



1st International Workshop on Resistive RAM October 20th and 21st, 2011, Leuven, Belgium



Agenda

Thursday, October 20th, 2011

- 9:00 – 9:15 **Welcome and Opening Remarks,**
J. A. Kittl/L. Van den Hove (Imec, Belgium)
- 9:15 – 9:55 **Keynote: Resistive Switching Memory (RRAM) – Modeling and Scaling Studies,**
H. -S. P. Wong (Stanford, USA)
- 9:55 – 10:35 **Keynote: Microscopic Processes in Redox-Based Resistive Switching,**
R. Waser (Jülich-Aachen Research Alliance-FIT, Germany)
- 10:35 – 10:55 **Coffee Break**
- 10:55 – 11:35 **Keynote: Collective motion of nano-filaments in Pt/n-type TiO₂/p-type NiO/Pt stacked resistance switching memory,** C. S. Hwang (Seoul National University, Korea)
- 11:35 – 12:00 **Resistive Random Access Memory: Technology and Applications,**
F. Chen (ITRI, Taiwan)
- 12:00 – 13:30 **Lunch**
- 13:30 – 13:55 **Progress and Challenges on Resistive RAM,**
J. A. Kittl (Imec, Belgium)
- 13:55 – 14:20 **Modeling filament conduction,**
R. Degraeve (Imec, Belgium)
- 14:20 – 14:40 **Coffee Break**
- 14:40 – 15:05 **Mechanisms and modeling of filamentary switching in bipolar metal-oxide RRAM,**
D. Ielmini (Politecnico di Milano, Italy)
- 15:05 – 15:30 **Oxide-Based RRAM-Unified Physical Mechanism and Implementation for Cell Design Optimization,** J. Kang (Peking University, China)
- 15:30 – 15:55 **Physical modeling of HfO₂ RRAM device operations,**
L. Larcher (Università di Modena e Reggio Emilia, Italy)
- 16:00 – 18:00 **Poster Session/Reception**



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18:00 – 19:30 **Panel Discussion: “What is the switching mechanism of metal oxide RRAM?”**

Panelists: H. Akinaga (AIST, Japan), R. Waser (JARA, Germany), C. S. Hwang (Seoul National University, Korea), D. Ielmini (Politecnico di Milano, Italy), Y. Nishi (Stanford, USA), F. Chen (ITRI, Taiwan), L. Larcher (Università di Modena, Italy)

Friday, October 21st, 2011

9:00 – 9:25 **Opportunities and Risks of the Resistive Memory in the Future Memory Market,**
I. G. Baek (Samsung, Korea)

9:25 – 9:50 **Emerging Memory Opportunities, Promise and Challenges,**
G. Sandhu (Micron, USA)

9:50 – 10:15 **Hf-based RRAM: towards 10 nm,**
B. Govoreanu (Imec, Belgium)

10:15 – 10:35 **Coffee Break**

10:35 – 11:00 **Keynote: Ionic memory,**
M. Kozicki (Adesto, USA)

11:00 – 11:25 **Triode atom-switch,**
T. Sakamoto (LEAP (NEC), Japan)

11:25 – 11:50 **Physics of Ag/GeS_x/W CBRAM cells,**
J. R. Jameson (Adesto, USA)

12:00 – 13:30 **Lunch**

13:30 – 13:55 **Tungsten-oxide ReRAM and Cu-based Multiple-layer CBRAM,**
E. Lee (Macronix, Taiwan)

13:55 – 14:20 **Cu-Te based CBRAM,**
L. Goux (Imec, Belgium)

14:20 – 14:45 **Kinetic Monte-Carlo Modeling of Electrochemical Metallization RRAMs,**
V. Subramanian (U.C. Berkeley, USA)



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Friday, October 21st, 2011

- 14:45 – 15:10 **RRAM memories for advanced CMOS integration,**
J. Buckley (CEA-LETI-MINATEC, France)
- 15:10 – 15:35 **ReRAM and CBRAM devices using AlOx and Ge-based materials,**
S. Maikap (Chang Gung University, China)
- 15:35 – 15:55 **Coffee Break**
- 15:55 – 16:20 **Selector considerations for RRAM,**
G. Spadini (Intel, USA)
- 16:20 – 16:45 **Selection devices for Resistive Switching Memories (RRAM),**
A. Chen (Global Foundries, USA)
- 16:45 – 17:10 **Bipolar Access Device Options for 3D Crosspoint Resistive RAM,**
K. Gopalakrishnan (IBM, USA)
- 17:10 – 17:30 **Coffee Break**
- 17:30 – 19:00 **Panel Discussion: “Which emerging memory for what applications?”**
Panelists: G. Sandhu (Micron, USA), G. Spadini (Intel, USA), T. Sakamoto (LEAP (NEC), Japan), I. G. Baek (Samsung, Korea), R. Srivastava (Sandisk), R. Liu (Macronix, Taiwan), C. Lam (IBM, USA), N. Derhacobian (Adesto, USA)

Organizing Committee:

Dr. J. A. Kittl	Prof. H.-S. P. Wong	Prof. Y. Nishi	Prof. H. Maes
Chief Scientist, Imec	Stanford University	Stanford University	Sr. VP Imec, Coordinator CALIT
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