



POSITION STATEMENT

NANOTECHNOLOGY RESEARCH & DEVELOPMENT

*Adopted by the IEEE-USA
Board of Directors, 20 June 2008*

The Institute of Electrical and Electronics Engineers-United States of America (IEEE-USA) supports the research, development and commercialization of nanotechnology. Nanotechnology, the research and development of materials, structures, and systems at the nanometer scale, with their novel properties is an enabling technology that will positively affect all areas of the American economy, quality of life, and will help America maintain its technological leadership. Nanotechnology is leading to significant advances in electronics, defense and homeland security, agriculture, communication, biology, diagnostic medicine, structural materials, and many other areas of prospective application in the next decade.

Launched in 2001, the National Nanotechnology Initiative (NNI) is a multi-agency program conceived to support and coordinate federal research and development in many aspects of nanotechnology. The U.S. NNI paved the way to other government nanotechnology programs in the European Union, Japan, China, Israel, Russia, and other countries. The U.S. federal investment at about \$1.4B in FY08 is roughly a quarter of the worldwide government investment in nanotechnology research and development. Nanotechnology R&D is expected to have a significant impact on the world economy.

The IEEE-USA strongly supports government policies that promote nanotechnology research and development and provide related support for commercialization and workforce education. To ensure the growth of nanotechnology and its economic benefits in the United States, the IEEE-USA further recommends that Congress and the Executive Branch:

- Authorize continued and stable funding for the NNI. The NNI is already providing a strong foundation for nanotechnology research and development in the United States. The government should continue to encourage and enhance cross-agency and multidisciplinary collaboration.

- Encourage and support nanotechnology-related technology transfer programs. The government should encourage and promote the rapid transfer of research results to technology development. The government should promote the collaboration among federal laboratories, universities and industry to foster an environment for rapid application of nanotechnology. (For example, the National Science Foundation, Department of Energy, or Department of Defense nanotechnology-linked facilities should be made accessible to industry and universities.)
- Provide incentives for commercialization. Government incentives should be implemented to facilitate the timely commercialization of nanotechnology from the research laboratories to the marketplace. The timeliness of patent issues is important in the global competition.
- Facilitate development and implementation of nanotechnology standards. To maintain U.S. leadership in nanotechnology, it is imperative for the U.S. Government, through its scientific arms, to drive not only the international standard measurement and nomenclature, but also lead the establishment of a program that guides researchers in developing quality methodologies to provide a fundamental understanding of the exact nature of the novel properties of the nanomaterials.
- Support nanotechnology education programs. To create and maintain an appropriate work force, the government should encourage and financially support the development of curricula and instruction for teaching and training in nanotechnology at all educational levels; and address the means of enhancing the level of teaching competence at the secondary and primary levels, regarding the nature of nanotechnology.
- Explore the societal and environmental implications of nanotechnology. Since nanotechnology has the potential to affect humans and the environment in ways that are not yet known, research must be sponsored to examine its impact to avoid unforeseen adverse consequences. Establishing a comprehensive and systematic approach to safety is urgently needed.

This statement was developed by the IEEE-USA Research and Development Policy Committee and represents the considered judgment of a group of U.S. IEEE members with expertise in the subject field. IEEE-USA advances the public good and promotes the careers and public-policy interests of the more than 215,000 engineers, scientists and allied professionals who are U.S. members of the IEEE. The positions taken by IEEE-USA do not necessarily reflect the views of the IEEE or its other organizational units.