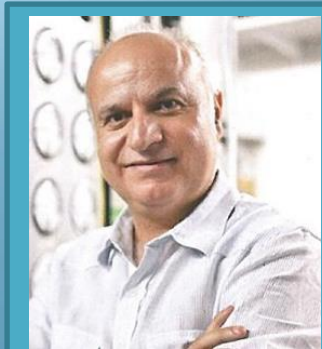


MSE-Colloquium@NTU

10 February 2020, 3:30 pm

Lecture Theatre 8, Nanyang Technological University, Singapore



Sustainable Nanotechnology: Bio-inspired, Nature-derived and Non-toxic Nanomaterials for Agri-food Applications

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Abstract

The rapid expansion of nanotechnology is a powerful scientific and economic force. However, how we balance the potential benefits of advanced nanomaterials with the potential environmental health and safety (EHS) hazards from such emerging and often inadequately characterized materials and products remains a challenge. Sustainable nanotechnology is an emerging field of interdisciplinary research that focuses on the development of “green” and non-toxic nanomaterials and technologies that can be used to tackle major societal challenges in various fields and applications.

This seminar will present highlights from current sustainable nanotechnology research projects at the Harvard Centre for Nanotechnology and Nanotoxicology (www.hsph.harvard.edu/nano) in the agriculture and food domain. Projects include among other the development of green, non-toxic, nano-modulating platforms using nature-derived biopolymers to engineer interfacial processes in the gut to reduce absorption of unwanted substances using nature-derived biopolymers, nanopatforms for precise and targeted agrichemical delivery, development of smart biodegradable, biopolymer based food package materials and green antimicrobial nanopatforms for food safety applications. (Note: The research was funded by the US National Institutes of Health [NIH] and United States Department of Agriculture [USDA] and the NTU/Singapore-Harvard SusNano Initiative.)

Biography

Dr. Demokritou is currently an associate professor at the Harvard T. H. Chan School of Public Health and the Director of two interdisciplinary research centres at Harvard University: Harvard-NIEHS Nanosafety Research Centre (www.hsph.harvard.edu/nanosafety) and the Centre for Nanotechnology and Nanotoxicology at (www.hsph.harvard.edu/nano). He is also the Program Director for the Harvard-Nanyang Technological University/Singapore Sustainable Nanotechnology Initiative (NTU-HSPH SUSNano). In addition, he is also a founding co-editor-in-chief of NanoImpact (Elsevier), a journal that focuses on all aspects of nanosafety research.

In the past, Dr. Demokritou served as a co-PI of the Harvard-EPA PM Health Effect Centre (1999-2010, US EPA star grant) and the Director of the Harvard-Cyprus International Institute for the Environment and Public Health from 2005-2008. He served as PI, co-PI, or co-investigator for several grants funded by NIH, EPA, NIOSH, NSF, USDA/NIFA, CPSC, and EU research framework (FP7). He holds 8 international/US patents and inventions. He is a co-author of 2 books, numerous book chapters, and more than 150 articles in leading journals in nanoscience, particle health effect, and aerosol engineering fields. Dr. Demokritou’s innovative research was highlighted in major mainstream media and online magazines, including articles published in the Economist, NanoWerk, Chemistry world, The Scientist, ACS C&EN News, MIT News, Harvard Gazette, and NPR news.