

# Imaging and Neutron Workshop (IAN 2006) October 23–26, 2006

## Monday, October 23, 2006

7:30—8:30 Registration/Poster Set-up

8:20—8:30 Welcoming Presentation: Al Ekkebus, Oak Ridge National Laboratory

8:30—9:00 Introduction and SNS Overview: Ian Anderson, Oak Ridge National Laboratory

### 9:00 Session MO1: Neutron Imaging Techniques and Challenges I

Chair: E. Lehmann, Paul Scherrer Institut

9:00 3D Imaging Techniques: A Comparison; R. Gaehler, Institut Laue Langevin

9:25 Neutron Scattering as Imaging; R. McGreevy, Rutherford Appleton Laboratory

9:50 The Neutron Imaging Facility ICON as Example for a State-of-the-Art Installation; G. Frei, Paul Scherrer Institut

10:15 Adsorption and Phase Contrast Neutron Imaging (overview); N. Kardjilov, Hahn-Meitner Institut

10:40—11:00 Break

### 11:00 Session MO2: Neutron Imaging Techniques and Challenges II

Chair: B. Schillinger, Technische Universitaet Muenchen

11:00 Fast Neutron Radiography; T. Buecherl, Technische Universitaet Muenchen

11:25 Tomography with Epithermal Neutrons; T. Kamiyama, Hokkaido University

11:50 Thermal Neutron Microscopy; T. Cremer, Adelphi Technology Inc.

12:15 The Important Role of Standardization in Neutron Imaging; J. Brenizer, Pennsylvania State University

12:40—14:00 Posters, Discussion, and Lunch (Technical discussions continue among attendees, speakers, and ORNL staff)

### 2:00 Session MO3: Challenges and Opportunities

Chair: R. McGreevy, Rutherford Appleton Laboratory

14:00 Development of New Neutron Imaging Techniques at ILL; H. Ballhausen, University of Heidelberg

14:25 Phase and Microstructure Imaging at a Pulsed Neutron Source; W. Kockelmann, Rutherford Appleton Laboratory

14:50 Prospects for Neutron Probed Magnetic Resonance Imaging; G. Granroth, Oak Ridge National Laboratory

15:10 Detectors for Imaging at a Pulsed Source; Lowell Crow, Oak Ridge National Laboratory

15:30—15:45 Break

### 3:45 Session MO3: Challenges and Opportunities (cont'd)

Chair: R. McGreevy, Rutherford Appleton Laboratory

15:45 Neutron Phase Contrast Imaging; F. Pfeiffer, Paul Scherrer Institut

16:10 Refraction and USANS–Radiography and Tomography; W. Treimer, University of Applied Sciences (TFH) Berlin, & Hahn-Meitner Institut

16:35 Nuclear Magnetism, Polarized Neutrons, and Imaging; J. K. Zhao, Oak Ridge National Laboratory

16:55 Visualization of Combined Ultra-small and Small-Angle Neutron Scattering Data from Hierarchical Structures; M. Agamalian, Oak Ridge National Laboratory

17:15 Spin Contrasts for Neutron Imaging; H. Lee, Oak Ridge National Laboratory

17:35—19:30 Posters and Dinner Discussion (Technical discussions continue among attendees, speakers, and ORNL staff)

19:30—20:30 Special Guest Speaker

Imaging Artifacts in the Louvre Museum; P. Walter, Centre de Recherche et de Restauration des Musees de France, Le Louvre

## **Tuesday, October 24, 2006**

### **7:30—8:30 Registration/Poster Set-up**

#### **8:30 Session TU1: Cultural Heritage**

**Chair: C. Andreani, Universita degli Studi di Roma Tor Vergata**

- 8:30 Imaging with Epithermal Neutrons for Cultural Heritage Research; G. Gorini, Universita degli Studi di Milano, Bicocca
- 8:55 Thermal Neutron Tomography: Archeological and Geological Investigations; R. Rosa, Ente per le Nuove Tecnologie l'Energia e l'Ambiente, Centro Ricerche Casaccia
- 9:20 The Study of Roman Artifacts by Neutron and X-Ray Imaging Methods in Switzerland; E. Deschler, Universitaet Zuerich

