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Center for Wireless Integrated
MicroSensing & Systems

WIMS² SEMINAR

Biomimetic Hair Sensors: Utilizing the Third Dimension

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3 – 4 pm ET ■ 1005 EECS Bldg.

Talk and webinar will start promptly at 3 pm ET.



Abstract – Nature and biology utilize a myriad of structures, materials, and schemes to achieve superb sensing performance with extreme reliability and robustness. One structure used more commonly in nature is the “hair”. Hair-like sensors are used for acoustic, chemical, flow, pressure, and gas sensing, among others. Hair-like actuators and passive structures are also used for thermal management, filtering, fluid flow control, etc. This talk discusses opportunities and approaches for developing hair-like biomimetic structures for sensing applications. It presents examples of hair structures used in biology for achieving specific sensing functions, and provides a review of past work, fabrication technologies, transduction mechanisms, and the role of electronics. Examples of micro hair sensor for measuring air flow speed and direction at the University of Michigan based on hot wire anemometry and hydraulic amplification are presented as examples of biomimetic hair sensors.

Bio – 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, the Deputy Director of the NSF ERC on Wireless Integrated MicroSystems (WIMS) from 2000-2009, and has been the Director of NSF’s National Nanotechnology Infrastructure Network (NNIN) since 2004. 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, micro-machined 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 thirty 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*. He has served as associate editor or editor of several journals. He is a Fellow of the IEEE and the AIBME.

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