



CNST ANNUAL NANOTECHNOLOGY WORKSHOP 2011 nPEAP Workshop MAY 12-13, 2011

Venue: Beckman Institute for Advanced Science and Technology; and
Micro and Nanotechnology Laboratory
[University of Illinois at Urbana-Champaign](#)

Thursday, May 12

7:30-8:15 AM Registration and Breakfast at Beckman

Plenary Session at Beckman Auditorium

8:30-10:00 AM Plenary Session Chair: Rashid Bashir, Director, Micro and Nanotechnology Lab.

8:30 Center for Nanoscale Science and Technology

8:35 **Welcome Remarks**

Robert Easter; Interim Vice President and Chancellor, University of Illinois

Ilesanmi Adesida, Dean, College of Engineering; Founding and Co-Director, CNST,
University of Illinois

Herbert Whiteley, Dean, College of Veterinary Medicine, University of Illinois
<to be confirmed>

nano@Illinois: Center for Nanoscale Science and Technology (CNST)
Rashid Bashir, Co-Director, CNST, Director, MNTL and
Irfan Ahmad, Executive Director, CNST

9:00 **Keynote:**
[Overview of IBM Watson Labs Nanoscience and Nanotechnology Research](#)

Thomas Theis, Program Manager, New Devices and Architectures for Computing, IBM

10:00 **Coffee Break**

Nanoelectronics, Nanomaterials, and Nanomanufacturing Session- A

10:30-12:00 **Session I Chair: David Cahill, Professor and Head, Department of Materials Science and Engineering <to be confirmed>**

- 10:30** **Novel Printing Approaches for Microelectrode Architectures on Flexible, Rigid, and Curvilinear Substrates**
Jennifer Lewis, Materials Science and Engineering/FSMRL, Illinois
- 10:50** **Modeling Graphene Nanoelectronics: History Repeats Itself**
Jean-Pierre Leburton, Electrical and Computer Engineering
- 11:10** ***In-Situ* TEM investigations of nanoscale energy systems in relevant environmental conditions**
Shen Dillon, Materials Science and Engineering
- 11:30** **Nanoengineering of High Power and Energy Density Rechargeable Batteries**
Paul Braun, Materials Science and Engineering
- 11:50** **Engineering New Functionalities in Materials: Complex Oxide Thin Films and Nanostructures for Next Generation Devices**
Lane Martin, Materials Science and Engineering
- 12:10** **Lunch and Performance**
Beckman Atrium

Nanoelectronics, Nanomaterials, and Nanomanufacturing Session- B

1:15-2:15 **Session II Chair: Edmund Seebauer, Professor and Head, Chemical and Biomolecular Engineering <to be confirmed>**

- 1:15** **A perspective on Challenges in Nanoscale Manufacturing**
Placid Ferreira, Mechanical Science and Engineering
- 1:35** **3D Topological Insulator- Superconductor Heterostructures: From Wormholes to Vortices**
Matthew Gilbert, Electrical and Computer Engineering
- 1:55** **Gas Detection using Sub-wavelength Structures on Fiber Tips**
Lynford Goddard, Electrical and Computer Engineering
- 2:15** **Coupled Electro-Thermal Simulation of Semiconductor Devices**
Umberto Ravaioli, Electrical and Computer Engineering
- 2:35** **Coffee Break**

Bionanotechnology and Nanomedicine*

**3:00-4:45 Session III Chair: Gene Robinson, Professor and Director,
Institute for Genomic Biology <to be confirmed>**

- 3:00 Nanoscale Force Sensors for Biological Applications**
Taher Saif, Mechanical Science and Engineering
- 3:20 Silicon Photonics: An Enabling Technology for Multiplexed Bioanalysis**
Ryan Bailey, Chemistry
- 3:40 Nanotherapeutics for Cancer Treatment**
JJ Cheng, Materials Science and Engineering
- 4:00 Cell Transplantation Device for Neovascularization: Integration of Material Chemistry and Microfabrication**
Hyunjoon Kong, Chemical and Biomolecular Engineering
- 4:20 Single-Exposure Photolithography for the Fabrication of Multilevel Microfluidics
<to be confirmed>**
Paul Kenis, Chemical and Biomolecular Engineering
- 4:40 Micro and Nano Printing for understanding Cell-material Interactions**
Amy Wagoner-Johnson, Mechanical Science and Engineering

