



SEMINAR

Recent Advances and Future Directions of MOS Devices for RF Applications

by

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VENUE: **Billings Room 3.04** (3rd Floor)
School of Electrical, Electronic & Computer Engineering
Electrical Engineering Building
The University of Western Australia
Fairway Entrance 2 and 3, Crawley (Perth)

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ABSTRACT:

It is beyond anyone's imagination as to how the MOS transistors could have transformed and advanced in the past 40 years. Traditionally, III-V compound transistors are the mainstream high-speed devices, and MOSFETs have long been considered as slow devices not suitable for radio frequency (RF) applications. Thanks to the aggressive feature size reduction in the past several years, MOSFETs can now reach an astonishing cutoff frequency of 300 GHz. This, together with the very large scale integration, low cost and good reliability, makes RF MOSFET a very strong contender in the fast growing wireless communication applications.

This overview talk will first cover the background and current status of MOSFETs for RF applications. Possible challenges and future developments of these devices will then be presented. Finally, novel MOS devices and technology roadmap for the next 20 years will be given.

ABOUT THE SPEAKER:

Juin J. Liou received the B.S. (honors), M.S., and Ph.D. degrees in electrical engineering from the University of Florida, Gainesville, in 1982, 1983, and 1987, respectively. In 1987, he joined the Department of Electrical and Computer Engineering at the University of Central Florida, Orlando, where he is now a Professor. His current research interests are micro/nanoelectronics computer-aided design, RF device modeling and simulation, and electrostatic discharge (ESD) protection design and simulation.

Dr. Liou has been awarded 3 U.S. patents and published 8 books, more than 210 journal papers (including 14 invited articles), and more than 160 papers (including 58 keynote or invited papers) in international and national conference proceedings. He

has been awarded more than \$7.0 million of research grants and has held consulting positions with research laboratories and companies in the United States, China, Japan, Taiwan, and Singapore. In addition, Dr. Liou serves as a technical reviewer for various journals and publishers, general chair or technical program chair for a large number of international conferences, and regional editor (in USA, Canada and South America) for the Microelectronics Reliability, an international journal published by Elsevier Science.

Dr. Liou received ten different awards on excellence in teaching and research from the University of Central Florida (UCF) and six different awards from the IEEE Electron Device Society. Among them, he was awarded the UCF Distinguished Researcher Award three times (1992, 1998, 2002), UCF Research Incentive Award two times (2000, 2005), UCF Trustee Chair Professor (2002), and IEEE Joseph M. Biedenbach Outstanding Engineering Educator Award in 2004 for his exemplary teaching, research, and international collaboration. His other honors include Fellow of the Institute of Electronic Engineers (IEE), IEEE Electron Device Society (EDS) Distinguished Lecturer, National Science Council Distinguished Lecturer, Yangtze River Scholar Endowed Chair Professor – the highest honorary professorship in China, Cao Guang-Biao Endowed Professor of Zhejiang University, China, Consultant Professor of Huazhong University of Science and Technology, Wuhan, China, and Courtesy Professor of Shanghai Jiao Tong University, Shanghai, China. Dr Liou was a recipient of U.S. Air Force Fellowship Award and National University Singapore Fellowship Award.

Dr. Liou served as the IEEE EDS Vice-President for Regions/Chapters, IEEE EDS Treasurer, IEEE EDS Finance Committee Chair, elected member of the IEEE EDS Administrative Committee, member of the IEEE EDS Educational Activities Committee, and member of the IEEE EDS Ex-Officio Administrative Committee.