About the NSRC Program

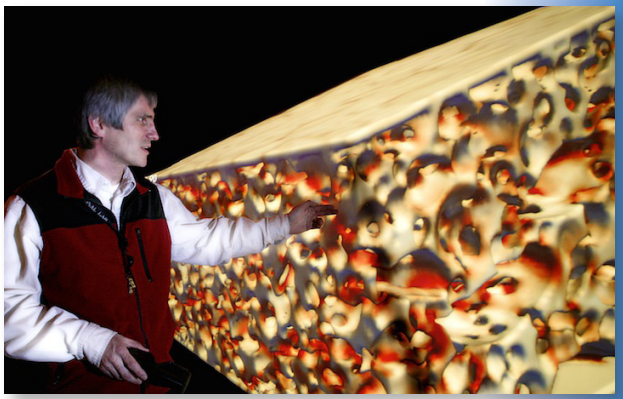
The Nanoscale Science Research Center (NSRC) Program is a major component of the Department of Energy's (DOE) Office of Science contribution to the U.S. Government National Nanotechnology Initiative (NNI). NNI involves twenty departments and agencies that collaborate toward "*a future in which the ability to understand and control matter at the nanoscale leads to a revolution in technology and industry that benefits society*." The Office of Science supports five NSRCs that are strategically located in DOE national laboratories across the U.S. The nanoscience centers are co-located with other major nanoscience-related user facilities such as neutron or synchrotron light sources.

The mission of the NSRCs is twofold: to enable the external scientific community to carry out high-impact nanoscience projects through an open, peer-reviewed user program, and to conduct in-house research to discover, understand, and exploit functional nanomaterials for society's benefit. To fulfill this mission, the NSRCs house the most advanced facilities for nanoscience research and employ world-class scientists who are experts in nanoscience and enjoy working with external users.

The NSRCs complement each other with their instrumentation and capabilities, the different thrusts of their in-house research programs, and the technical expertise of their staffs.

The NSRC Program

- Operates a national network of geographically distributed facilities that leverage other facilities and expertise at DOE National Laboratories.
- Has world-leading capabilities and scientific expertise to create, characterize and understand novel nano-structured materials.
- Provides state-of-the-art nanoscience tools and expertise for research by non-profit or business organizations, whether small or large, for use-inspired research.
- Is available free-of-charge for non-proprietary work if the user intends to publish the research results in open literature.
- Serves users from all U.S. states and many countries around the world.
- Enables thousands of scientists to perform cutting edge nanoscience research each year.
- Contributes to the success of America's current and future research leaders.



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U.S. Department of Energy
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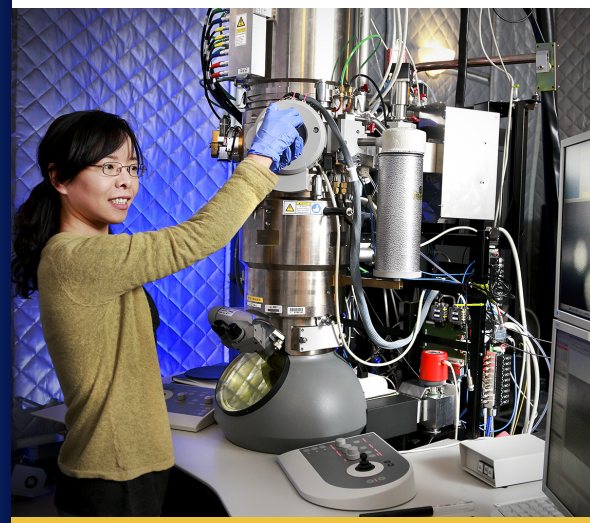
science.energy.gov/bes/suf/user-facilities/nsrc

LA-UR-14-23801

The Nation's Premier Scientific User Facilities for Interdisciplinary Research at the Nanoscale

Nanoscale Science Research Centers



U.S. DEPARTMENT OF ENERGY

Office of Science

The Molecular Foundry (TMF)

Lawrence Berkeley National Laboratory

The Molecular Foundry (TMF) provides users with instruments, techniques, and expertise to enhance their research in the synthesis, characterization, and theory of nanostructures. Its research themes emphasize combinatorial synthesis of nanomaterials, multimodal *in situ* imaging and spectroscopy, interfaces in nanomaterials, "single digit" nanofabrication, and high-resolution electron scattering.