Session IV

5:15-7:00 Poster Session* and Reception at Micro and Nanotechnology Laboratory

**Moderators: Lizanne DeStefano, Educ Psych (to be confirmed), and
Irfan Ahmad, CNST/ABE, Illinois**

7:30PM Dinner/Speech (by invitation)

TBA:

I-Hotel, University of Illinois Research Park

**includes presentations by faculty and students affiliated with the following multidisciplinary centers and projects:*

- *NSF IGERT-Cellular and Molecular Mechanics and BioNanotechnology-*
- *M-CNTC: Midwest Cancer Nanotechnology Training Center (NIH/NCI)*
- *EBICS: Emerging Behaviors of Integrated Cellular Structures Center (NSF STC)*
- *US Army TATRC: Micro and Nano-mediated 3D Stereo Lithography*

nPEAP

Nano Photonics and Electronics Industry Affiliates Program

Friday, May 13

Venue: Micro and Nanotechnology Laboratory (MNTL) Seminar Room 1000

7:00-8:00AM Continental Breakfast at Micro and Nanotechnology Laboratory Atrium

Nanoelectronics: High Speed Nanotransistor for Energy Efficient Electronics

8:00-10:00 Session I: Chair: Milton Feng, ECE/MNTL, nPEAP, Co-Chair

8:00 Welcome Remarks

Andrew Alleyne, Associate Dean of Research, College of Engineering, Ralph M. and Catherine V. Fisher Professor of Mechanical Science and Engineering

Andreas Cangellaris, Head, Department of Electrical and Computer Engineering, and M.E. Van Valkenburg Professor of Electrical and Computer Engineering

<to be confirmed>

8:15 Keynote:

Emerging Device Nanotechnology Research for Future Computing and SOC Nanoelectronics

Dr. Robert Chau, Intel Senior Fellow and Director of Transistor Research and Nanotechnology

Invited Talk:

8:45 The Challenges Facing the Advanced Logic Technologies in the Near to Long Term

Dr. Carlos Diaz, TSMC Director of Advanced Device Technology and TCAD (Taiwan Semiconductor)

9:15 Invited Talk:

Type II InP DHBT and ICs for Agilent Instruments

Dr. Barry Wu, Agilent Senior Researcher (MBE and Mixed Signal ICs), Santa Rosa, CA

9:45 The Metamorphosis of the Transistor into a Transistor Laser Modulated at 40 Gb/s

Milton Feng, Nick Holonyak Jr. Chair, Professor of Electrical and Computer Engineering; and Nick Holonyak, Jr., John Bardeen Endowed Chair, Professor of Electrical and Computer Engineering, MNTL

10:15 Coffee Break

Nanophotonics and Optoelectronics

10:30-12:00 Session II: Chair: Shun- Lien Chuang, ECE/MNTL

- 10:30 Photonic Crystal VCSELs for Emerging Applications**
Kent Choquette, Abel Bliss Professor of Electrical and Computer Engineering, MNTL
- 10:50 Nanolasers on Silicon Substrate: What is the Smallest Semiconductor Laser one can make?**
Shun Lien Chuang, Robert C. MacClinchie Distinguished Professor of Electrical and Computer Engineering, MNTL
- 11:10 Microcavity Plasmas and Optical/Electronic Devices <to be confirmed>**
J. Gary Eden, Gilmore Family Endowed Professor of Electrical and Computer Engineering
- 11:30 Blue Waters and Beyond- Unsatisfiable Demand for Increased Bandwidth and Reduced Power Consumption**
Wen-Mei Hwu, AMD Jerry Sanders Chair, Professor of Electrical and Computer Engineering, Coordinated Science Laboratory
- 11:50 Coffee Break**

