**Southeastern Michigan Section**
**"Chapter IV" Speaker Series**
**Fri, Nov. 21, 2008, 4:30 pm**
**Room #1005, EECS Bldg,**
**North Campus, University of Michigan**
**1301 Beal Ave, Ann Arbor, MI**

# "RF MEMS Circuits, Antennas and Sensors"
## Solid and Liquid Implementations

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**Abstract:**
Switches and varactors are the conventional RF MEMS devices commonly employed to tune the response of a large variety of circuits and antennas. Despite their many advantages, several limitations still exist today primarily related to achieving high-Q tunable circuits, harsh environment sensors as well as repeatable and reliable devices. These issues have significantly slowed down the adoption of RF MEMS in commercial products. In this seminar we will present several novel architectures for addressing many of these issues. Specifically we will focus on a) demonstrating reliable high-displacement cantilevers for high-Q tunable circuits and highly efficient on-wafer antennas, b) harsh environment sensors for engine health monitoring and c) liquid devices for high-power hot-switched applications. These approaches constitute a paradigm shift on existing RF MEMS implementations and provide a path for addressing some of the remaining critical MEMS reliability issues.

**Speaker's Biography:**
Dimitrios Peroulis (S'99–M'04) received the B.Sc. degree in electrical and computer engineering from the National Technical University of Athens, Athens, Greece, in 1998, and the M.S.E. and Ph.D. degrees in electrical engineering from The University of Michigan, Ann Arbor, in 1999 and 2003, respectively. Since August 2003, he has been an Assistant Professor at the School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN. He is also a member of the Birck Nanotechnology Center and the Center for Wireless Systems and Applications at Purdue University. His current research work is focused on RF microelectromechanical systems (MEMS) for multifunctional communication circuits and antennas. In addition, he is working in the areas of nano/micro-sensors particularly focused on health monitoring sensors for structural and non-structural components in harsh environments. Dr. Peroulis is currently leading the experimental activities of a $21M 5-year MEMS center funded by the National Nuclear Security Administration and focused on understanding the underlying physics of basic failure mechanisms in MEMS. Dr. Peroulis has received numerous departmental and university teaching awards at Purdue University. He has authored and co-authored over 70 journal and conference papers and has been the recipient of three Student Paper Awards at IEEE MTT-S (2001 and 2002) and IEEE AP-S (2001). He also received the NSF CAREER award in 2008.

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