Mihail Roco, Ph.D.
Senior Advisor on Nanotechnology, National Science Foundation

Mihail C. Roco is the Senior Advisor for Nanotechnology at the National Science Foundation (NSF) and a key architect of the National Nanotechnology Initiative. Prior to joining National Science Foundation, he was Professor of mechanical and chemical engineering. Dr. Roco is the founding Chair (in August 2000) of the U.S. National Science and Technology Council’s Subcommittee on Nanoscale Science, Engineering and Technology (NSET). Dr. Roco is credited with thirteen patents, coauthored over two hundred articles and in screen books including more recently “Managing Nano-Bio-Info-Cognition Innovations” (2007) and “Mapping Nanotechnology Knowledge and Innovation: Global and Longitudinal Patent and Literature Analysis” (2009). Dr. Roco is a corresponding member of the Swiss Academy of Engineering Sciences. He is a Fellow of ASME, Fellow of the Institute of Physics, and leads the Nanotechnology Group of the International Risk Governance Council. Dr. Roco was elected as Engineer of the Year by the U.S. Society of Professional Engineers and NSF in 1999 and again in 2004. He was awarded the National Materials Council. Dr. Roco was elected as Engineer of the Year by the U.S. Society of Professional Engineers and NSF in 1999 and again in 2004. He was awarded the National Materials Council. Dr. Roco is a corresponding member of the Swiss Academy of Engineering Sciences. He is a Fellow of ASME, Fellow of the Institute of Physics, and leads the Nanotechnology Group of the International Risk Governance Council. Dr. Roco was elected as Engineer of the Year by the U.S. Society of Professional Engineers and NSF in 1999 and again in 2004. He was awarded the National Materials Council. Dr. Roco was elected as Engineer of the Year by the U.S. Society of Professional Engineers and NSF in 1999 and again in 2004. He was awarded the National Materials Council. Dr. Roco is a corresponding member of the Swiss Academy of Engineering Sciences. He is a Fellow of ASME, Fellow of the Institute of Physics, and leads the Nanotechnology Group of the International Risk Governance Council. Dr. Roco was elected as Engineer of the Year by the U.S. Society of Professional Engineers and NSF in 1999 and again in 2004. He was awarded the National Materials Council.
Workshop Premise

The broad objective of the Center for Nanoscale Science and Technology (CNST) workshop is to showcase University of Illinois research in nanotechnology, nanomedicine, nanomaterials, nanomanufacturing, and computational nanotechnology/nanomechanics. The general framework of a nanotechnology workshop is similar to those held on campus since 2003, which were all well attended by industry and academia. Some of those interactions have since led to industry and cross-campus collaborations. The CNST-led forums and workshops have contributed tremendously toward the formation of multidisciplinary teams leading to the establishment of multi-million dollar new nanotechnology centers on campus. The workshop will provide a forum for industry and interactions. The workshop brings together campus community faculty, graduate and undergraduate students, administration from URB and other academic institutions, and industry engaged in cutting-edge research. A workshop panel will roadmap the future direction of research and development in nanotechnology and regional partnerships.

The two-day workshop is being held on May 6 and 7, 2010 at the renowned National Center for Supercomputing Applications, and Micro and Nanotechnology Laboratory, University of Illinois at Urbana-Champaign. The workshop program includes plenary sessions, technical papers, panel discussions, and poster sessions, in addition to lunch and dinner receptions.

Sponsors:
UNIVERSITY OF ILLINOIS CENTER FOR NANOSCALE SCIENCE AND TECHNOLOGY.
www.cnst.illinois.edu

CNST nano@illinois

The University of Illinois Center for Nanoscale Science and Technology (CNST) is the premier center for nanotechnology research, education, entrepreneurial, and outreach activities. CNST draws its strength by working as a collaboratory involving major nanotechnology laboratories and centers. The Center has engaged in efforts leading to the development of multidisciplinary teams and establishment of federally funded centers and projects, and development of nanotechnology curriculum. It is working toward seamless integration of interdisciplinary research from atoms and molecules 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 biomaterials, nanomedicine, computational nanotechnology, nanoelectromechanical systems, nanoelectronics, nanofabrication, nanomaterials, nanomanufacturing, nanomedicine, and nanophotonics.

For more information: www.cnst.illinois.edu or call 217-333-2444.

For Technical Collaboration Contact:
Irfan Ahmad, Center for Nanoscale Science and Technology
University of Illinois | 217-333-2015 | nanotechnology@illinois.edu | www.cnst.illinois.edu

Workshop Registration, Poster Signup, and Hotel Information
Registration Required. Seating is limited, so register early online: www.cnst.illinois.edu
Workshop Location
National Center for Supercomputing Applications, and Micro and Nanotechnology Laboratory
For parking directions to the National Center for Supercomputing Applications or the Micro and Nanotechnology Laboratory at the University of Illinois at Urbana-Champaign visit:
http://www.cnst.illinois.edu/PlanoWorkshop2010.htm

