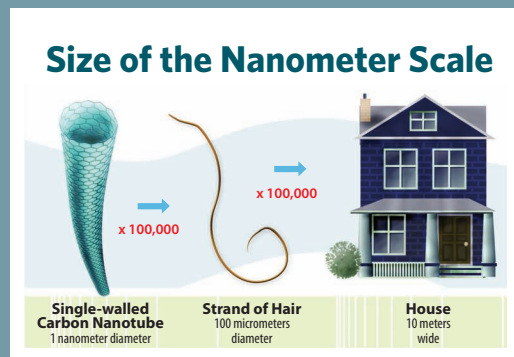


What is Nanotechnology?

Nanotechnology is the understanding and control of matter at dimensions between approximately 1 and 100 nanometers, known as the nanoscale, where unique phenomena enable novel applications.

Encompassing nanoscale science, engineering, and technology, nanotechnology involves imaging, measuring, modeling, and manipulating matter at this length scale.

A nanometer is one-billionth of a meter. A sheet of paper is about 100,000 nanometers thick; a single gold atom is about a third of a nanometer in diameter. Unusual physical, chemical, and biological properties can emerge in materials at the nanoscale. These properties may differ in important ways from the properties of bulk materials and single atoms or molecules.



The NNCO is the coordination office of the NNI

The National Nanotechnology Coordination Office (NNCO) was established in 2001 to provide technical and administrative support to the NSET Subcommittee, serve as a central point of contact for Federal nanotechnology R&D activities, and perform public outreach on behalf of the National Nanotechnology Initiative.

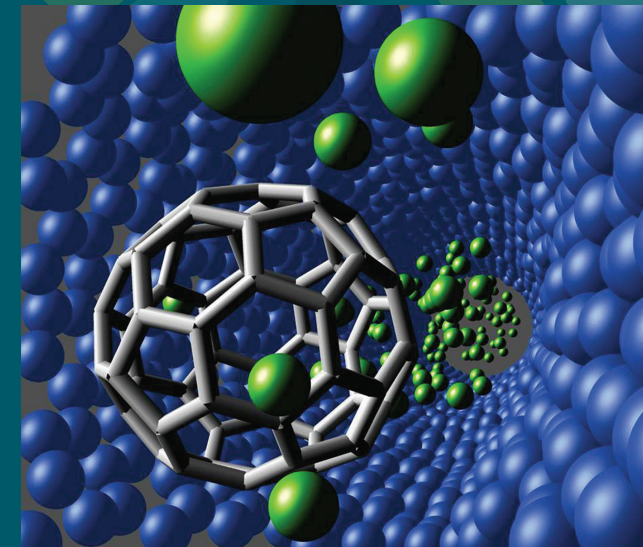
Contact the NNCO

National Nanotechnology
Coordination Office
4201 Wilson Blvd., Stafford II Rm 405
Arlington, VA 22230
Phone: 703-292-8626
Fax: 703-292-9312
E-mail: info@nnco.nano.gov

Cover image: credit Oak Ridge National Laboratory

The National Nanotechnology Initiative

Leading to a revolution in technology and industry that benefits society



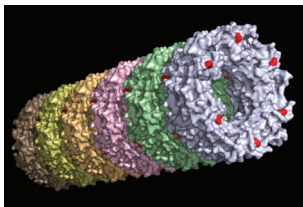
NANO.gov

What is the National Nanotechnology Initiative?

The United States has set the pace for nanotechnology innovation worldwide with the National Nanotechnology Initiative, NNI. Launched in 2000 with eight agencies, the NNI today consists of the individual and cooperative nanotechnology-related activities of 25 Federal agencies with a range of research, application, and regulatory roles and responsibilities.

The NNI brings together the expertise needed to advance this broad and complex field—creating a framework for shared goals, priorities, and strategies that helps each participating Federal agency leverage the resources of all participating agencies.

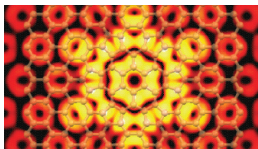
With the support of the NNI, nanotechnology research and development is taking place in academic, government, and industry laboratories across the United States.



Scientists at Lawrence Berkeley National Laboratory have created customizable nanotubes whose length can be adjusted. Potential

applications include drug delivery and biological scaffolding. (credit Lawrence Berkeley National Laboratory)

Researchers at the Georgia Institute of Technology and National Institute of Standards and Technology are studying sheets of graphene, which can be used for electronics applications.



(credit E. Cockayne and J. Stroscio, NIST)

NNI Goals

- Advance world-class nanotechnology research and development
- Foster the transfer of new technologies into products for commercial and public benefit
- Develop and sustain educational resources, a skilled workforce, and the supporting infrastructure and tools to advance nanotechnology
- Support the responsible development of nanotechnology

How is the NNI Organized?

The NNI is managed within the framework of the National Science and Technology Council (NSTC), the Cabinet-level council under the Office of Science and Technology Policy at the White House.

The Nanoscale Science, Engineering, and Technology (NSET) Subcommittee of the NSTC facilitates planning, budgeting, program implementation, and review across the NNI agencies. The NSET Subcommittee is composed of representatives from agencies participating in the NNI.

NSET Working Groups:

- Global Issues in Nanotechnology
- Nanotechnology Environmental & Health Implications
- Nanomanufacturing, Industry Liaison, & Innovation
- Nanotechnology Public Engagement & Communications

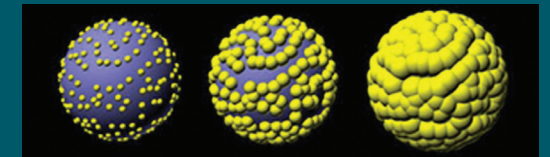
NNI Signature Initiatives enable the rapid advancement of science and technology in the service of national economic, security, and environmental goals by focusing resources on critical challenges.

Achieving the NNI Goals

Significant scientific and technological achievements have been made as a result of the R&D funding by NNI participating agencies.

Small Solutions for Big Problems

Gold nanoshells serve as a platform for the discovery, diagnosis, and treatment of cancer without invasive biopsies, surgery, radiation or chemotherapy.



Computer simulation of growth of gold nanoshell with silica core and over-layer of gold

(credit N. Halas, Genome News Network, 2003)

Driving Nanotechnology into the Future

Examples of how nanomaterials developed through the NNI possess the potential to revolutionize the next generation of electric cars:

- Batteries
- Fuel-based catalytic range extenders
- Electrical motors
- Smart silicon and thin film solar panels
- Sensors and electronics
- Lightweight composites