Nanotechnology

12:00-1:20 Session III: Chair: Joseph Lyding, ECE, nPEAP, Co-Chair

- 12:00 III-V Nanoelectronic and Nanophotonic Devices: Towards Controllability and Manufacturability**
Xiuling Li, Electrical and Computer Engineering, MNTL
- 12:20 Carbon-Based Low-Power Electronics**
Eric Pop, Electrical and Computer Engineering, MNTL
- 12:40 Nanostructured Silicon Thermoelectrics: Science and Engineering**
Sanjiv Sinha, Mechanical Science and Engineering, Nano-CEMMS
- 1:00 Graphene: Edges and Defects**
Joseph Lyding, Electrical and Computer Engineering, Beckman Institute
- 1:20 Box Lunch Break and Poster Session**
- 1:45-2:30 Discussion on nPEAP: Roadmap**
Moderators: Rashid Bashir, Director, Micro and Nanotechnology Laboratory, Co-Director, Center for Nanoscale Science and Technology, Abel Bliss Professor of Electrical and Computer Engineering and Bioengineering
Joseph Lyding, Electrical and Computer Engineering, and Beckman Institute

2:45-4:00 Concluding Session Chair: TBA

3:20 Overview of CNST and nPEAP Workshops

Best Student Poster Awards

3:45 Closing Remarks:

Ravi Iyer, Vice Chancellor for Research, and George and Ann Fisher Distinguished Professor of Electrical and Computer Engineering, Coordinated Science Laboratory

4:00 Adjourn

4:10-5:00 Lab Tours: MNTL and FSMRL

(Tour duration: 20mins; tours start at 20 mins interval from 4:10 PM)

Workshop Registration, Poster Signup, and Hotel Information

Registration Required. Seating is limited, so register early online:

www.cnst.illinois.edu

Workshop Location

**Beckman Institute for Advanced Science and Technology, and
Micro and Nanotechnology Laboratory**

For parking directions to the Beckman or the Micro and Nanotechnology Laboratory at the University of Illinois at Urbana-Champaign visit: www.cnst.illinois.edu

CNST Workshop Organizing Committee

- Irfan Ahmad, Co-Chair, and Agricultural and Biological Engineering, CNST, MNTL
- Rashid Bashir, Co-Chair, and Electrical and Computer Engineering, MNTL, CNST
- Rohit Bhargava, Bioengineering
- JJ Cheng, Materials Science and Engineering
- Lizanne DeStefano, Educational Psychology
- Timothy Fan, Veterinary Clinical Medicine
- Jean-Pierre Leburton, Electrical and Computer Engineering
- Yi Lu, Chemistry
- Joseph Lyding, Electrical and Computer Engineering

nPEAP Workshop Organizing Committee

- Milton Feng, Co-Chair, Nick Holonyak Jr. Chair, Professor of Electrical and Computer Engineering
- Joseph Lyding, Co-Chair, Professor of Electrical and Computer Engineering, Beckman
- Shun-Lien Chuang, Robert C. MacClinchie Distinguished Professor of Electrical and Computer Engineering
- James Coleman, Intel Alumni Endowed Chair, Professor of Electrical and Computer Engineering
- Eric Pop, Electrical and Computer Engineering
- Rashid Bashir, Abel Bliss Professor of Electrical and Computer Engineering, and of Bioengineering, Director, MNTL, CNST
- Irfan Ahmad, Agricultural and Biological Engineering, CNST, MNTL
- Sophi Martin, Office of Research, College of Engineering

Workshop Sponsored by:

**The Center for Nanoscale Science and Technology
at the University of Illinois at Urbana-Champaign**

Co-sponsors:

- Micro and Nanotechnology Laboratory
- National Center for Supercomputing Applications
- Beckman Institute for Advanced Science and Technology
- Coordinated Science Laboratory
- Frederick Seitz Materials Research Laboratory
- Institute for Genomic Biology
- NSF IGERT- Cellular and Molecular Mechanics and BioNanotechnology (CMMB)
- NIH/NCI Midwest-Cancer Nanotechnology Training Center (M-CNTC)
- NSF Center on Emergent Behaviors of Integrated Cellular Systems (EBICS, co-location)
- Nano-CEMMS
- Network for Computational Nanotechnology/NanoHub at Illinois
- Nanotechnology Community of Scholars at ACES

