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<th>Time</th>
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<tbody>
<tr>
<td>7:30am</td>
<td>Breakfast</td>
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<tr>
<td>8:30am</td>
<td>TSA1 - Terrestrial Radiation and Its Impact on the Reliability Performance of Microelectronics</td>
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<td>Robert Baumann&lt;sup&gt;1&lt;/sup&gt; (1. Radiosity Solutions LLC &amp; Southern Methodist University)</td>
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<tr>
<td>8:30am</td>
<td>Bias Temperature Instabilities: Best Practices for Reliability Benchmarking and Optimization Based on Recent Theoretical Insights</td>
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<td>Jacopo Franco&lt;sup&gt;1&lt;/sup&gt; (1. IMEC)</td>
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<tr>
<td>10am</td>
<td>Break</td>
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<tr>
<td>10:30am</td>
<td>Plasma-induced Damage-modeling, Characterizations, and Design Methodologies</td>
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<td>Koji Eriguchi&lt;sup&gt;1&lt;/sup&gt; (1. Kyoto University)</td>
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<tr>
<td>10:30am</td>
<td>TSA2 (Tutorial) - Plasma-induced Damage-modeling, Characterizations, and Design Methodologies</td>
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<td>Michael Khazhinsky&lt;sup&gt;1&lt;/sup&gt; (1. Silicon Labs)</td>
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<tr>
<td>10:30am</td>
<td>Self-heating: Assessment Methodologies, Impact on Reliability and Prospects for Future Technology Solutions</td>
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<td>Erik Bury&lt;sup&gt;1&lt;/sup&gt; (1. IMEC)</td>
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<tr>
<td>12pm</td>
<td>Lunch</td>
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<tr>
<td>1:30pm</td>
<td>SONOS or Charge Trap Memories</td>
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<td>Krishnaswamy Ramkumar&lt;sup&gt;1&lt;/sup&gt; (1. Cypress Semiconductor)</td>
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<tr>
<td>1:30pm</td>
<td>Electromigration: Physics, Rule, Validation, and Relaxation</td>
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<td>Young-Joon Park&lt;sup&gt;1&lt;/sup&gt; (1. Texas Instruments)</td>
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<tr>
<td>1:30pm</td>
<td>Electronic Design Automation (EDA) Solutions for Latch-up Verification in CMOS and HV Technologies</td>
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<td></td>
<td>Michael Khazhinsky&lt;sup&gt;1&lt;/sup&gt; (1. Silicon Labs)</td>
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<td>3pm</td>
<td>Break</td>
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<sup>1</sup> (1. Radiosity Solutions LLC & Southern Methodist University)
## Monday, 30 March

