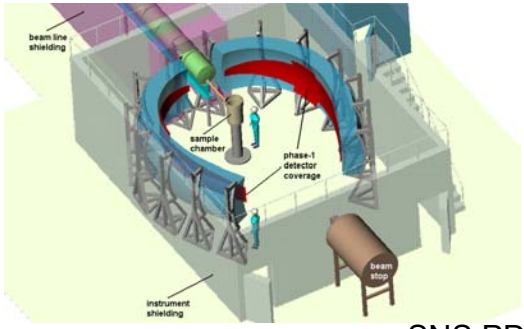
- **Virtual Neutron University (VNU) – Magid, Egami, Larese**
- **Scholars in Residence – Magid, Egami**
- **K-12 programs for Students – Egami, Magid**
  new module for the Governor's School
- **Evaluation – French**
- **Diversity – Egami**

Outreach – Magid
web portal, traveling exhibit, science museum liaison

Novel Instrumentation Concepts (NIC) – A JINS Continuing Program Component

June 15-17, 2003: NIC Planning Group met

- Chair: Mike Rowe, Director of NCNR (Roger Pynn, LANSCE); Ferenc Mezei, HMI and LANSCE; Jack Carpenter, IPNS; Ian Anderson, SNS; Lee Magid, JINS



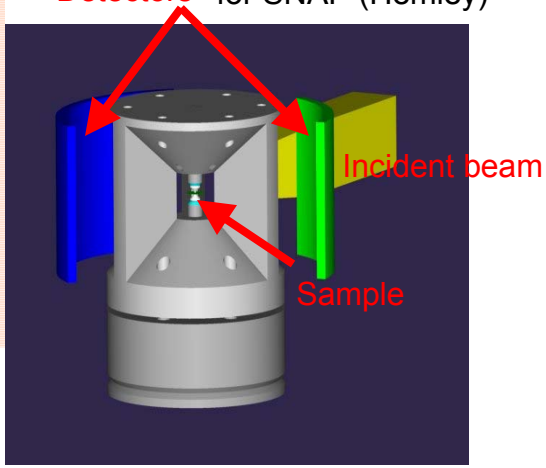
SNS PD

July 30: concept presented to NSF-DMR and DOE-BES; Mar. 2004, full white paper developed and discussions Initiated with funding agencies.

NIC will create an environment where thinking about novel concepts is viewed as an honorable intellectual activity.
Environment includes:

- science drivers/ideas
- simulation packages
- lash-ups/testing
- junior participants – educate/train the next generation
- access to neutrons/technology
- int./ext. sabbaticals for senior members

High pressure cell for SNAP (Hemley)



Funding assumptions: 5-year block grant, $1.7M/yr plus facilities-based concepts testing - $1M/yr (largely in-kind)

Scientific Input from the University Community

JINS

Recent and Upcoming Major JINS Workshops:

Materials S&E, 10/ 2001- 160 attendees

Biological Systems, 4/2002 – 100 attendees

Solid State Chem./Earth Sci., 3/2003 – 105 attendees
associated short courses – 55 attendees

SENSE: Sample Env. for NS Experiments, 9/2003
NSFChemBio: Neutron Scattering in Chemistry and at the Chem./Bio Interface, 9/2003
160 attendees (combined)

Neutrons and Energy for the Future, 6/2004
(satellite of 2nd ACNS conference)

Principal sponsors: ***NSF, UT, ORNL/SNS, ORAU, DOE, UT-B univ., European FP6 - NMI3***

Scientific Input from the University Community, cont.

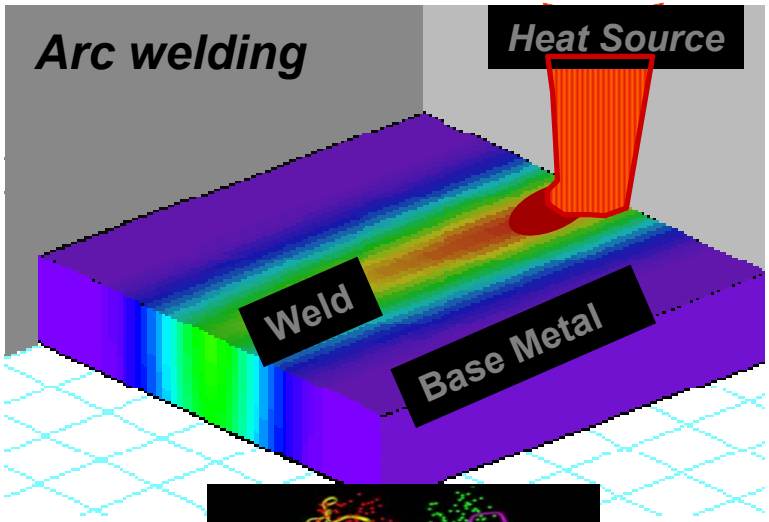
Other workshops/planning activities with JINS participation:

