Nanofabrication/ Nanomanufacturing/ Nanoelectronics

10:20 a.m.
Three-Dimensional Fountain
Pen Nanofabrication
Min Feng Yu, Mechanical Science & Engineering

10:40 a.m.
Solid-State Superionic Stamping: A Direct Approach to Nanopatterning of Metallic Structures
Placid Ferrero, Nano-CMEMS/Mechanical Science & Engineering

11:00 a.m.
Carbon Nanotube FETs for High Frequency Electronics
John Pappas and Hong Zheng, Northrop Grumman

11:20 a.m.
Electro-Thermal Interaction in Nanoscale Devices: Carbon Nanotubes and Phase-Change Memory
Eric Pop, Electrical & Computer Engineering

11:40 a.m.
Coffee Break

Nanomaterials

11:50 a.m.
“Wavy” Semiconductor Nanomaterials for Stretchable Electronics
John Rogers, Materials Science & Engineering/Nano-CEMMS

12:10 p.m.
Research in Beyond CMOS Materials, Devices, and Architectures
George Bauriaudoff, Intel

12:30 p.m.
Mechanical Behavior of Polymeric Nanofibers Subject to Cold Drawing
Ioannis Chasiotis, Aerospace Engineering

12:50 p.m.
Novel Techniques in Fine-Particle Manufacturing for Liquid Crystal Displays and Inkjet Printing
Anit Shirs, Gulf Cooperation

1:10 p.m.
CNST Poster Awards and Concluding Remarks

1:20 p.m.
Box Lunch

2:00 – 3:30 p.m.
Micro and Nanotechnology Lab and Institute for Genomic Biology Tours
Tours are available on request; signup online, www.cnst.uiuc.edu. Tour duration: 20 mins; tours start at 20 minute intervals from 2:00 p.m. [Explore MNTL at www.micro.uiuc.edu and IGB at: www.sph.uiuc.edu]

Center for Nanoscale Science and Technology
The University of Illinois Center for Nanoscale Science and Technology (CNST) is the premier center for nanotechnology research, education, and outreach activities. CNST draws its strength from working as a collaboratory involving the Beckman Institute for Advanced Science and Technology, Biotechnology Center, Coordinated Science Laboratory, Frederick Seitz Materials Research Laboratory, Institute for Genomic Biology, Micro and Nanotechnology Laboratory, Center for Nanoscale Chemical, Electrical, Mechanical, Manufacturing Systems, National Center for Supercomputing Applications, and the School of Chemical Sciences. The Center is working towards seamless integration of interdisciplinary research from atoms and materials to devices and systems. CNST is uniquely located to harness the entrepreneurial and technical spirit in the Midwest, with ongoing industrial linkages as it prepares tomorrow’s workforce. The CNST thrives on its cutting-edge research in bio-nanotechnology, computational nanotechnology, nanocharacterization, nanoelectronomechanical systems, nanoelectronics, nanofabrication, nanomaterials, nanomanufacturing, nanomedicine, and nanophotonics. For more information visit: www.cnst.uiuc.edu.

Micro and Nanotechnology Laboratory
The Micro and Nanotechnology Laboratory (MNTL) at the College of Engineering, University of Illinois at Urbana-Champaign is one of the nation’s largest and most sophisticated university-based facilities for semiconductor, nanotechnology, and biotechnology research. The laboratory is a user facility that is available for use by university and industry from across the nation. It contains over 8,000 square feet of class 100 and class 1000 clean room laboratory and state-of-the-art instruments. The laboratory is designed to enable the seamless transition of interdisciplinary research from atoms and materials to devices and systems. The MNTL is home to a large number of state-of-the-art laboratories and equipment for the study of nanotechnology, ranging from devices and circuits to the manipulation of nanostructures. The MNTL is also equipped with a variety of microscopes and other imaging equipment, as well as a range of computational tools.

Workshop Organizing Committee
James Coleman, Professor, ECE/MNTL/CNST – Chair
Irfan Ahmad, Associate Director CNST – co-Chair
Narayana Atari, Associate Professor, MechSE
Brian Cunningham, Associate Professor, ECE/MNTL/CNST
Nicholas Fang, Assistant Professor, MechSE/Nano-CMEMS
Edwin Hahn, Professor and Associate Dean (Research), VetMed
Michael Insana, Professor, BiE
Murin Nayefeh, Professor, Physics
Grazieku Padua, Associate Professor, FSHN/ACES
John Rogers, Professor, MatSE/FAML/Nano-CMEMS
Taher Sall, Professor, MechSE/CCM
Nahid Sobh, Senior Research Scientist, NCSA
Nancy Sotiroiu, Professor, MatSE
Kenneth Watkin, Professor, AH/Beckman/CNST

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Urbana-Champaign (SCCNE)
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Macro and Nanotechnology Laboratory
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AGENDA

Thursday, May 3, 2007

7:30 – 8:15 a.m.  
Registration and Breakfast  
NCSA Atrium

8:30 – 9:35 a.m.  
Plenary Session  
Chair: James Coleman, Micro & Nanotechnology Lab/Electrical & Computer Engineering

8:30 a.m.  
Introductory Remarks  
Irfan Ahmad, Associate Director, Center for Nanoscale Science and Technology

Nanoscale Science and Technology

Welcome Remarks  
Benjamin Aidesida, Dean, College of Engineering/Director, Center for Nanoscale Science and Technology