The Foundry's seven facilities provide synthesis of novel inorganic, organic and biological nanostructured building blocks, measurement and simulation of their properties, and their integration into complex assemblies. Utilization of these capabilities by users is enhanced through close ties to the other DOE user facilities at Lawrence Berkeley National Laboratory, which includes the Advanced Light Source (ALS) and the National Energy Research Scientific Computing Center (NERSC).

foundry.lbl.gov

Center for Integrated Nanotechnologies (CINT)

Los Alamos and Sandia National Laboratories

CINT's vision is to become a world-leading resource for developing the scientific principles that govern the design, performance, and integration of nanostructured materials into the micro and macroscale worlds. This differentiating focus on nanomaterials integration involves the experimental and theoretical exploration of behavior over multiple spatial and temporal length scales, the development of novel synthesis and processing approaches, and an understanding of emergent behavior and new performance regimes.

Expertise and advanced capabilities are available in: nanoscale electronics and mechanics; theory, simulation and modeling; soft, biological and composite nanomaterials; nanophotonics and optical nanomaterials. This comprehensive portfolio of capabilities is complemented by CINT Discovery Platforms™, which are customized microfabricated structures and devices used for nanoscience research.

cint.lanl.gov

Center for Nanoscale Materials (CNM)

Argonne National Laboratory

The CNM provides expertise, instrumentation, and infrastructure for interdisciplinary nanoscience and nanotechnology user research. The CNM and the Electron Microscopy Center, a key resource for solving materials research problems using electron beam characterization methods, together form an integrated facility that is accessible to the scientific community at large.

The Center's goal is to support basic research and the development of advanced instrumentation that generates scientific insights, creates materials with unique functionality, and contributes significantly to energy-related research and development programs. Argonne's Advanced Photon Source (APS) plays a key role in that the shared CNM/APS hard x-ray nanoprobe beamline allows for unprecedented views deep within nanomaterials.

nano.anl.gov

Center for Nanophase Materials Sciences (CNMS)

Oak Ridge National Laboratory

The CNMS combines a vibrant research effort to understand and control the complexity of electronic, ionic, and molecular behavior at the nanoscale with a multi-disciplinary user environment. The work closely ties to neutron science capabilities at Oak Ridge National Laboratory (ORNL) and integrates synthesis science, theory/modeling/simulation, and advanced approaches for functional and structural imaging.

Distinguishing capabilities include precision synthesis of macromolecular nanomaterials and inorganic nanostructures, band excitation scanning probe microscopy, He-ion and scanning transmission electron microscopies, atom probe and electron tomographies. Theoretical tools and expertise address emergent behavior in nanoscale systems. Nanofabrication capabilities include a wide range of tools with emphasis on integrating functionality in hard and soft materials.

cnms.ornl.gov

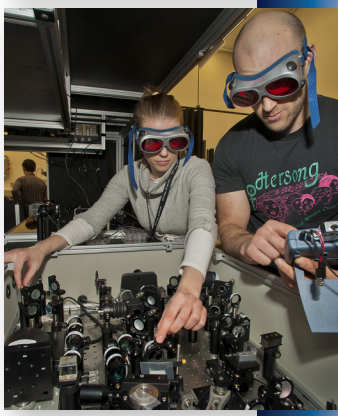
Center for Functional Nanomaterials (CFN)

Brookhaven National Laboratory

CFN is a user-oriented research center with the dual mission of: 1) providing open, state-of-the-art facilities, capabilities, and expertise for the nanoscience community; and 2) advancing and exploiting nanoscale materials and phenomena that help address the nation's energy challenges.

CFN conducts energy-related research on electronic nanomaterials and soft and bio-nanomaterials, with emphasis on block co-polymer and DNA-mediated self-assembly of nanostructures. A third research thrust focuses on interface science and catalysis, particularly in-operando characterization of catalysts through ambient pressure x-ray photoelectron spectroscopy, and through aberration-corrected transmission electron microscopy and low energy electron microscopy. Synergies between CFN and Brookhaven National Laboratory's National Synchrotron Light Source-II with its unprecedented brightness and resolution capabilities provide unique opportunities for transformational breakthroughs in nanoscience.

bnl.gov/cfn

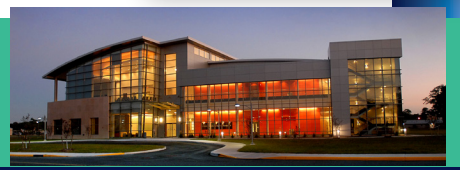


The Molecular Foundry, California

Center for Integrated Nanotechnologies, New Mexico

Center for Nanoscale Materials, Illinois

Center for Nanophase Materials Sciences, Tennessee



Center for Functional Nanomaterials, New York