Thursday, May 6

8:00–8:45 AM Registration and Breakfast at NCSA Atrium
Plenary Session at NCSA Auditorium
09:00–10:30 AM Plenary Session Chair: Rashid Bashir, Director, Micro and Nano-technology Lab.
9:00 AM Center for Nanoscale Science and Technology
9:15 AM Welcome Remarks
Robert Easter; Interim Chancellor, University of Illinois
Ruth Watts, Dean, College of Liberal Arts and Sciences, University of Illinois
Michael Irigoy, Senior Executive Director, College of Engineering, University of Illinois
nanoIllinois: Center for Nanoscale Science and Technology (CNST)
Rashid Bashir, Director, MNTL, and Irfan Ahmad, Associate Director, CNST
9:45 AM Keynote:
Current Progress and Future Opportunities in Nanotechnology
Michael Roco, Senior Advisor for Nanotechnology, National Science Foundation
11:00 AM–1:00 PM Poster Session, Lunch–CNST Atrium
Nanomaterials, Nanoevironment, & Nanomanufacturing Session
1:15 PM–2.35 PM Session II Chair: Deborah Deckiland, Chemical and Biomedical Engineering
1:15 PM Semiconductor Nanomaterials for Bio-Integrated Forms of Electronics
John Rogers, Materials Science and Engineering, FS Materials Research Laboratory, and Director, Nano-CMMI, Illinois
1:30 PM Teaching “Old” Materials “New” Tricks: Site- and Shape-specific Nanopatterning of Multifunctional Materials
Vivek Dravid, Materials Science and Engineering, Northwestern University
1:50 PM An Integrated Approach Toward Understanding the Toxicity and Health Hazards of Metal and Metal Oxide Nanomaterials
Vicki Graczan, Chemistry, University of Illinois
2:15 PM Nanoplasmonic Lasers
Shun-Usn Chuang, Electrical and Computer Engineering, Illinois
3:40 PM Probing Carbon Nanostructures using Superconductivity—and vice-versa
Nadya Mason, Physics, University of Illinois
3:50 PM Best Student Poster Awards
Closing Remarks: Ravi Iyer, Vice Chancellor for Research

Panel on Midwest Collaboration in Nanotechnology Research and Develop-
ment: Developing a Regional Partnership
3:00 PM–4:45 PM Session II: Moderator: Debbia Dutta, Dean Graduate College
Panels: Irfan Ahmad, Rashid Bashir, Illinois; Vivek Dravid, Northwestern; Vicki Graszan, Iowa; Younan Xia, Washington Uni-
versity; Paul Bohn, Notre Dame; Hongda Chen, National Program Leader, Bioprocessing Engineering Nanotechnology, USDA; Tiffany Houchin, Elanco, Eli Lilly and Company
5:00 PM–7:00 PM Poster Session and Reception at NCSA Atrium
7:30–9:00 PM Dinner/Speech (by invitation)
Blue Waters: An Extraordinary Computing Resource to Enable Extraordi-
mary Research
Thomas Dunnig, Director, National Center for Supercomputing Applications
I-Hotel, University of Illinois Research Park

Friday, May 7

8:00 AM–8:15 AM Continental Breakfast at Micro- and Nanotechnology Laboratory At-
trium
Bionanotechnology, Nanagioculture, and Nanomedicine
8:30 AM–10:00 AM Session III: Chair: Michael Insana, Bioengineering
8:30 AM Intelligent Integrated Microfluidics– Molecular Recognition and Catalysis in Simple Nanopores and Nanopore Arrays
Paul Bohn, Chemistry, University of Notre Dame
8:50 AM Nanobiomes: From Quantum, Synthetic to Systems Nanobiotechnology and Molecular Medicine
Logan Liu, Electrical and Computer Engineering, University of Illinois
9:10 AM Intracellular Raman Chemical Imaging for Mammalian and Microbial Systems
Joseph Irrudayaraj, Agricultural and Biological Engineering, and Block Nanotechnology Center, Purdue University
9:30 AM Nanoparticles against B-Linear Acute Lymphoblastic Leukemia
Faith Wickman, Institute for Pediatric Clinical Research; Children’s Hospital Los Angeles, University of Southern California
9:50 AM Coffee Break
Nanoelectronics and Nanophotonics Session at 1000 MNTL
10:15 AM–10:55 AM Session IV Chair: James Coleman, Electrical and Computer Engi-
neering
10:15 AM Carbon-Based Nanoelectronics: Fundamental Issues
Joseph Lyding, Electrical and Computer Engineering, MNTL, Illinois
10:35 AM Approaches for Photonic Crystal Membrane Nanolaser Diodes
Kent Choquette, Electrical and Computer Engineering, MNTL, Illinois
10:55 AM Nanoelectronics in Microcavity Plasma Devices and Arrays
J. Gary Eden, Electrical and Computer Engineering, MNTL, Illinois
11:15 AM Nanoplasmonic Lasers
Shun-Usn Chuang, Electrical and Computer Engineering, MNTL, Illinois
11:35 AM Probing Carbon Nanostructures using Superconductivity—and vice-versa
Nadya Mason, Physics, University of Illinois
11:55 AM Box Lunch at MNTL Attrium/Lab Tours
(Tour duration: 20 mins; tours start at 20 mins interval from 1:00 PM)
Computational Nanotechnology, Nanomechanics, and Multidisciplinary- 
Nano Programs Assessment
2:15 PM–4:00 PM Session V Chair: Jimmy Hsia, Professor of Mechanical Science and En-
eering
2:15 PM The Role of Molecular Modeling in Bionanotechnology
Klaus Schulten, Physics and Beckman Institute, Illinois
2:35 PM A Multiscale Computational Framework for Modeling of Nanomaterials
Arif Masud, Civil and Environmental Engineering, Illinois
2:55 PM Multiscale Analysis of Silicon NEMS
Nanyakwa Muthoni, Mechanical Science and Engineering, and Nano-
CMMI, Illinois
3:15 PM Break
3:20 PM Nano-Centers Program Assessment
Laura DeDeStefano, Educational Psychology, Nano-CMMI, and I-STEM
3:40 PM Nanotechnology-based Multidisciplinary Translational Research and Development
Irfan Ahmad, Center for Nanoscale Science and Technology, and Agricultural and Biological Engineering, Illinois
4:00 PM Best Student Poster Awards
Closing Remarks: Paul Lye, Visc Consultant for Research
4:30 PM Adjourn