- U.S. Army Telemedicine and Advanced Technology Research Center Project

nano@illinois

Workshop Premise

The broad objective of the University of Illinois Center for Nanoscale Science and Technology (CNST) workshop is to showcase University of Illinois research in bionanotechnology/ nanomedicine, nanoelectronics/nanophotonics, nanomaterials/nanomanufacturing, and computational nanotechnology/nanomechanics.

The general framework of the 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 then 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 interactions and collaborations. The workshop brings together campus community (faculty, graduate and undergraduates, administration) from UIUC and other academic institutions, and industry engaged in cutting-edge research. A workshop panel will discuss the roadmap to future direction of research and development in nanotechnology and regional partnerships.

FORMAT: The two-day workshop will be held on May 12 and 13, 2011 in conjunction with nPEAP (Nano Photonics and Electronics Affiliates Program) workshop at the renowned Beckman Institute and the Micro and Nanotechnology Laboratory at the University of Illinois at Urbana-Champaign. The workshop programs includes plenary session speeches, technical sessions, and poster sessions, in addition to lunch and dinner receptions.

SPONSORS:

**UNIVERSITY OF ILLINOIS
CENTER FOR NANOSCALE SCIENCE AND TECHNOLOGY.**

www.cnst.illinois.edu

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Established in 2001-02, the University of Illinois Center for Nanoscale Science and Technology (CNST) is the premier center for nanotechnology research, education and training, and entrepreneurial and outreach activities. CNST draws its strength from working as a collaboratory

involving the Beckman Institute for Advanced Science and Technology, Roy J. Carver 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, the Schools of Chemical Sciences and of Molecular and Cellular Biology, and other multidisciplinary centers. It brings together nanoscale research from across the campus, drawing faculty from engineering, chemistry, physics, biology, neuroscience, agriculture, medicine, and other areas. The center envisions seamless integration of research from materials to devices to systems and applications.

CNST is uniquely located to harness the innovation-based entrepreneurial and technical spirit in downstate Illinois, with ongoing linkages with the University Research Park, the Illinois Department of Commerce and Economic Opportunity, and the State legislature. Industrial and international linkages have also been initiated through multidisciplinary centers. In addition, CNST has embarked on developing a curriculum for nanotechnology education, which will transcend a number of campus departments and units. Exceptional students with interest in nanotechnology projects have been awarded fellowships, as the center prepares the next generation workforce. CNST-led efforts have led to leveraging of existing nanotechnology research labs into also hands-on training sites for molecular and

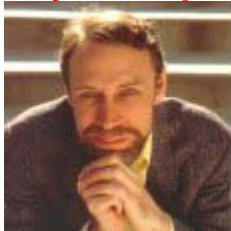
cellular biology, mechanobiology, micro and nanofabrication, and enabling technologies, and tissue engineering.

The CNST thrives on its cutting-edge core research in bionanotechnology, computational nanotechnology, nanocharacterization, nanoelectromechanical systems, nanoelectronics, nanofabrication, nanomaterials, and nanophotonics. Translational areas include: nanoagriculture and food, nanoenvironment, nanomanufacturing, nanomedicine, nanosecurity, and societal implications of nanotechnology.

For more information visit: www.cnst.illinois.edu or

email: nanotechnology@illinois.edu or call 217-244-1353.

Keynote Speakers:



Thomas N. Theis, *Ph.D.*
Program Manager, New Devices and Architectures for Computing
IBM

Thomas Theis received a B.S. degree in physics from Rensselaer Polytechnic Institute in 1972, and M.S. and Ph.D. degrees from Brown University in 1974 and 1978, respectively. A portion of his Ph.D. research was done at the Technical University of Munich, where he completed a postdoctoral year before joining IBM Research in 1979.