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<thead>
<tr>
<th>Time</th>
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<tr>
<td>7am</td>
<td><strong>Breakfast</strong></td>
<td><strong>International Foyer</strong></td>
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<tr>
<td>8am</td>
<td><strong>The Role of Defects on Reliability Aspects in GaN Power Devices</strong></td>
<td><strong>Val Verde</strong></td>
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<tr>
<td></td>
<td><strong>TMA.1 (Tutorial) - The Role of Defects on Reliability Aspects in GaN Power Devices</strong></td>
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<td><strong>Val Verde</strong></td>
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<tr>
<td>9:30am</td>
<td><strong>Break</strong></td>
<td><strong>International Foyer</strong></td>
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<tr>
<td>10am</td>
<td><strong>System-Focused Reliability of SiC MOSFETs</strong></td>
<td><strong>Val Verde</strong></td>
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<td><strong>TMA.2 (Tutorial) - System-Focused Reliability of SiC MOSFETs</strong></td>
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<td><strong>Val Verde</strong></td>
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<td>Time</td>
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| 10am   | **Phase Change Memory: Technology Reliability and System-Level Implications**  
International I & II |                |
|        | **TMB.2 (Tutorial) - Phase Change Memory: Technology Reliability and System-Level Implications**  
» Haralampos Pozidis¹, Nikolaos Papandreou² (1. IBM Research - Zurich, 2. IBM) |                |
| 10am   | **Challenges in Prognostics and Health Management of Electronic Systems**  
International III & IV |                |
|        | **TMC.2 (Tutorial) - Challenges in Prognostics and Health Management of Electronic Systems**  
» Michael Azarian¹ (1. University of Maryland) |                |
| 10am   | **TCAD-EDA Assisted BTI-HCD Reliability Framework from Devices to Circuits**  
*Cap Rock I, II & III* |                |
|        | **TMD.2 (Tutorial) - TCAD-EDA Assisted BTI-HCD Reliability Framework from Devices to Circuits**  
» Souvik Mahapatra¹ (1. Indian Institute of Technology Bombay) |                |
| 10am   | **Tests, Events to Damage, Failure Types, and Co-Design Approaches**  
*Spicewood I, II & III* |                |
|        | **TME.2 (Tutorial) - Exploring Relation of ESD and EMC: Tests, Events to Damage, Failure Types, and Co-Design Approaches**  
» Melanie Etherton¹ (1. NXP) |                |
| 11:30am| **Lunch**                                                                | Vineyard       |
| 12:30pm| **Testing for Wear and Abnormal Conditions of Power IGBT Modules**  
*Val Verde* |                |
|        | **TMA.3 (Tutorial) - Testing for Wear and Abnormal Conditions of Power IGBT Modules**  
» Francesco Iannuzzo¹ (1. Aalborg University) |                |
| 12:30pm| **Designing for Analog Reliability: From Components to Circuits**  
*International I & II* |                |
|        | **TMB.3 (Tutorial) - Designing for Analog Reliability: From Components to Circuits**  
» Dhanoop Varghese¹, Sunglyong Kim² (1. Texas Instruments, 2. Texas Instruments, Inc.) |                |
| 12:30pm| **Materials Analysis Techniques in Semiconductor**  
*International III & IV* |                |
|        | **TMC.3 (Tutorial) - Materials Analysis Techniques in Semiconductor**  
» Ling Pan¹ (1. Intel) |                |
| 12:30pm| **Materials Engineering Challenges for Neuromorphic Computing**  
*Cap Rock I, II & III* |                |
|        | **TMD.3 (Tutorial) - Materials Engineering Challenges for Neuromorphic Computing**  
» Siddarth Krishnan¹ (1. Applied Materials) |                |
| 1pm    | **IEW Technical Session/Posters I**  
*Spicewood I, II & III* |                |
| 2pm    | **Break**                                                                | International Foyer |
**Monday, 30 March**

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<th>Time</th>
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<tr>
<td>2:30pm</td>
<td>Circuit</td>
<td>Val Verde</td>
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<td><strong>YA1 (IRPS YIR) - Main Review</strong></td>
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<td></td>
<td>» James Tschanz¹ (1. Intel Corporation)</td>
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<td></td>
<td><strong>YA2 (IRPS YIR) - EDA Aspects</strong></td>
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<td></td>
<td>» Georgios Konstantinidis¹ (1. Google)</td>
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<tr>
<td>3pm</td>
<td>Break</td>
<td>International Foyer</td>
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<td>3:20pm</td>
<td>RF/mmW/5G</td>
<td>Val Verde</td>
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<td><strong>YA3 (IRPS YIR) - Si and SiGe Reliability</strong></td>
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<td></td>
<td>» Fernando Guarin¹ (1. GLOBALFOUNDRIES)</td>
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<td><strong>YA4 (IRPS YIR) - Compound</strong></td>
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<td>» Enrico Zanoni¹ (1. University of Padova)</td>
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<tr>
<td>3:30pm</td>
<td>IEW Discussion Group II</td>
<td>Spicewood II &amp; III</td>
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<td>3:30pm</td>
<td>IEW Discussion Group I</td>
<td>Spicewood I</td>
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<tr>
<td>4:10pm</td>
<td>Memory</td>
<td>Val Verde</td>
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**Tuesday, 31 March**

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<th>Time</th>
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<tr>
<td>7am</td>
<td>Breakfast</td>
<td>Texas Grande</td>
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<tr>
<td>8:30am</td>
<td>IRPS Welcome &amp; Introduction</td>
<td>Texas Grande</td>
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<tr>
<td>9:05am</td>
<td>Plenary Keynote I</td>
<td>Texas Grande</td>
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<td><strong>PK1 (Plenary Keynote) - The Future of Compute: Reliability and Resiliency in the Era of Data Transformation</strong></td>
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<td></td>
<td>» Michael C. Mayberry¹, Gaudenzio Meneghesso² (1. Intel, 2. UniPD)</td>
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<tr>
<td>9:40am</td>
<td>Plenary Keynote II</td>
<td>Texas Grande</td>
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<td></td>
<td><strong>PK2 (Plenary Keynote) - Power Semiconductor Reliability – An Industry Perspective on Status and Challenges</strong></td>
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<td>» Oliver H&quot;aberlen¹, Gaudenzio Meneghesso² (1. Infineon Technologies Austria AG, 2. UniPD)</td>
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### Continued from Tuesday, 31 March

