

NANOTECHNOLOGY MYTHBUSTERS PANEL



Dr. Amy Wang, PANEL CHAIR

Toxicologist, U.S. Environmental Protection Agency

Introduction to Nanotechnology

Dr. Amy Wang is a toxicologist (EPA postdoc) in the National Center for Computational Toxicology, a part of U.S. Environmental Protection Agency (EPA) at Research Triangle Park, NC. Dr. Wang specializes in nanotoxicology and risk assessment. Her current project is high-throughput screening and computational profiling of nanomaterial biological activity/toxicity, in which a wide range of classes of nanomaterials are characterized and tested in various in vitro assays and in zebrafish embryos by multidisciplinary researchers in academia, government, and private sectors. She is a principle author in EPA Case Studies of Nanoscale Titanium Dioxide, in which comprehensive environmental assessment framework was applied. Dr. Wang's previous research areas included metal toxicity, carcinogenicity, mode of action, and veterinarian medicine. She is a board member of Research Triangle Chapter of Society for Risk Analysis (SRA), and served in various specialty sections, including Nanotoxicology, in the Society of Toxicology (SOT).



Dr. Joe DeSimone

Chancellor's Eminent Professor of Chemistry, University of North Carolina – Chapel Hill
William R. Kenan Jr. Professor of Chemical Engineering, North Carolina State University

Nano Manufacturing / Innovations in Synthesis

Joseph DeSimone is the Chancellor's Eminent Professor of Chemistry at the University of North Carolina at Chapel Hill and William R. Kenan Jr. Professor of Chemical Engineering at North Carolina State University. DeSimone is also an Adjunct Member of the Sloan-Kettering Institute for Cancer Research at Memorial Sloan-Kettering Cancer Center in New York. DeSimone has published over 260 scientific articles and has over 115 issued patents in his name with over 120 patents pending. In 2005 DeSimone was elected into the National Academy of Engineering and the American Academy of Arts and Sciences.

DeSimone has received 40 major awards and recognitions including the 2009 NIH Director's Pioneer Award; the 2009 North Carolina Award and the \$500,000 Lemelson-MIT Prize for Invention and Innovation. DeSimone's group is now heavily focused on learning how to bring the precision, uniformity and mass production techniques associated with the fabrication of nanoscale features found in the microelectronics industry to the nano-medicine field for the fabrication and delivery of vaccines and therapeutics for the treatment and prevention of diseases. DeSimone recently launched Liquidia Technologies (www.liquidia.com). DeSimone's laboratory and the PRINT technology recently became a foundation for the new \$20 million Carolina Center for Cancer Nanotechnology Excellence funded by the National Cancer Institute. DeSimone received his BS in Chemistry in 1986 from Ursinus College in Collegeville, PA and his Ph.D. in Chemistry in 1990 from Virginia Tech.



Dr. Nigel Walker

Deputy Program Director for Science for the National Toxicology Program,
National Institute of Environmental Health Sciences

Nanotoxicity

Dr. Nigel Walker is Deputy Program Director For Science for the National Toxicology Program (NTP) at the National Institute of Environmental Health Sciences (NIEHS), one of National Institutes of Health. He received his B.Sc. in Biochemistry in England from the University of Bath in 1987 and his Ph.D. in Biochemistry from the University of Liverpool in 1993. Following postdoctoral training in environmental toxicology at the Johns Hopkins School of Hygiene and Public Health in Baltimore MD, he moved to the NIEHS, where he has been since 1995. Dr. Walker currently is the lead scientist for several NTP projects including the NTP Nanotechnology Safety Initiative that is evaluating the safety of engineered nanoscale materials. He has over 15 years experience in environmental molecular toxicology, quantitative dose response modeling and risk analysis, with particular emphasis on persistent organic pollutants and has published over 90 peer-reviewed publications. He is an adjunct associate professor in the Curriculum in Toxicology at the University of North Carolina at Chapel Hill, and past-President of the North Carolina Society of Toxicology.



Dr. Cole Matson

Executive Director, Duke Center for Environmental Implications of NanoTechnology

Environmental Implications

Dr. Cole W. Matson is the Executive Director of the Center for the Environmental Implications of NanoTechnology (CEINT), a NSF and EPA-funded center headquartered at Duke University. Dr. Matson is an environmental toxicologist specializing in the genetic effects of contaminants on wildlife. His research focus is currently the genetic and developmental impacts of nanomaterials on fish, with a particular interest in how environmental variables affect toxicity. Cole has published and presented environmental toxicology research for the last ten years, with projects covering a wide variety of organisms and stressors. His early work focused on the population genetic impacts of chronic contamination exposures and on biomarkers of DNA damage. More recent work has focused on mechanistic toxicology and embryonic developmental toxicity. Cole's interest in nanomaterial toxicity is centered on environmentally relevant transformations of particles and how these transformations affect the toxicity of the particles, including separating particle toxicity from metal toxicity. Cole has previously conducted wildlife toxicology research within two Superfund Research Centers (Texas A&M University and Duke University), and has collaborated with a diverse group of academic, government, and foreign researchers.



Dr. Christine Hendren

Research Environmental Science Engineer, RTI International

Nano Risk Assessment

Dr. Christine Hendren is a risk assessor and decision analyst at RTI International, specializing in risk assessment of nanomaterials and applying decision analytic frameworks to assist in complex choices in environmental management. In her doctoral work with Duke's Center for the Environmental Implications of NanoTechnology (CEINT), she specialized in modeling environmental exposure potential to nanomaterials under the conditions of uncertainty inherent to the field, and has worked with Bayesian and other probabilistic approaches to bound near term estimates for environmental concentrations. In her previous role as an ORISE Fellow at the U.S. EPA she was a principal author of the Case Study of Nanoscale Silver, which pulled together data from a variety of disciplines to assess the current state of the science with regard to enabling a comprehensive environmental assessment of nanomaterial impacts.