Bradford Schwartz, Regional Dean, College of Medicine

Robert Pennington, Deputy Director, National Center for Supercomputing Applications

9:00 a.m.  
Applied Nanotechnology for Human Space Exploration  
Leonard Yowell, Applied Nanotechnology Project Lead, National Aeronautics and Space Administration

9:35 a.m.  
Coffee Break

Nanoscale Energy

9:50 – 11:00 a.m.  
Session I  
Chair: Mark Sharenow, WATER CAMPSIS/ Mechanical Science & Engineering

9:50 a.m.  
Down-sizing Matter: The Impact on Ion Conductivity and Mass Storage  
Joachim Maier, Solid State Chemistry, Max-Planck Institute for Solid State Research

10:10 a.m.  
Characterization of Adsorption Properties of Single-Walled Carbon Nanotubes for Gas Storage and Purification  

10:30 a.m.  
Nanoparticle Coating in Low-pressure Plasma Reactor for Energy-related Applications  
Fazrad Hashayek, Mechanical & Industrial Engineering, University of Illinois at Chicago

10:55 – 12:35 p.m.  
Session II  
Chair: Michael Insana, Bioengineering

10:55 a.m.  
Integration of Biology and Silicon Devices: Opportunities and Prospects  
Rashid Bashir, Birck Nanotechnology Center, Purdue University

11:15 a.m.  
Materials for the 21st Century: Biological Inspiration for Complex Synthetic Nanoscale Materials Systems  
Michael Simpson, Oak Ridge National Laboratory

11:35 a.m.  
Identification of Transcription Networks in Embryonic Stem Cells  
Sheng Zhang, Bioengineering

11:55 a.m.  
Informatics Resource for Nanotechnology Research in Cancer Diagnostics and Therapeutics  
David Sept, Biomedical Engineering/SCCNE, Washington University in Saint Louis

12:15 p.m.  
Fluorescence Lifetime Imaging of Microarrays  
Ewald Terpetschnig and Beniamino Barbieri, ISS, Inc. (local company)

12:35 p.m.  
Buffet Lunch, Poster Session, and NCSA Demos: Evolutionary Highway

1:00 – 2:00 p.m.  
Poster Judging  
NCSA Atrium

1:30 – 3:00 p.m.  
Coffee Break

Panel on Research, Development, and Commercialization in Nanomedicine and Nanoscale Energy

3:45 – 5:15 p.m.  
Session IV  
Moderator: Irfan Ahmad, Center for Nanoscale Science and Technology

3:45 p.m.  
Panelists: Wendy Sanhai, Food and Drug Administration; Joachim Maier, Max-Planck; Sean Murdock, Nanobusiness Alliance; Larry Nagahara, National Cancer Institute, Gary Eden, University of Illinois; Gregory Lanza, Washington University, Saint Louis

3:15 p.m.  
Magnetic Nanoparticle Contrast for Optical Coherence Tomography and Multi-Modality Imaging  
Amy Oldenburg, Bioengineering

3:35 p.m.  
Coffee Break

Nanomedicine I

2:00 – 3:30 p.m.  
Session III  
Chair: Taher Saif, Center for Cellular Mechanics/ Mechanical Science & Engineering

2:00 p.m.  
Nanotechnology Innovation through Collaboration with FDA  
Wendy Sanhai, Senior Scientific Advisor, Office of the Commissioner, U.S. Food and Drug Administration

2:35 p.m.  
Nanoparticles with Predefined Drug Loading and Controlled Drug Release for Cancer Therapy  
Jianjun Cheng, Materials Science & Engineering

2:55 p.m.  
Improving Host Immune Response to Cancer using Targeted Anti-Angiogenic Nanoparticles  
Gregory Lanza, Division of Cardiovascular Diseases/SCCNE, Washington University in Saint Louis

3:15 p.m.  
Magnetic Nanoparticle Contrast for Optical Coherence Tomography and Multi-Modality Imaging  
Amy Oldenburg, Bioengineering

3:35 p.m.  
Coffee Break

Friday, May 4, 2007

7:30 – 8:30 a.m.  
Continental Breakfast  
NCSA Atrium

Nanomedicine II/ Societal Implications of Nanotechnology

8:30 – 10:10 a.m.  
Session V  
Chair: Stephen Boppart, Director, Mills Breast Cancer Institute, Carle/Electrical & Computer Engineering

8:30 a.m.  
Advancing Cancer Research through Nanotechnology  
Larry Nagahara, Nanotechnology Projects Manager, National Cancer Institute

8:50 a.m.  
Hybrid/Virion/Synthetic Gene Delivery Nanovectors: Toward an “Artificial Virus”  
Daniel W. Pack, Department of Chemical & Biomolecular Engineering

9:10 a.m.  
Novel Techniques for Fabricating Uniform Micro and Nanospheres, Thin Films, Nanofibers, and Nanowires and Their Applications  
Kevin Kim, Electrical and Computer Engineering

9:30 a.m.  
Fibrous Scaffolds for Cartilage Engineering  
Dominique Griffon, Large Animal Clinic, Veterinary Medicine

9:50 a.m.  
Public Perceptions and Understanding of Nanotechnology  
Dietram Scheufele, Journalism & Mass Communication

10:10 a.m.  
Coffee Break