Dr. Theis joined the Semiconductor Science and Technology Department at IBM Watson Research Center in December of 1978. Since then he has made important contributions to the understanding of conduction in wide-band-gap insulators and donors in III-V compound semiconductors and has contributed as a manager and technical strategist to the development of technology products including IBM's introduction of copper wiring technology in the late 1990's. As IBM's world-wide director for research in the physical sciences from 1998 to 2010, he championed successful new research initiatives in nanoelectronics, nanophotonics, exploratory memory devices, quantum computing, and "green" technology. In June of 2010, he assumed his present position as Program Manager, New Devices and Architectures for Computing. Tom is a Fellow of the American Physical Society and serves on numerous advisory boards and committees. He is proud to have served on the National Academies committees that authored the first and second triennial reports on the National Nanotechnology Initiative, and to have recently served on the committee that authored the Report to the President and Congress on the Third Assessment of the National Nanotechnology Initiative.

Abstract:

Beyond Silicon: Nanoscale Science and Technology at IBM

Nanotechnology is the future of information technology, so it should be no surprise that IBM Research pursues a broad range of research topics in nanoscale science and technology. But how are projects chosen and supported? First, we invest in core research competencies. Specifically, we seek to advance the state of the art in selected processes for materials synthesis and device fabrication, instruments for nanoscale imaging and characterization, and computational and theoretical techniques for modeling nanostructured materials and nanoscale devices. These core competencies support our primary research focus – the exploration of new devices to store, communicate, and process information. Examples of new devices to store information include random access memories based on magnetic tunnel junctions and on phase change materials. Our research on new devices to communicate information is focused on nanophotonics, where we aim to build a complete wave-

length-multiplexed optical communications network on a silicon chip. An example of a new device to process information is the carbon nanotube transistor, but we are also exploring more exotic device concepts with the potential to operate with greatly reduced power dissipation -- beyond the limits of any conventional field effect transistor. While our primary objective is the exploration and development of such new devices for information technology, we are also partnering with other companies and research organizations to explore applications of nanotechnology in other industries. One example that has received some press recently is our development of a liquid-solution-based process for the fabrication of thin-film solar cells. The underlying synthetic process was originally developed for the fabrication of thin-film transistors. Another example is our demonstration of new membrane materials for improved filtration of water – research which leverages expertise in polymer chemistry originally developed in support of microelectronics manufacturing. In general, the ability to pattern materials on ever smaller scales and synthesize structures on ever larger scales is driving novel applications well outside the traditional domains of information technology and industrial chemistry where these techniques emerged.



Robert Chau, Ph.D.

**Intel Fellow and Director of Transistor Research and Nanotechnology,
Intel Corporation**

Robert Chau received the B.S., M.S., and Ph.D. degrees in electrical engineering from The Ohio State University.

Dr. Robert Chau is an Intel Senior Fellow and Director of Transistor Research and Nanotechnology in the Technology and Manufacturing Group of Intel Corporation. He is responsible for directing research and development in advanced transistors and gate dielectrics, process modules and technologies, and integrated processes for microprocessor and SOC applications. He is also responsible for leading research efforts in emerging nanotechnology for future nanoelectronics applications.

Dr. Chau joined Intel in 1989, became an Intel Fellow in 2000 and an Intel Senior Fellow in 2005. He was the co-recipient of the 2008 SEMI Award for North America for the development of Intel's 90nm strained silicon technology, and the 2008 EDN (Electronics Design, Strategy, News) "Innovator of the Year" award for the development of Intel's 45nm high-k metal gate transistor technology. He holds more than 200 issued U.S. patents and has been elected an IEEE Fellow. In April 2010 Dr. Chau was recognized by the newspaper The Oregonian as the most prolific inventor in the State of Oregon.

Abstract:

**Emerging Device Nanotechnology Research for Future Computing and SOC
Nanoelectronics**

The presentation will cover two topics: (1) integration of III-V compound semiconductors on Si substrate for future digital CMOS and SOC applications, and (2) research progress on forward-looking devices beyond CMOS for future nanoelectronics.