#### 10:15am
**Plenary Keynote III**
*Texas Grande*

**PK3 (Plenary Keynote) - IoT End-node Device: Built to Last**

- **Alessandro Piovaccari**, Gaudenzio Meneghesso
  (1. SiLabs, 2. UniPD)

#### 10:50am
**Break & Exhibits**
*Texas Grande*

#### 11:10am
**2A - Circuit Reliability and Aging I**
*Texas Grande*

**2A.1 (Invited) - An Industry-Standard Approach Toward Modeling Device Aging**

- **Colin Shaw** (1. Silvaco)

**2A.2 - Fast & Accurate Methodology for Aging Incorporation in Circuits using Adaptive Waveform Splitting (AWS)**

- **Subrat Mishra**, Pieter Weckx, Ji-Yung Lin, Ben Kaczer, Dimitri Linten, Alessio Spessot, Francky Catthoor
  (1. IMEC, 2. IMEC, Kapeldreef 75, B-3001 Leuven, Belgium)

**2A.3 - BTI and HCD Degradation in a Complete 32 x 64 bit SRAM Array – including Sense Amplifiers and Write Drivers – under Processor Activity**

- **Victor M. van Santen**, Simon Thomann, Chaitanya Pasupuleti, Paul R. Genssler, Narendra Gangwar, Uma Sharma, Jörg Henkel, Souvik Mahapatra, Hussam Amrouch
  (1. Karlsruhe Institute of Technology (KIT), 2. Indian Institute of Technology Bombay)

#### 11:10am
**2B - RF/mmW/5G Reliability I**
*International I & II*

**2B.1 (Invited) - Reliability Physics of GaN HEMT Microwave Devices: The Age of Scaling**

- **Enrico Zanoni**, Matteo Meneghini, Gaudenzio Meneghesso, Fabiana Rampazzo, Daniele Marcon, Veronica Zhan Gao, Francesca Chiochetta, Andreas Graff, Frank Altmann, Michel Simon-Najasek, David Poppitz
  (1. UniPD, 2. University of Padova, 3. IMWS)

**2B.2 - Short-term reliability of high performance Q-band AlN/GaN HEMTs**

- **Riad KABOUCHE**, Kathia Harrouche, Etienne Okada, Farid MEDJDOUB
  (1. IEMN-University of Lille)

**2B.3 (Invited) - Silicon Based RF Reliability Challenges for 5G Communication**

- **Paul Colestock**, Srinivasan Purushothaman, Fernando Guarin
  (1. GLOBALFOUNDRIES)

#### 11:10am
**2C - Reliability Testing I**
*International III & IV*

**2C.1 - A Novel ‘I-V Spectroscopy’ Technique to Deconvolve Threshold Voltage and Mobility Degradation in LDMOS Transistors**

- **Yen-Pu Chen**, Bikram Mahajan, Dhanoop Varghese, Srikanth Krishnan, Vijay Reddy, Muhammad Ashraful Alam
  (1. Purdue University, 2. Texas Instruments)

**2C.2 - Studies of Bias Temperature Instabilities in 4H-SiC DMOSFETs**

- **Amartya Ghosh** (1. The Pennsylvania State University)

**2C.3 - Surge Energy Robustness of GaN Gate Injection Transistors**

- **Ruizhe Zhang**, Joseph P. Kozak, Jingcun Liu, Ming Xiao, Yuhao Zhang
  (1. Virginia Polytechnic Institute and State University)

#### 11:10am
**IEW Technical Session / Posters II**
*Spicewood I, II & III*
12:30pm  Lunch
      Vineyard

1:40pm  3A - Circuit Reliability and Aging II
      Texas Grande

3A.1 (Invited) - A Novel Approach to In-field, In-mission Reliability Monitoring Based on Deep Data
   » Evelyn Landman1, Tamar Naishlos2, Noam Brousard3 (1. CTO, proteanTecs, 2. Director of Marketing, proteanTecs, 3. VP System, proteanTecs)

