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Technical Papers

Session 1	Advanced Characterization 1
Chair	**Pat Lenahan**, *Penn State*

Advances in imaging and quantification of electrical properties at the nanoscale using Scanning Microwave Impedance Microscopy (sMIM) [INVITED]
Stuart Friedman

Oxide Defects in Emerging Technologies: Characterization and Mitigation [Tutorial]
Dmitry Veksler

Session 2	Memory and Circuit Reliability
Chair	**Luca Larcher**, *Univ. of Modena and Reggio Emilia*

BTI Variability of SRAM Cells Under Periodically Changing Stress Profiles
Kay-Uwe Giering, André Lange, Ben Kaczer and Roland Jancke

AC Stress and Standard Cell Aging Characterization to Enhance Reliability Coverage of Logic Circuits [INVITED]
Y.-C. Huang, L.-C. Hsu, W.-S. Chou, M.-H. Hsieh, K.-W. Shih, N.-H. Tseng, R. B. Pittu, W. Wang and Y.-H. Lee

Novel Characterization Techniques Providing Reliable and Low-power Flash NOR Memory Operations [INVITED]
Jean Coignus, Alexandre Vernhet, Gilles Reimbold, Giulio Torrente and David Roy

The Sources of Erase Voltage Variability in Split-Gate Flash Memory Cell Arrays
Yuri Tkachev and James A. Walls

Session 3	MEMS
Chair	**Tom Kopley** , *ON Semiconductor*

MEMS Reliability [Tutorial]
Allyson Hartzell

Session 4	Defects
Chair	**Stanislav Tyaginov**, *TU Vienna*

Random Telegraph Noise Analysis as a Tool to link Physical Device features to Electrical Reliability in Nanoscale Devices [INVITED]
Francesco Maria Puglisi

On the Distribution of the FET Threshold Voltage Shifts due to Individual Charged Gate Oxide Defects
B. Kaczer, S. M. Amoroso, R. Hussin, A. Asenov, J. Franco, P. Weckx, Ph. J. Roussel, G. Rzepa, T. Grasser and N. Horiguchi

Atomistic Modeling of Defects in SiO_2 and HfO_2 for Reliability Predictions [Tutorial]
Al-Moatasem El-Sayed

Session 5	Silicon MOSFET Reliability
Chair	**Steve Ramey**, *Intel*

Time Dependent Junction Degradation in FinFET
T. Y. Ho, K. Joshi, K. H. Lee, P. J. Liao, J. R. Shih, Y. -H. Lee

Session 6	High Voltage Devices
Chair	**Zakariae Chbili**, *GlobalFoundries*

Session 7	Advanced Characterization 2
Chair	**Ricki Southwick**, *IBM*

Reliability of Electronic Devices: Nanoscale Studies Based on the Conductive Atomic Force Microscope [Invited]
Mario Lanza

Scalpel SPM toward the three-dimensional characterization of confined volumes [Tutorial]
Umberto Celano

Session 8	Self-Heating
Chair	**Gavin Hall**, *ON Semiconductor*

Self-Heating Confounds, Correlates, and Redefines Front and Backend Reliability of Modern Surround Gate Transistors
Ashraf Alam

Self-heating Impact on TDDB in Bulk FinFET Devices: Uniform vs Non-uniform Stress
Z. Chbili and A. Kerber

Session 9	TDDB
Chair	**Andreas Aal**, *Volkswagen*

A Physical Manifestation of Interfacial Roughness Pitfalls in Assessing Dielectric TDDB Lifetimes
Lieyi Sheng

Fast TDDB for Early Reliability Monitoring
C. LaRow, Y. Liu, Z. Chbili and A. Gondal

Session 10	Harsh Environments
Chair	**Jean Yang-Scharlotta**, *JPL*

Automotive system level reliability dependence on semiconductor capabilities and market dynamics [INVITED]
Andreas Aal

Reliability-performance evaluation for scaled multi-materials device stacks [Invited]
Gennadi Bersuker

Session 11	Back End of Line
Chair	**Jean Yang-Scharlotta**, *JPL*

Scaling and Variability Challenges to Advance Node BEOL Reliability [Tutorial]
Patrick Justison

Effect of Texture and Elastic Anisotropy of Copper Microstructure on Reliability
Adarsh Basavalingappa, Ming Y. Shen and James R. Lloyd

Session	Poster Presentations

Vth Is Dead — Long Live The Threshold Voltage
Theodor Hillebrand, Maike Taddiken, Konstantin Tscherkaschin, Steffen Paul, Dagmar Peters-Drolshagen

Humidity and Polarity Influence on MIM PZT Capacitor Degradation and Breakdown
Jiahui Wang, Cora Salm, Evert Houwman, Minh Nguyen and Jurriaan Schmitz

Reliability of Integrated Resistors and the Influence of WLCSP Bake
S. Jose, J. Bisschop, V. Girault, L. V. Marwijk, J. Zhang and S. Nath

AC TDDB Analysis for Circuit-Level Gate Oxide Wearout Reliability Assessment
T. E. Kopley, K. O'Brien and W.-C. Chang

1/f Noise Analysis of Hafnium Oxide Based ReRAM Devices Using ac + dc Measurement Technique
Niaz Mahmud, Avyaya J. Narasimham and J. R. Lloyd

Intrinsic Reliability Characterization for Stand-Alone MEMS Switch Technology
Edoardo Maria Ceccarelli, Colm Heffernan, John Browne and Padraig Fitzgerald

Improved Analysis of NBTI Relaxation Behavior Based on Fast I-V Measurement
D. Nouguier, C. Ndiaye, G. Ghibaudo, X. Federspiel, M. Rafik and D. Roy

Increasing Velocity of Wafer Level Reliability Characterization: Novel Approaches and Limitations
B.Bittel, S. Vadlamani, S. Ramey and S. Padiyar

Study on Off-State Hot Carrier Degradation and Recovery of NMOSFET in SWD Circuits of DRAM
Kangil Kim, Ilsub Chung, Kangil Kim, Duan Sun, Sangjae Rhe, Ilgweon Kim, Hongsun Hwang, Kangyong Cho and Gyoyoung Jin

On the Effect of Interface Traps on the Carrier Distribution Function During Hot-Carrier Degradation
S. E. Tyaginov, A. Makarov, M. Jech, J. Franco, P. Sharma, B. Kaczer and T. Grasser

Radiation Induced Leakage Currents in Dense and Porous Low-*k* Dielectrics
Ryan J. Waskiewicz, Michael J. Mutch, Patrick M. Lenahan and Sean W. King

Bias Temperature Instability and its Correlation to Flicker (1/f) Noise in FinFETs
Y. M. Ding, D. Misra and P. Srinivasan