

Thursday, April 9

Scaife Hall Auditorium

Room 125

4:30 p.m.

Refreshments at 4:00 p.m.



Professor Kameshwar Poola

University of Berkeley

*Electrical Engineering and Computer Sciences
and Mechanical Engineering*

Kameshwar Poola received the Ph.D. degree from the University of Florida, Gainesville in 1984. He has served on the faculty of the University of Illinois, Urbana from 1984 to 1991. Since then, he has been with the University of California, Berkeley where he is a Professor of Mechanical Engineering and Electrical Engineering & Computer Sciences. He currently serves as the Director of the IMPACT center for Integrated Circuit manufacturing at the University of California.

In 1999, Dr. Poola co-founded OnWafer Technologies which offers metrology based yield enhancement solutions for the semiconductor industry. OnWafer was acquired by KLA-Tencor in 2007. He has also served as a technology and mergers/acquisitions consultant for Cadence Design Systems.

Dr. Poola has been awarded a 1988 NSF Presidential Young Investigator Award, the 1993 Hugo Schuck Best Paper Prize, the 1994 Donald P. Eckman Award, the 1998 Distinguished Teaching Award of the University of California, and the 2005 and 2007 IEEE Transactions on Semiconductor Manufacturing Best Paper Prizes. Professor Poola's research interests include **System Identification, Robust Control, Semiconductor Manufacturing, Sensor Networks, and Medical Imaging.**

Modeling, Control, and Optimization: Critical technologies in Semiconductor Manufacturing

We begin by reviewing the design and manufacturing flow for modern integrated circuits. We then describe the vital role played by **modeling, control, and optimization** technologies in this design/manufacturing flow.

Next, we present our efforts in developing **metrology for lithography and plasma etching** applications. These include temperature, etch-rate, and thermal flux sensors. Our sensors are fully self-contained with on board power, communications, and signal processing electronics. The sensors we have developed offer very fine spatial and time resolution, making them suitable for process optimization and control. We describe our efforts in using these sensors for feedback control of the photolithography process. We then discuss our efforts at commercializing this technology.

We close with an overview of our most recent work on **modeling, optimization, and control** for a variety of problems including inverse lithography, proximity correction, double patterning, and design rule checking.

ECE Seminar Hosts

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