Emerging Non-Volatile Memories

GUEST SPEAKER

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When: **24th May 2010, 3.00 p.m. to 4.00 p.m.**
Where: **Institute of Microelectronics, Singapore**
11 Science Park Road Singapore Science Park II Singapore 117685

Abstract
Recently, next generation non-volatile memories (NVM) continue to receive great attention due to its scalability, rapid read and write performance, simple structure, and easy incorporation with CMOS process. At the same time, the mainstream non-volatile memory, Flash, may have serious trouble in scaling when the technology node is beyond 22 nm. There are many candidates for next generation non-volatile memory, such as Magnetro-resistive RAM (MRAM), Phase change RAM (PCRAM), and Resistive RAM (RRAM). This talk will introduce the current results and future directions of ITRI's NVM program which includes the topics of MRAM, PCM, and RRAM. For the RRAM part, A HfO2-based resistive memory with the TiN electrode and fully integrated with 0.18μm CMOS technology will be introduced. Excellent memory performance, such as low operation current (25μA), high on/off resistance ratio (>1000), fast switching speed (5ns), satisfactory switching endurance (>106) and reliable data retention will be demonstrated in this presentation.

Speaker Biography

Dr Kao Ming-Jer received his Ph.D. in Electrical Engineering from National Cheng Kung University, Taiwan, in 1996. Then, he joined Electronics Research and Service Organisation (ERSO) of ITRI and was responsible for the device design in CCD/IRCCD and power electronics projects during 1996 ~2001. He initiated new non-volatile memory program and lead a research group on devices design、process integration and electrical characterisation when he was a department manager in 2002. He was elected as a "Outstanding Young Electrical Engineer" by the Chinese Institute of Electrical Engineering in 2004. Due to his contribution in the advanced research projects, he won "Outstanding project award" and "Advanced technologies award" from Ministry of Economic Affairs of ROC in 2004 and 2005, respectively. He was promoted to a director of nanoelectronic technology division in 2005. His current research interests are in the areas of power electronics, emerging nonvolatile memories and three dimensional integrated circuit (3D IC). Most recently, he became the deputy general director of electronics and optoelectronics lab. (EOL).

Registration
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