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PRISM Seminar Series – Spring 2009

PURDUE UNIVERSITY Discovery Park

Emerging Technologies for RF Miniaturization

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Birck 1001

Abstract: As new communication protocols and wireless services emerge, RF systems must support multiple frequencies, bandwidths, and functions while continuing to shrink in size, weight, and power. To enable this trend, Sandia is investigating a broad range of RF microsystem technologies for miniaturizing RF functions. This presentation will provide a broad overview of Sandia's efforts in compound semiconductor electronics, optoelectronic signal processing, tunable dielectrics, and THz components, with a detailed discussion of Sandia's RF MEMS switch and microresonator technologies. RF MEMS technologies enable miniature time-delay elements, filter banks, reconfigurable filters, tunable amplifiers, and tunable antennas with performance superior to other technologies. The presentation will discuss these types of components, their expected impact on RF systems, and current challenges in technology maturation and system integration.

Bio: Christopher D. Nordquist is a Principal Member of Technical Staff in the RF/Optoelectronic Microsystems Technology Department at Sandia National Laboratories in Albuquerque, NM. He received BS, MS, and Ph.D. degrees in Electrical Engineering from the Pennsylvania State University, where he was supported by an NDSEG Fellowship to investigate microassembly techniques for heterogeneous integration of compound semiconductors onto silicon for multi-function integrated circuits. His current research focuses on the application of microfabrication and microassembly towards the realization of reconfigurable and multifunction RF and microwave circuits, including phase shifters, reconfigurable amplifiers, and tunable filters and antennas. Additional interests include compound semiconductor devices, THz technologies, and 3-D heterogeneous integration. He is a member of the IEEE Electron Device and Microwave Theory and Techniques Societies and has authored or co-authored over 30 conference and journal papers.

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