

RF MEMS: The Applications Perspective

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Birck 1001

Abstract: This seminar will focus on discussing RF MEMS from the applications point of view. We will look at the different types of RF MEMS devices (switches, varactors, etc.) needed for the next generation of reconfigurable radios, radars and sensors. Starting from system-level requirements we will discuss the performance and reliability requirements imposed on the RF MEMS devices. Particular attention will be paid to metal-to-metal contact and capacitive switches and their respective failure modes. The seminar will include a presentation of the best devices and structures available today along with a discussion of what needs to be done to deploy them in real-world systems.

Bio: Dimitrios Peroulis received a B.Sc. degree in electrical and computer engineering from the National Technical University of Athens, Athens, Greece, in 1998, and 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. He is also a member of the Birck Nanotechnology Center. His research work is focused on RF Microelectromechanical Systems (MEMS) for multifunctional communication circuits and antennas. In addition, he works on inherently reliable health-monitoring micro/nano-sensors for structural and non-structural components operating in harsh environments. Dr. Peroulis is currently actively involved in the experimental activities of the PRISM center and the DARPA IMPACT center 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 received the NSF CAREER award in 2008 and won (with Prof. Byunghoo Jung) the first place in Phase I of the 2007-2008 Semiconductor Research Corporation (SRC) Design Challenge with a highly-efficient 60 GHz transceiver design in the Jazz 180 nm SiGe BiCMOS technology.

