

What's New at CNST

Explore www.cnst.illinois.edu or contact us at nanotechnology@illinois.edu for news and announcements about CNST facilities, research, and activities, including the following:

CNST Seminar Series and Annual Workshops

Leading experts in nanotechnology from around the world are invited to campus. They make presentations, exchange ideas, and explore possibilities for collaborations. Open to the public, this series has a goal of creating awareness about the potential and implications of nanotechnology among the academic and nonacademic community.

Nanotechnology Education

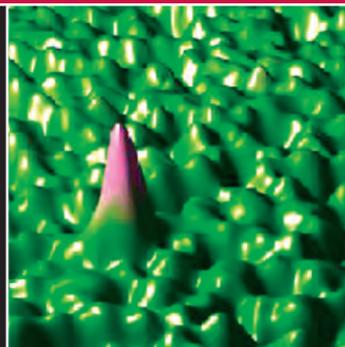
CNST is leading the effort to prepare students for tomorrow's challenges by developing a nanoscale science and technology curriculum unique to the University of Illinois. Courses span the basic sciences, engineering sciences, and information sciences. The curriculum will provide students with a broad interdisciplinary understanding of nanotechnology as it applies to basic and applied research. Goals are to help students gain knowledge, develop skills, and appreciate the role nanotechnology is likely to play in shaping our future.

CNST Collaboratory

Agricultural and food, atmospheric and environmental, communications and electronics, computational, medical and pharmaceutical, and nanomaterials characterization, identification, and fabrication are among the broad and diverse areas that interest CNST research faculty. CNST facilitates a collaboratory approach—the effective integration of key laboratories to address critical issues in nanotechnology and its applications. Key areas of collaboratory activities include the following:

- Molecular and electronic nanostructures research in the **Beckman Institute for Advanced Science and Technology**
- Bionanotechnology research in the **Biotechnology Laboratory**
- Nanoscale information technology research in the **Coordinated Science Laboratory**
- Nanoscale materials research in the **Frederick Seitz Materials Research Laboratory**
- Systems biology, cellular, and metabolic engineering and genome technology research in the **Institute for Genomic Biology**
- Nanoscale materials and structures research in the **Micro and Nanotechnology Laboratory**
- Computational nanotechnology research in the **National Center for Supercomputing Applications**

DEFINING THE FUTURE IN NANOTECHNOLOGY



For More Information

Created to advance innovation in nanotechnology research, education, training, and commercialization of technologies, CNST is committed to the seamless integration of research- from materials, to devices, to systems and applications. Contact CNST at:

Center for Nanoscale Science and Technology

CNST University of Illinois Center for Nanoscale Science and Technology
1102-1104 Micro and Nanotechnology Laboratory, MC 249
208 North Wright Street
Urbana, IL 61801

217.244.1353
nanotechnology@illinois.edu
www.cnst.illinois.edu

Irfan Ahmad, Executive Director

isahmad@illinois.edu
217.333.2015

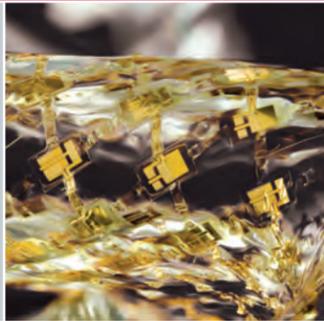
Rashid Bashir, Co-Director

rbashir@illinois.edu
217.333.3097

 ILLINOIS

11/11-500

CNST



CENTER FOR NANOSCALE SCIENCE AND TECHNOLOGY

University of Illinois at Urbana-Champaign

Defining the Future in Nanotechnology

Core Research

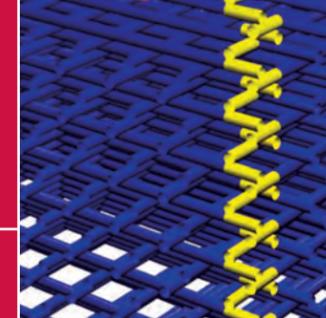
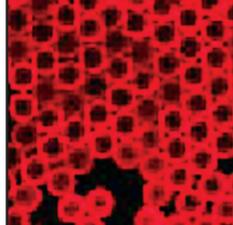
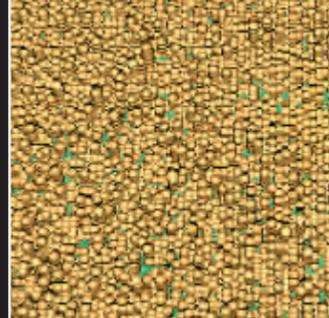
- *Bionanotechnology*
- *Computational and Theoretical Nanotechnology*
- *Nanomaterials and Nanomechanics*
- *MEMS/NEMS*
- *Societal and Ethical Implications of Nanotechnology & Assessment*