3A.2 (Invited) - Voltage Regulator Reliability
   » Saibal Mukhopadhyay1, Venkata Chaitanya Krishna Chekuri2, Arvind Singh1, Nael Mizanur Rahman2, Edward Lee1 (1. Georgia Tech, 2. Georgia Institute of Technology)

3A.3 (Invited) - Experimental Monitoring of Aging in CMOS RF Linear Power Amplifiers: Correlation Between Device and Circuit Degradation
   » Rosana Rodriguez1, Albert Crespo-Yepes1, Javier Martin-Martinez2, Montse Nafria2, Xavier Aragones3, Diego Mateo3, Enrique Barajas3 (1. Universitat Autonoma de Barcelona, 2. UAB, 3. Universitat Politencica de Catalunya)

3A.4 - Hot-Carrier induced Breakdown events from Off to On mode in NEDMOS
   » Alain Bravaix1, Edith KUSSENER1, David NEY1, Xavier Federspiel2, Florian Cacho2 (1. ISEN, 2. ST Microelectronics, 3. STMicroelectronics)

3A.5 - Statistical Characterization of BTI and RTN using Integrated pMOS Arrays
   » Bernhard Stampfer1 (1. Institute for Microelectronics, TU Wien, Gußhausstr. 27-29, 1040 Vienna, Austria)

1:40pm  3B - Wide-Bandgap Semiconductors I
      International I & II

3B.1 (Invited) - Ruggedness of SiC Devices Under Extreme Conditions
   » Peter Friedrichs1 (1. Infineon)

3B.2 - Physics of Degradation in SiC MOSFETs Stressed by Over-voltage and Over-current Switching
   » Joseph P. Kozak1, Ruizhe Zhang1, Jingcun Li1, Khai Ngo1, Yuhao Zhang2 (1. Virginia Polytechnic Institute and State University)

3B.3 - Non-Isothermal Simulations to Optimize SiC MOSFETs for Enhanced Short-Circuit Ruggedness
   » Dongyoung Kim1, Adam Morgan1, Nick Yun1, Woongje Sung1, Anant Agarwal2, Robert Kaplar2 (1. SUNY Polytechnic Institute, 2. The ohio state University, 3. Sandia National Labs)

3B.4 - Gate-oxide reliability and failure-rate reduction of industrial SiC MOSFETs
   » Thomas Aichinger1, Matthias Schmidt2 (1. Infineon Technologies Austria AG, 2. Infineon Technologies AG)

3B.5 - Influence of high-voltage gate-oxide pulses on the BTI behavior of SiC MOSFETs
   » Sebastian Maass1, Thomas Aichinger2, Gerald Rescher2, Hans Reisinger1 (1. Infineon Technologies AG, 2. Infineon Technologies Austria AG)

1:40pm  3C - Neuromorphic Computing Reliability I
      International III & IV

3C.1 (Invited) - Introduction of Non-Volatile Computing In Memory (nvCIM) by 3D NAND Flash for Inference Accelerator of Deep Neural Network (DNN) and the Read Disturb Reliability Evaluation
   » Hang-Ting Lue1 (1. Macronix)

3C.2 - Device-aware inference operations in SONOS non-volatile memory arrays
   » Christopher Bennett1, T. Patrick Xiao1, Ryan Dellana1, Ben Feinberg1, Venkatraman Prabhakar2, Krishnaswamy Ramkumar2, Vineet Agrawal3, Long Hinh3, Swatilekha Saha3, Vijay Raghavan3, Ramesh Chettuvetty3, Sapan Agarwal3, Matt Marinella3 (1. Sandia National Labs, 2. Cypress Semiconductor)
Continued from Tuesday, 31 March

3C.3 - Superior Data Retention of Programmable Linear RAM (PLRAM) for Compute-in-Memory Application
» Shifan Gao¹, Cong Yu¹, Zeyu Zhang¹, Xiang Qiu¹, Choonghyun Lee¹, Yi Zhao¹ (1. Zhejiang University, 2. Flash Billion)

3C.4 - Gate-Oxide Trapping Enabled Synaptic Logic Transistors
» Xin Ju¹, Diing shenp Ang¹ (1. Nanyang Technological University)

3C.5 - Memory Update Characteristics of Carbon Nanotube Memristors (NRAM) Under Circuitry-relevant Operation Conditions
» Dmitry Veksler¹, Gennadi Bersuker¹, Pragya Shrestha², Charles Cheung¹, Jason Campbell², Adam Bushmaker¹, Maribeth Mason¹, Tom Rueckes¹, Lee Cleveland¹, Harry Luan¹, David Gilmer² (1. The Aerospace Corporation, 2. National Institute of Standards and Technology, 3. NIST, 4. Nantero Inc.)

