

NANOSCALE SCIENCE AND ENGINEERING AT NSF

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National Science Foundation and National Nanotechnology Initiative



Abstract

NSF supports nanoscale science and engineering in all disciplines throughout its research and education directorates as a mean of advancing fundamental discovery and innovation, integrating various fields of research, and advancing knowledge on nature and technology. NSF is part of the National Nanotechnology Initiative (NNI), partnering with 30 other departments and independent agencies. The NNI enables research, education and innovation from the atomic and molecular levels for about 6,000 active awards representing approximately 10 percent of all NSF portfolios.

The presentation will outline long-term research trends in the United States and the corresponding NSF programs and outcomes driven by nanotechnology and its convergence with other foundational emerging technologies (nano.gov; www.wtec.org/nano2/). Convergence offers a new universe of discovery, innovation, and application opportunities through specific theories, principles, and methods (www.wtec.org/NBIC2-report). The presentation will include an update on international evolution of nanotechnology since 1991 to 2019 in World of Science papers, USPTO patents, and NSF funding.

Bionote

Mike Roco is the Senior Advisor for Science and Engineering at the National Science Foundation and founding chair of the U.S. National Science and Technology Council's subcommittee on Nanoscale Science, Engineering and Technology (NSET). Prior to joining National Science Foundation, he was professor of mechanical and chemical engineering. Dr. Roco is credited with thirteen inventions, contributed over two hundred articles and twenty books. He was elected as the Engineer of the Year by the U.S. National Society of Professional Engineers and NSF in 1999 and again in 2004. Dr. Roco is member of the European Academy of Sciences and Arts, correspondent member of the Swiss Academy of Engineering Sciences, honorary member of the Romanian Academy, and Fellow of ASME, Institute of Physics and AIChE. He was awarded the U.S. National Materials Advancement Award in 2007 "as the individual most responsible for support and investment in nanotechnology by government, industry, and academia worldwide", and received the IUMRS "Global Leadership and Service Award" at the EU Parliament in 2015 for "vision and dedicated leadership ...that has made major impact to all citizens around the world."