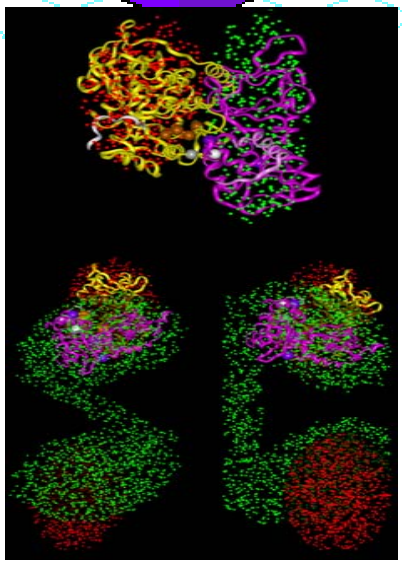
IConUSAS Workshop, 7/2003 – 50 attendees
(incubation of IDT for USANS at SNS)

MANDi Workshop, 10/2003
(refinement of science case for macromol. crystallography)

1st ANSWER Workshop, 11/2003
(mechanical behavior of materials)
JINS partners on their program for workshops, neutron schools, symposia and scientific exch.

PNCMI 2004 – Polarized Neutrons for Condensed Matter Investigations, 6/2004
a satellite of ACNS 2004; overlapping with Neutrons & Energy for the Future



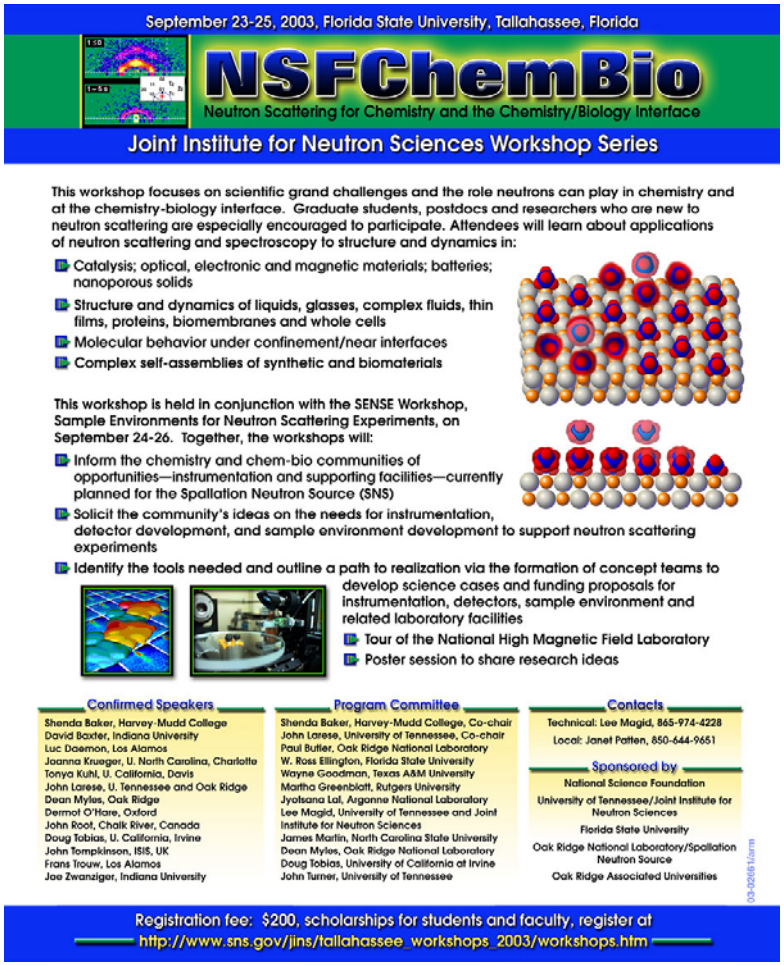


Neutron Scattering for the Chemistry and Chem/Bio Interface

Good mix of current and prospective users

- **came to learn about**
  - Neutrons 101a and b; CNMS; D-lab
  - forefront science using neutrons (cond. phases; thin films/confinement; biology/ polymers; catalysis/vibn'l spectros.)
  - current landscape for SE
  - funding opportunities at NSF, DOE, NIH
- **communicate their needs/priorities**
  - instrumentation; SE; supporting labs; isotopic labeling; education
- **agree to stay engaged as champions**
  - ad hoc source of advice for facilities
  - PI's on proposals

NSF will look to the workshop report for guidance and expects to see proposals. -- Joan Frye, NSF-CHE



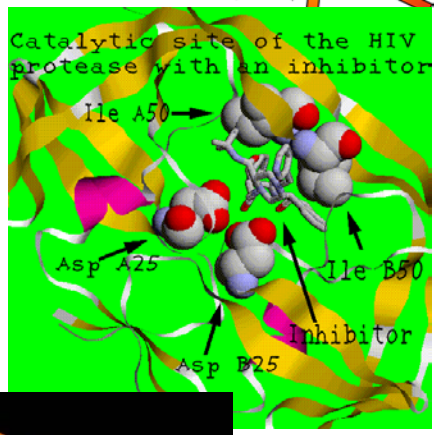
NSFChemBio, cont.