3:50pm Break & Exhibits
Texas Grande

4:00pm

4A - Metallization/BEOL Reliability I
Texas Grande

4A.1 - Reliability Characteristics of a High Density Metal-Insulator-Metal Capacitor on Intel’s 10+ Process
» Cheyun Lin¹ (1. Intel Corporation)

4A.2 - Impact of Anode-side Defect Generation on Inter-Level TDDB Degradation in Cu/Low-k Damascene Structures
» Naohito Suzumura¹, Kazuyuki Omori¹, Hideaki Tsuchiya¹, Hideki Aono¹, Tomohiro Yamashita¹ (1. Renesas Electronics Corporation)

4A.3 - Dielectric Reliability Study of 21 nm Pitch Interconnects with Barrierless Ru Fill
» Alicja Lesniewska¹, Davide Tierno¹, Philippe Roussel¹, Victor Vega Gonzalez¹, Marleen van der Veen¹, Patrick Verdonck², Nicolas Jourdan³, Christopher J. Wilson³, Kristof Croes³, Zsolt Tokei² (1. IMEC, Kapeldreef 75, B-3001 Leuven, Belgium, 2. IMEC, 3. IMEC, Kapeldreef 75, B-3001 Leuven)

4A.4 - Dielectric Breakdown in Cu/Low-k Interconnects With High-k Dielectrics
» Xiaoying Chen¹, Yi Zhao¹, Joon Park¹ (1. Zhejiang University)

4B - RF/mmW/5G Reliability II
International I & II

4B.1 - A Novel Methodology to Evaluate RF Reliability on SOI CMOS-based Power Amplifier for mmWave Applications
» Srinivasan Purushothaman¹, Paul Colestock¹, Stephen Moss¹, Thomas Samuels¹, Fernando Guarin¹, Byoung Min¹ (1. GLOBALFOUNDRIES)

4B.2 - Exploring the DC reliability metrics for scaled GaN-on-Si devices targeted for RF/5G applications
» Vamsi Putcha¹, Erik Bury¹, Jacopo Franco¹, Amey Walke¹, Simeng Zhao¹, Uthayasankaran Peralagu¹, Ming Zhao¹, AliReza Alian¹, Ben Kaczer¹, Niamh Waldron¹, Dimitri Linten¹, Bertrand Parvais¹, Nadine Collaert¹ (1. IMEC, Kapeldreef 75, B-3001 Leuven, Belgium, 2. vanderbilt university)

4B.3 (Invited) - The Role of RF Operational Life Testing in Evaluating III-V Devices Addressing RF Through Millimeter-wave Applications
» Elias Reese¹ (1. Qorvo)

4B.4 (Invited) - The Role of On-Chip Millimeter-Wave Test and Measurement in RF System Integration
» Toru Iwahashi¹, Hideki Aono¹ (1. Renesas Electronics Corporation)

4C - System Electronics Reliability
International III & IV

4C.1 (Invited) - Challenges in Prognostics and Health Management of Electronic Systems
» Michael Azarian¹ (1. Univ Maryland/CALCE)

4C.2 - Use of Silicon-based Sensors for System Reliability Prediction
» Dmitry Goloubey¹, Shi-Jie Wen¹, Donald Allen¹, Ranjani Ram¹, Firdous Bano¹, Nithin Guruswamy¹, James Turman¹ (1. Cisco Systems)
Continued from Tuesday, 31 March

**4C.3 - Early Diagnosis and Prediction of Wafer Quality using Machine Learning on sub-10nm Logic Technology**

» heungkook ko¹, Sangwoo Pae¹, Dongjoon Lee¹, Sena Park¹, Sung Ryul Kim¹, Jihyun Ryu¹, Euncheol Lee¹, Seoung Bum Kim², Hyungrok Do², Hyungu Kahng², Yoon Sang Cho², Jiyoon Lee², Dongkyun Kwon¹, Yongsung Ji¹, Hai Jiang¹, Tae-Young Jeong¹, Taiki Uemura¹, Mingu Kwak² (¹. SAMSUNG ELECTRONICS, 2. Korea University)