The first topic will summarize recent research progress made on the InGaAs quantum well field effect transistor (QWFET) and its integration on Si substrate for future high-speed and low-voltage (e.g. 0.5V) logic applications. For example, enhancement-mode InGaAs QWFETs with high-K gate dielectrics have been fabricated on silicon substrate, and achieved $fT > 400\text{GHz}$ at low operating voltage of 0.5V. It has been proposed that InGaAs n-channel QWFET be combined with the high-mobility Ge p-channel FET to form a non-silicon channel CMOS architecture on silicon substrate for future high-speed and low-power CMOS applications. In addition, successful integration of wide band gap III-V materials (e.g. GaN) on large silicon substrate will enable many useful functionalities for future SOC's.

The second topic will describe research effort and progress made on forward-looking devices beyond CMOS. In this research space, carbon-based, spin-based, tunnel-based and exciton-based devices are being explored as alternative switches/devices to either replace CMOS after 2020 or combine with CMOS to create new circuit functionalities for future SOC nanoelectronics applications. These emerging devices exhibit unique and interesting characteristics which will be discussed.

About nPEAP

nPEAP

nano-Photonics and Electronics Industry Affiliates Program

The University of Illinois welcomes its valued industry partners to the launch of a new affiliates program focused on cutting-edge nano-photonics and electronics research. The **nano-Photonics and Electronics Affiliate Program** (nPEAP) workshop being held in conjunction with the University of Illinois Center for Nanoscale Science and Technology Annual Nanotechnology Workshop, will highlight the cutting edge and ground breaking research currently underway at the University of Illinois and look toward new directions and opportunities for research in these areas, which will define the future. In addition, the forum will serve as a springboard for initiating discussions among industry leaders and academia on developing meaningful, tangible, and mutually beneficial research and development partnerships. We welcome you to the beautiful University of Illinois campus in Urbana-Champaign for this exciting event.

University of Illinois researchers have made profound contributions in development of electronic and photonic devices. The recently released nano@illinois research faculty handbook profiles some of the leading researchers and their innovations. These developments have had tremendous impact on industry at large, some of these innovations have spanned into multi-billion industry. While the need for scaling of electronic and photonic devices and systems continues to increase, the technical challenges for such scaling also continue to rise. Our world class faculty and research leaders expect to continue vigorous interactions with industry for the benefit of all involved. The purpose of initiating this affiliate program is to reinvigorate, formalize, and strengthen these interactions between the University of Illinois faculty and the industry in the areas of photonics and electronics.

There also is a rich and long history of University of Illinois faculty engaging with industry in a previous affiliate program called PEAP (Physical Electronic Affiliate Program). That program, which was active in late eighties to late nineties, brought industry leaders to campus once a year in a pre-competitive environment for faculty research presentations, exchange of ideas, and industry interactions with graduate students. The newly proposed effort envisages to build on the tradition of academia-industry partnership, a hallmark of the University of Illinois, as there is now a renewed need for such interactions, as the magnitude of challenges and opportunities continues to rise in scaling and development of electronic and photonic devices, materials, and systems.

Proposed Topics and Discussions

- Grand challenges in electronic and photonic scaling and integration incorporating materials, devices, and systems
- Device Modeling; Understanding and discovering new circuit/device properties.
- Novel Devices and Materials: Meeting and exceeding year 2020⁺ performance requirements
- End of road-map lithography need and solutions

- Industry perspective on next generation workforce hiring needs?
- Where do you see your particular industry heading in the next 5, 10, or 20 years?
- Networking events to meet students and researchers on campus who are and will continue to do exciting work in electronics/photonics.
- Historical perspective on affiliates program (PEAP) and plans moving forward
- Laboratory tours and brief update on recently funded multidisciplinary nanotechnology centers



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Multidisciplinary Research: Collaboratory

Center for Nanoscale Science and Technology (CNST)

1102-04 Micro and Nanotechnology Laboratory
208 North Wright Street
Urbana, IL 61801
Ilesanmi Adesida, Director
Irfan Ahmad, Associate Director
(217) 333-2015
www.cnst.illinois.edu