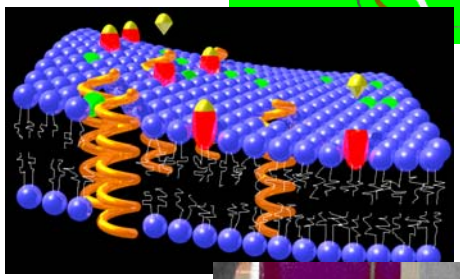
Breakout sessions:

- **support facilities for hard matter**
  J. Larese, J. Turner
- **for soft matter**
  J. Krueger, P. Butler
- **isotopic labeling**
  D. Myles, J. Penfold
- **education**
  S. Baker, J. Martin, J. Zwanziger

(joint with SENSE)

- **SE for polymers/macromol.**
- **"conventional" SE**
- **for biology**





J. Katsaras and coworkers, doped "bicelle" system

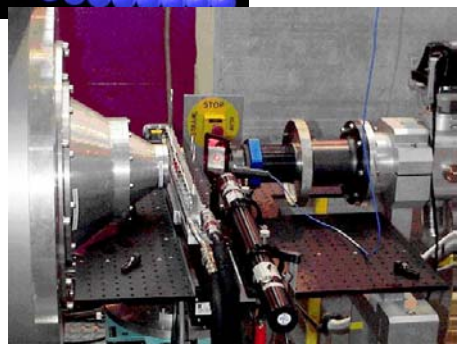
Highest priority for near-term follow-up/proposal(s):

Isotopic labeling facilities – multiple, networked sites

- **brainstorming session to be held Mar. 25 at SNS**
- **draw on existing plans by CSMB (bio. macromolecules) and CNMS (synthetic polymers/polyelectrolytes**
- **explore adding add'l small molecule and materials components**

Mini-symposia organized for the Spring and Fall 2004 national American Chemical Society meetings

J

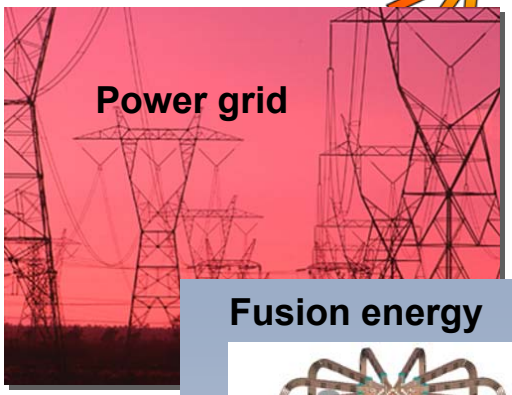


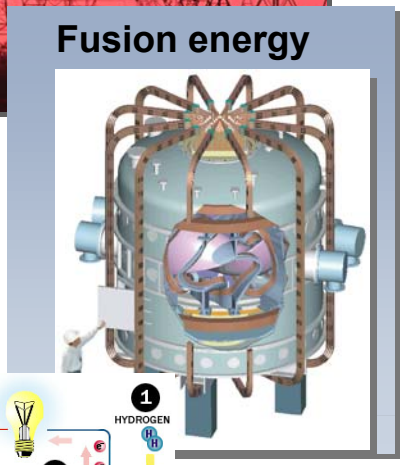
Simultaneous DWS and SANS – Schurtenberger and Kohlbrecher

Neutrons and Energy for the Future

June 4-5, 2004 – Washington, DC – joint with NMI3

- fuel cells, advanced batteries, catalysis
- applications of complex fluids in energy
- hydrogen storage; hydrogen in metals
- materials issues in fusion reactors





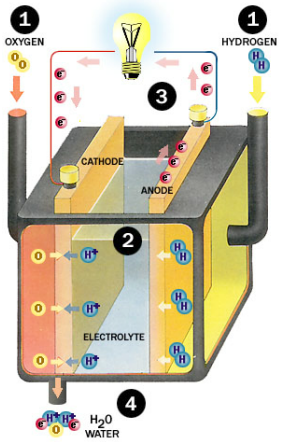
Who should attend:

- current and prospective neutron users from the materials community
- research and technology officers from academia and industry
- policy makers

Presentations will focus on:

- open scientific questions
- facilities' capabilities
- policy/funding perspectives

See www.sns.gov/jins/nmi3/ for details of the agenda and the members of the int'l scientific organizing committee



PEM fuel cell