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<tr>
<td>6pm</td>
<td><strong>Workshop Reception</strong>&lt;br&gt;Texas Grande</td>
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<td>7pm</td>
<td><strong>HCI/BTI</strong>&lt;br&gt;International I &amp; II&lt;br&gt;Chaired by: Xavier Federspiel and Souvik Mahapatra</td>
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<td>7pm</td>
<td><strong>Solid State Drive</strong>&lt;br&gt;International III &amp; IV&lt;br&gt;Chaired by: Jay Sarkar and Nikolaos Papandreou</td>
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<td>7pm</td>
<td><strong>BEOL</strong>&lt;br&gt;Delaney I &amp; II&lt;br&gt;Chaired by: Ki-Don Lee and Gavin Hall</td>
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<td><strong>BEOL</strong></td>
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<td>7pm</td>
<td><strong>Wide-Bandgap I</strong>&lt;br&gt;Cap Rock I, II &amp; III&lt;br&gt;Chaired by: Shireen Warnock and Matteo Meneghini</td>
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<td><strong>Wide-Bandgap I</strong></td>
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7pm  **Neuromorphic**<br>Cross Timbers I & II<br>Chaired by: Gennadi Bersuker and Matt Marinella and Kin Leong Pey

8pm  **Circuit Reliability**<br>International I & II<br>Chaired by: Valeriy Sukharev and Georgios Konstadinidis

8pm  **Emerging Memory**<br>International III & IV<br>Chaired by: Joe McCrate and Tetsuo Endoh

8pm  **Automotive**<br>Delaney I & II<br>Chaired by: Riccardo Mariani and Udeerna Doppalapudi

8pm  **Wide-Bandgap II**<br>Cap Rock I, II & III<br>Chaired by: Aivars J. Lelis

8pm  **RF/mmW/5G**<br>Cross Timbers I & II<br>Chaired by: Fernando Guarin and Farid Medjdoub

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Wednesday, 1 April

7am  
Breakfast  
Texas Grande

8:30am  
5A - Transistors I  
Texas Grande

5A.1 (Invited) - Modeling Framework for Transistor Aging Playback in Advanced Technology Nodes
» Inanc Meric¹, Stephen Ramey¹, Steven Novak², Jeffrey Hicks¹, Sivakumar P. Mudanai³, Satrajit Gupta³ (1. Intel Corporation, 2. Logic Technology Development Quality and Reliability, Intel Corporation, 3. Intel)

5A.2 - A Compact Physics Analytical Model for Hot-Carrier Degradation
» Stanislav Tyaginov¹, Alexander Grill², Michiel Vandemaele¹, Tibor Grasser³, Geert Hellings¹, Alexander Makarov⁴, Markus Jech⁴, Dimitri Linten², Ben Kaczer⁴ (1. IMEC, 2. IMEC, Kapeldreef 75, B-3001 Leuven, Belgium, 3. Institute for Microelectronics, TU Wien, Gussausstr. 27-29, 1040 Vienna, Austria, 4. Vienna Technical University)

5A.3 - The Influence of Gate Bias on the Anneal of Hot-Carrier Degradation
» Michiel Vandemaele¹, Kai-Hsin Chuang¹, Erik Bury², Stanislav Tyaginov², Guido Groeseneken¹, Ben Kaczer¹ (1. imec + KU Leuven, 2. IMEC, 3. IMEC, Kapeldreef 75, B-3001 Leuven, Belgium)

5A.4 - Analysis of BTI, SHE Induced BTI and HCD Under Full VG/VD Space in GAA Nano-Sheet N and P FETs
» Nilotpal Choudhury¹, Uma Sharma², Huimei Zhou³, Ricki Southwick⁴, Miaomiao Wang³, Souvik Mahapatra¹ (1. Indian Institute of Technology Bombay, 2. India, 3. IBM Research)

5A.5 - Comparison of Variability of HCI Induced Drift for SiON and HKMG Devices
» Xavier Federspiel¹, Cheikh Diouf², Florian Cacho², Emmanuel Vincent¹ (1. ST Microelectronics, 2. STMicroelectronics)

8:30am  
5B - Wide-Bandgap Semiconductors II  
International I & II

5B.1 (Invited) - Defect Spectroscopy in SiC Devices
» Michael Waltl¹ (1. Institute for Microelectronics, TU Wien, Gusshausstr. 27-29, 1040 Vienna, Austria)

5B.2 (Invited) - Challenges and Peculiarities in Developing New Standards for SiC
» Don Gajewski¹ (1. Cree/Wolfspeed)

