NSF NNIN: From Invention to Innovation

The NSF National Nanotechnology Infrastructure Network (NNIN) is an integrated network of 13 university micro/nanofabrivcation facilities, supported by the National Science Foundation, serving the needs of nanoscale science, engineering and technology researchers across the country. The goal of the NNIN is to enable rapid advancement in science and engineering at the nanoscale by providing researchers with efficient access to nanotechnology infrastructure (fabrication, characterization and computational capabilities and facilities) and support from experienced staff members. The NNIN network is used annually by over 6000 users, who come from 188 universities, 350 small companies and 89 large companies, with over 885 industrial scientists, and 4600 graduate students that reflects between 15-25% of experimental science and engineering student community that potentially needs the type of resources NNIN provides. NNIN, through its nanotechnology facilities and associated staff, continues to make a significant impact on both the academic community and on the economic development front.

The NNIN @ Michigan site includes the 13,500 sq.ft. Lurie Nanofabrication Facility (LNF), which offers complete capabilities for fabrication, simulation, testing and characterization of MEMS/NEMS and microfluidic systems, including bulk Si micromachining, surface micromachining, electroplating, and wafer bonding. In addition, comprehensive fabrication capabilities for optical and e-beam lithography, direct write and printing techniques, thin-film deposition, chemical vapor deposition, oxidation/doping/diffusion, lapping/polishing are available. The facility also provides users with the flexibility to work with many non-Si materials for quantum devices, nanophotonics, advanced electronic devices and circuits, organic electronics. This shared user facility currently serves over 500 users working on a wide variety of applications in engineering and science.

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Khalil Najafi is the Schlumberger Professor of Engineering, and Chair of Electrical and Computer Engineering at the University of Michigan since September 2008. He served as the Director of the Solid-State Electronics Laboratory from 1998-2005, has been the director of NSF's National Nanotechnology Infrastructure Network (NNIN) since 2004, and the deputy director of the NSF ERC on Wireless Integrated Microsystems (WIMS) at the University of Michigan. He received the B.S., M.S., and the Ph.D. degree in 1980, 1981, and 1986 respectively, all in Electrical Engineering from the University of Michigan, Ann Arbor. His research interests include: micromachining technologies, micromachined sensors, actuators, and MEMS; analog integrated circuits; implantable biomedical microsystems; micropackaging; and low-power wireless sensing/actuating systems. Dr. Najafi has been active in the field of solid-state sensors and actuators for more than twenty five years. He has been involved in several conferences and workshops dealing with micro sensors, actuators, and microsystems, including the International Conference on Solid-State Sensors and Actuators, the Hilton-Head Solid-State Sensors and Actuators Workshop, and the IEEE/ASME Micro Electromechanical Systems (MEMS) Conference. Dr. Najafi is an Associate Editor for the IEEE Journal of Micro Electromechanical Systems (JMEMS), and the Journal of Micromechanics and Microengineering, Institute of Physics Publishing, and an editor for the Journal of Sensors and Materials. He is a Fellow of the IEEE and the AIBME.