#### **9:45—10:05 Break**

#### **10:05 Session TU2: Medical and Biomedical**

**Chair: D. Myles, Oak Ridge National Laboratory**

- 10:05 Neutron Stimulated Emission Computed Tomography; A. Kapadia, Duke University
- 10:30 Microscopic Boron Imaging in Tissue Sections Using High Resolution Quantitative Autoradiography; K. Riley, Massachusetts Institute of Technology
- 10:55 Multimodal Contrast Agents; K. Watkin, University of Illinois, Urbana
- 11:20 Imaging Biomarkers; M. Vannier, University of Chicago
- 11:45 State of the Art and Limitations in MRI and Optical Microscopy; W. Warren, Duke University

#### **12:10—13:30 Discussion and Lunch** (Technical discussions continue among attendees, speakers, and ORNL staff)

#### **13:30 Session TU3: Engineering**

**Chair: C. Hubbard, Oak Ridge National Laboratory**

- 13:30 Imaging Single Grains in Polycrystalline Materials; J. Root, Canadian Neutron Beam Centre
- 13:55 Complex Multi-Phase Flow Visualizations and Implications to Metal Casting Using Neutrons; D. Penumadu, The University of Tennessee
- 14:20 Stroboscopic and Continuous Neutron Imaging at FRM II; B. Schillinger, Technische Universitaet Muenchen

#### **14:45—15:05 Break**

#### **15:05 Session TU4: Materials Research, Energy, Fuel Cells, and Aerospace**

**Chair: D. Penumadu, The University of Tennessee**

- 15:05 The Experimental Program for Neutron Imaging at PSI; E. Lehmann, Paul Scherrer Institut
- 15:30 Neutron Imaging for Fuel Cell Research; M. Arif, National Institute for Standards and Technology
- 15:55 Optics and Techniques for Diffraction and Contrast Imaging; G. Ice, Oak Ridge National Laboratory

#### **16:20—16:40 Break**

#### **16:40 Session TU5: Homeland Security and Contraband Detection**

**Chair: J. D. White, Oak Ridge National Laboratory**

- 16:40 Prototype Photonuclear Inspection Technology—An Integrated Systems Approach; J. Jones, Idaho National Laboratory
- 17:05 Analysis of Photon Interrogation of Nuclear Materials for Nonproliferation Applications; S. Clarke, Purdue University
- 17:30 Fast Neutron Resonance Radiography for Detection of Explosives and Contraband; R. Lanza, Massachusetts Institute of Technology
- 17:50 Flash Proton Radiography; F. Merrill, Los Alamos National Laboratory

#### **18:20—19:30 Posters and Buffet Dinner** (Technical discussions continue among attendees, speakers, and ORNL staff)

#### **19:30—21:30 Joint Sessions Highlights, Challenges and Opportunities**

## **Wednesday, October 25, 2006**

**7:30—8:30 Registration**

**8:30 Session WE1: Molecular and Cellular Biology**

**Chair: M. Vannier, University of Chicago**

- 8:30 Whole Cell Imaging and Protein Localization in Biology and Biomedical Research; G. McDermott, Univ. of CA-San Francisco
- 8:55 X-ray Imaging at the Advanced Photon Source and Applications in Biology; Q. Shen, Argonne National Laboratory
- 9:20 Prospective Applications of Neutron Holography in Biology; J. Katsaras, Chalk River Laboratories
- 9:45 Isotopic and Nuclear Spin Contrast; H. Stuhrmann, Institut de Biologie Structurale, Grenoble

**10:10—10:30 Break**

**10:30 Session WE2: Physics, Chemistry, and Geology**

**Chair: L. Butler, Louisiana State University**

- 10:30 Advances in Time-Resolved X-ray Detectors for Synchrotron Applications; R. Durst, Bruker AXS Inc.
- 10:55 Highly Sensitive Real-Time Imaging System Using Conventional RI; T. Nakanishi, University of Tokyo
- 11:20 Fingerprinting Marbles by Combining Neutron Diffraction and Imaging; R. Triolo, Universita degli Studi di Palermo

**11:45—12:15 Closing Remarks; K. Herwig; Oak Ridge National Laboratory**

**12:30—14:00 Lunch and poster removal** (Technical discussions continue among attendees, speakers, and ORNL staff)

**12:15—16:00 Tour SNS and/or HFIR**

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- Oak Ridge National Laboratory/Spallation Neutron Source and High Flux Isotope Reactor
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