5B.3 - Towards a Robust Approach to Threshold Voltage Characterization and High Temperature Gate Bias Qualification
» Daniel Habersat¹, Aivars L. Lelis², Ronald Green¹ (1. Optical and Power Devices Branch, U.S. Army Combat Capabilities Development Command — Army Research Laboratory, 2. United States Army Research Laboratory)

5B.4 - Similarities and Differences of BTI in SiC and Si Power MOSFETs
» Judith Berens¹, Magdalena Weger¹, Gregor Pobegen¹, Thomas Aichinger², Gerald Rescher², Christian Schleich³, Tibor Grasser³ (1. KAI Kompetenzzentrum Automobil- und Industrielektronik GmbH, Europastr. 8, 9524 Villach, Austria, 2. Infineon Technologies Austria AG, 3. Institute for Microelectronics, TU Wien, Gussausstr. 27-29, 1040 Vienna, Austria)

5B.5 - Non-Intrusive Methodologies for Characterization of Bias Temperature Instability in SiC Power MOSFETs
» Jose Ortiz Gonzalez¹, Olayiwola Alatise¹, Phil Mawby¹ (1. University of Warwick)
Continued from Wednesday, 1 April

SC.1 - In-Situ Monitoring of Self-Heating Effect and its Quantitative Impact on Hot Carrier Injection in Aggressively Scaled SOI FinFETs Under Dynamic Circuit Operation
» Yiming Qu, Jiwu Lu, Junkang Li, Zhuo Chen, Jie Zhang, Chunlong Li, Shih-Min Lee, Yi Zhao (1. Zhejiang University, 2. Hunan University, 3. Institute of Microelectronics, Chinese Academy of Sciences, Beijing)

SC.2 - A fast and test-proven methodology of assessing RTN/fluctuation on deeply scaled nano pMOSFETs
» Rui Gao, Mezhabeen Mehedi, Haibao Chen, Xinsheng Wang, Jianfu Zhang, Xiaoling Lin, Zhiyuan He, Yiqiang Chen, Dengyun Lei, Yun Huang, ZHIGANG JI, Yunfei En, Runsheng Wang (1. China Electronic Product Reliability and Environment Research Institute, 2. School of Engineering, Liverpool John Moores University, 3. School of Microelectronics, Shanghai Jiaotong University, 4. Department of Electronics & Electrical Engineering, Harbin Institute of Technology at Weihai, 5. National Key Laboratory of Science and Technology on Micro/Nano Fabrication, Shanghai Jiaotong University, 6. Institute of Microelectronics, Peking University)

SC.3 - Reliability and Variability of Advanced CMOS Devices at Cryogenic Temperatures
» Alexander Grill, Erik Bury, Jakob Michl, Stanislav Tyaginov, Dimitri Linten, Tibor Grasser, Bertrand Parvais, Ben Kaczer, Michael Waltl, Iuliana Radu (1. IMEC, Kapeldreef 75, B-3001 Leuven, Belgium, 2. IMEC, 3. Institute for Microelectronics, TU Wien, Vienna, Austria, 4. Institute for Microelectronics, TU Wien, Gußhausstr. 27-29, 1040 Vienna, Austria)

SC.4 - Quantum Mechanical Charge Trap Modeling to Explain BTI at Cryogenic Temperatures
» Jakob Michl, Alexander Grill, Dieter Claes, Gerhard Rzepa, Ben Kaczer, Dimitri Linten, Iuliana Radu, Tibor Grasser, Michael Waltl (1. Institute for Microelectronics, TU Wien, Gußhausstr. 27-29, 1040 Vienna, Austria, 2. IMEC, Kapeldreef 75, B-3001 Leuven, Belgium, 3. Global TCAD Solutions GmbH, Vienna, Austria)

SC.5 - Nanoindentation to investigate IC stability using ring oscillator circuits as a CPI sensor
» Simon Schlipf, André Clausner, Jens Paul, Simone Capecchi, Laura Wambera, Karsten Meier, Ehrenfried Zschech (1. Fraunhofer Institute for Ceramic Technologies and Systems IKTS, 2. GLOBALFOUNDRIES, 3. Technische Universität Dresden)

8:30am 5D - Keynotes
Spicewood I, II & III

IK1 (IEW Keynote) - On-Chip HV Transient IEC Design Challenges
» Rajkumar Sankaralingam (1. Texas Instruments)