Beckman Institute for Advanced Science and Technology (BI)

405 North Mathews Avenue
Urbana, IL 61801-2300
Tamer Basar, Director
(217) 244-1176
www.beckman.illinois.edu

Center for Agricultural and Pharmaceutical Nanotechnology (CAPN)*

Planning Phase
1102-04 Micro and Nanotechnology Laboratory
208 North Wright Street
Urbana, IL 61801
Brian Cunningham, Director
www.cnst.illinois.edu/capn/

Center for Directed Assembly of Nanostructures (CDAN)* (co-location)

2015 Frederick Seitz Materials
Research Laboratory
104 South Goodwin Avenue
Urbana, IL 61801
Kenneth Schweizer, Site Lead
(217) 333-6440
www.mrl.illinois.edu

Center for Nanoscale Chemical-Electrical-Mechanical Manufacturing Systems (Nano-CEMMS)*

4410 Mechanical Engineering Laboratory
105 South Mathews Avenue
Urbana, IL 61801
John Rogers, Director
(217) 265-0093
www.nano-cemms.illinois.edu

Center of Advanced Materials for Purification of Water with Systems (WaterCAMPWS)*

2127 Mechanical Engineering Laboratory
1206 West Green Street
Urbana, IL 61801
Mark Shannon, Director
(217) 333-2633
www.watercampws.illinois.edu

Center on Emergent Behaviors of Integrated Cellular Systems (EBICS)*

1102A Micro and Nanotechnology Laboratory
208 North Wright Street
Urbana, IL 61801
Jimmy Hsia, Education Director
(217) 333-2321

Coordinated Science Laboratory (CSL)

202 Coordinated Science Laboratory
1308 W. Main Street
Urbana, IL 61801
William Sanders, Director
(217) 333-2511
www.csl.illinois.edu

Frederick Seitz Materials Research Laboratory (FSMRL)+

2015 Frederick Seitz Materials
Research Laboratory
104 South Goodwin Avenue
Urbana, IL 61801
Jennifer Lewis, Director
(217) 333-1370
www.mrl.illinois.edu

Institute for Genomic Biology (IGB)

Institute for Genomic Biology
1206 W. Gregory Drive
Urbana, IL 61801
Harris Lewin, Director
(217) 244-2999
www.igb.illinois.edu

Materials Computation Center (MCC)*

2015 Frederick Seitz Materials
Research Laboratory
104 South Goodwin Avenue
Urbana, IL 61801
Duane Johnson, Director
(217) 265-0319
www.mcc.uiuc.edu

Micro and Nanotechnology Laboratory (MNTL)*

2000 Micro and Nanotechnology Laboratory
208 North Wright Street
Urbana, IL 61801
Rashid Bashir, Director
(217) 333-3097
www.mntl.illinois.edu

National Center for Supercomputing Applications (NCSA)*

NCSA Building
1205 West Clark Street
Urbana, IL 61801
Thom Dunning, Jr., Director
(217) 244-0072
www.ncsa.illinois.edu

[Pick the date]

Network for Computational Nanotechnology/NanoHub at Illinois*

2104 Micro and Nanotechnology Laboratory
208 North Wright Street
Urbana, IL 61801

Nahil Sobh, Site Lead

Umberto Ravaioli, Faculty Lead

(217) 244-9481

www.nanohub.org

Siteman Center of Cancer Nanotechnology Excellence (SCCNE) (Illinois co-location)**

1102-04 Micro and Nanotechnology Laboratory
208 North Wright Street
Urbana, IL 61801

Rashid Bashir, PI

Irfan Ahmad, Project Coordinator/co-PI

(217) 333-2015

www.cnst.illinois.edu/sccne-uiuc.htm

*Currently/formerly a National Science Foundation Center

** National Cancer Institute Center

+ Currently/formerly a Department of Energy Laboratory/Center

For more information email: nanotechnology@illinois.edu or visit www.cnst.illinois.edu

For Technical Collaboration Contact:

Center for Nanoscale Science and Technology

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