



# A Forum on the Future of Electronics

Fowler Hall

October 1, 2013 10:30 AM – 12 NOON

Silicon chips in personal electronics and computers, electronic displays, and the semiconductor lasers used in CD players and for Internet communications, have shaped the world we live in, but will the current paradigm that has driven progress for the past 40+ years continue, or will the 21<sup>st</sup> Century be a new era of electronics? These questions will be addressed in a seminar by Dr. Dennis Buss followed by a panel discussion with Purdue faculty.

## Microelectronics in Transition

**Dr. Dennis Buss**

**Chief Scientist, Texas Instruments**

For the past 40 years, the semiconductor industry has been dominated by Moore's Law scaling of CMOS.

- Technology trend has been highly predictable
- Scaling has been so fast that technology innovations have not been possible. They have been run over by CMOS.
- Industry trends have been driven by technology (scaling), not by societal needs.

However, CMOS scaling will end in this decade. The Era of Moore's Law scaling will give way to the **Era of Accelerated Technology Innovation**.

- Cost of high-speed computation will stagnate. Future progress will be driven by design.
- Differentiated process technology will become a competitive advantage.
- CMOS will provide a stable platform for integrating innovative technologies.
- Technology innovations will be driven by the needs of society.
- Technology innovation will become more diverse and less predictable.

**Dennis Buss** spent most of his industrial career at Texas Instruments. He began in July 1969, was elected TI Fellow in 1978 and, except for a decade as VP for Technology at Analog Devices, served the rest of his career in technology development leadership positions at TI. In 2007, Dennis became TI Chief Scientist and Visiting Scientist at MIT with responsibility for managing TI-MIT joint research. He retired in 2010, but continues this role as a consultant to TI. Dennis received his BS, MS and Ph.D. in Electrical Engineering from MIT and served twice on the MIT faculty. He is an IEEE Fellow, the recipient of the 1985 Herschel Award, the 1987 Jack A. Morton Award, and was selected by the Electron Devices Society to receive the IEEE Third Millennium Medal.



## Panel Discussion

**Moderator:** Professor Tim Fisher, James G. Dwyer Professor of Mechanical Engineering, Purdue University

**Panel:** Professors M.A. Alam, Supriyo Datta, Joerg Appenzeller, Gerhard Klimeck, and Mark Lundstrom