NANOTECHNOLOGY FOUNDATION FOR EMERGING SCIENCE AND TECHNOLOGY

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Abstract: An international scientific and technological endeavor was set in motion by fundamental discoveries and unifying vision of nanotechnology formulated about 2000, which has inspired the National Nanotechnology Initiative (NNI). NNI involves over thirty U.S. research and regulatory federal agencies with a cumulative public R&D investment by 2021 of about $31B. NSF supports nanoscale science and engineering in all disciplines throughout its research and education directorates as a mean of advancing foundational knowledge and innovation and integrating various fields of research. The presentation will outline current research trends after twenty years of NNI investments, and underline convergence of nanotechnology with other foundational technologies.

Nanotechnology progress has inspired and enabled novel emerging knowledge and technology fields. It has created a foundation for the entire, fast-evolving global science and technology system. Convergence of nanotechnology with modern biology, information, cognition, and artificial intelligence systems are envisioned to generate novel science and technology platforms supporting the economy of the future. Nanotechnology has enabled quantum information systems, wireless communication, advanced semiconductors manufacturing. Nanotechnology convergence seeds new opportunities to address sustainable society, independent aging, personalized learning, and other societal endeavors.

Bio: 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 and fifty 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, of Institute of Physics and of 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."