Translational Research

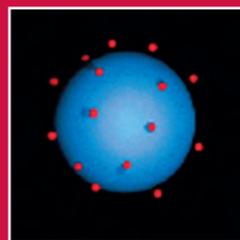
- *NanoAgriculture and Food*
- *Nanoenergy*
- *Nanoenvironment*
- *Nanomanufacturing*
- *Nanomedicine*
- *Nanosecurity*

 ILLINOIS

www.cnst.illinois.edu



Small Scale, Grand Potential



The National Nanotechnology Initiative describes this new science as “the study and design of systems at the nanoscale, the scale of the atom. It is concerned with materials and systems whose structures and components exhibit novel and

significantly improved physical, chemical, and biological properties—that enable the exploitation of novel phenomena and processes—due to their nanoscale size.”

Nanotechnology makes possible the creation of new materials, devices, and systems—

- Agricultural and the environmental advancements in bioinformatics, genomics, quantum dots as biological markers, high throughput robotic screening, artificial synthesis of clean energy, pollution control, and water purification systems.
- Information technology innovation, including quantum computing and computer chips that store trillions of bits of information on pinhead-sized devices.
- Materials with more desirable properties, such as high strength, chemical sensing, or optical switching designed in from the start.
- Medical improvements, including advanced drug delivery, gene sequencing, biocompatible materials for implants, and sensors for disease detection.

—and CNST is leading the way.

Center for Nanoscale Science and Technology

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.

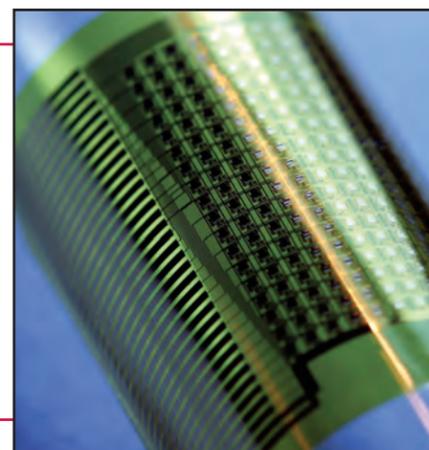
CNST is uniquely located to harness the entrepreneurial and technical spirit in downstate Illinois, with ongoing linkages with the University Research Park, the Illinois Department of Commerce and Economic Opportunity, and the State legislature. Industrial and international linkages have also been initiated 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 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.

With a strong research and teaching faculty, some of the best students in the world, more than \$200 million invested in equipment, and one of the strongest partnership programs, the CNST is a leader in cutting-edge nanotechnology research.

CORE RESEARCH

- **Bionanotechnology**
- **Computational and Theoretical Nanotechnology**
- **Nanomaterials and Nanomechanics**
- **MEMS/NEMS**
- **Societal and Ethical Implications of Nanotechnology & Assessment**



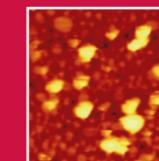
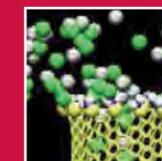
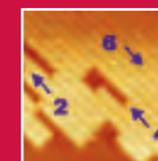
Partner with CNST

At CNST, we believe that partnerships advance the research and education mission of the University of Illinois. Linkages with industry partners and other researchers help us deliver quality education and engage in the kind of cutting-edge research that leads to

- important discoveries,
- innovative technologies,
- and the new products that affect the lives of all citizens.

The CNST offers an environment conducive to partnerships and collaborations. Those who wish to work with university researchers and students, spend time on campus, or support specific areas of research can choose from many options.

Affiliates program: Industry partners interact closely with CNST faculty members working in specific research areas. Opportunities range from informal laboratory visits to participation in annual workshops or campus symposia.



Consulting opportunities: Industry partners work with CNST faculty members on a private basis.

Personnel placement and research visitors programs: Industry partners can place personnel at CNST for a limited time. Researchers from academia and industry can interact with CNST faculty and students working on novel, innovative, interdisciplinary research topics for an extended period.

Student interns and fellowships: Industry partners support students’ research and hire interns as a way to meet short-term needs and recruit future employees.

Leverage funding, long-term gifts, research center funding, contracts: Industry partners add support to ongoing research at CNST or support specific areas of research. Research center funding can provide significant impetus to specific research directions, while a research contract can focus faculty and student talents in a specific, goal-oriented research area.

Licensing services: Industry partners can license intellectual property, such as hardware, software, technology process, or developed material, from CNST.

Contact us today to establish a partnership.