PURDUE UNIVERSITY Discovery Park

Birck Nanotechnology Center

SEMINAR

Transformative Power Semiconductor Technologies to Impact 21st Century Energy Economy, and Space and Defense Electronics

KRISHNA SHENAI, PHD

Professor, Electrical Engineering and Computer Science Department
The University of Toledo, Toledo, OH

THURSDAY, JULY 8, 2010, 10:00AM
BIRCK NANOTECHNOLOGY CENTER, ROOM 1001

ABSTRACT: Energy and environment are intertwined — together, they govern and dictate 21st century global economy in all walks of human endeavor. One of the formidable challenges of our time is to develop Bob Galvin's perfect power system — a secure, reliable, and efficient smart electric power grid that seamlessly integrates distributed renewable energy technologies and delivers agile information-quality power. This talk will focus on advanced power semiconductor materials, devices, circuits and systems that are needed in order to address this daunting challenge. Specifically we will discuss emerging silicon and wide bandgap materials and power devices, heterogeneous chip-scale power integration, advanced thermal management and cooling, system integration, and strategic insertion of advanced power technologies into smart grid with renewable energy sources and wireless sensor control.

BIO: Dr. Shenai is a Professor of Electrical Engineering and Computer Science at The University of Toledo, Toledo, OH. He has over 25 years of combined industrial, academic, and entrepreneurial experience in developing and deploying advanced semiconductor technologies for electric energy conversion and power management. He is best known for his pioneering contributions to semiconductor metallization, power MOSFETs, smart-power ICs, synchronous power rectifiers, wide bandgap power semiconductors (SiC and III-Nitrides), soft-switching power technologies, high-density power converters, power system reliability, and RF power amplifiers. His current research is primarily focused on the development and integration of advanced power technologies for energy conversion and power management, low-power sensors and wireless sensor networks, and minimally invasive robotic surgery. He is a Fellow of IEEE, Fellow of AAAS, Fellow of IETE (India), a Distinguished Lecturer of IEEE Electron Device Society, and a member of Serbian Academy of Engineering.

Host: Professor James A. Cooper, cooperj@purdue.edu