IK2 (IEW Keynote) - On-Chip Protection From System-level Fast Transient Stress Event
» Michael Stockinger (1. NXP)

10:50am Break & Exhibits
Texas Grande

11am Plenary Keynote IV
Texas Grande

PK4 (Plenary Keynote) - Reliability Drives Semiconductor Industry Evolution
» Walden Rhines, Gaudenzio Meneghesso (1. Mentor, 2. UniPD)

11:35am Lunch
Vineyard

12:35pm 6A - ESD and Latchup
Texas Grande

» kranti Nagothu, Sampath KumarBoelia, Chirag Garg, Akram Salman, Gianluca Boselli, Mayank Shrivastava (1. Indian Institute of Science, 2. Texas Instruments)
Continued from Wednesday, 1 April

6A.2 - Over-Voltage Protection on the CC Pin of USB Type-C Interface against Electrical Overstress Events
» Chao-Yang Ke¹, Ming-Dou Ker¹ (1. Institute of Electronics, National Chiao-Tung University)

6A.3 - Design Insights to Address Low Current ESD Failure and Power Scalability Issues in High Voltage LDMOS-SCR Devices
» kranthi Nagothu¹, Sampath Kumar Boelia¹, Gianluca Boselli², Akram Salman¹, Mayank Shrivastava¹ (1. Indian Institute of Science, 2. Texas Instruments)

6A.4 - Threshold Voltage Shift in a-Si:H Thin film Transistors under ESD stress Conditions
» Rajat Sinha¹, Prasenjit Bhattacharya¹, Sanjiv Sambandan¹, Mayank Shrivastava¹ (1. Indian Institute of Science)

6A.5 - Sub-nanosecond Reverse Recovery Measurement for ESD Devices
» Alex Ayling¹, Shudong Huang¹, Elyse Rosenbaum¹ (1. University of Illinois - Urbana Champaign)

6A.6 - Improved Turn-on Uniformity & Failure Current Density by n- & p-Tap Engineering in Fin Based SCRs
» Monishmurali M¹, Milova Paul¹, Mayank Shrivastava¹ (1. Department of Electronics Systems Engineering, Indian Institute of Science, Bangalore, Karnataka, 560012, India)

12:35pm 6B - Wide-Bandgap Semiconductors III
International I & II

6B.1 - A Generalized Approach to Determine the Switching Lifetime of A GaN FET
» Sandeep Bahl¹, Francisco Baltazar¹, Yong Xie¹ (1. Texas Instruments)

6B.2 - Charge Trapping and Stability of E-Mode p-gate GaN HEMTs Under Soft- and Hard- Switching Conditions
» Fabrizio Masin¹, Matteo Meneghini¹, Eleonora Canato¹, Alessandro Barbato¹, Carlo De Santi¹, Arno Stockman², Abhishek Banerjee², Peter Moens², Enrico Zanoni¹, Gaudenzio Meneghesso¹ (1. UniPD, 2. ON Semiconductor)

6B.3 - Trap Dynamics Model Explaining the RON Stress/Recovery Behavior in Carbon-Doped Power AlGaN/GaN MOS-HEMTs
» Nicolò Zagni¹, Alessandro Chini¹, Francesco Maria Puglisi¹, Paolo Pavan¹, Matteo Meneghini², Gaudenzio Meneghesso³, Enrico Zanoni¹, Giovanni Verzellesi¹ (1. University of Modena and Reggio Emilia, 2. University of Padova, 3. UniPD)

6B.4 - Demonstration of Bilayer Gate Insulator for Improved Reliability in GaN-on-Si Vertical Transistors
» Kalparupa Mukherjee¹, Carlo De Santi¹, Matteo Borga¹, Shuzhen You¹, Karen Geens², Benoit Bakeroor², Stefaan Decoutere², Gaudenzio Meneghesso¹, Enrico Zanoni¹, Matteo Meneghini¹ (1. UniPD, 2. IMEC, 3. University of Ghent)

6B.5 - Robust avalanche in GaN leading to record performance in Avalanche Photo Diode
» Dong Ji¹, Burcu Ercan², Garrett Benson³, AKM Newaz³, Srabanti Chowdhury¹ (1. Stanford University, 2. University of California at Davis, 3. San Francisco State University)

6B.6 - Failure Analysis of 100 nm AlGaN/GaN HEMTs Stressed under On- and Off-State Stress
» Tobias Kemmer¹, Michael Dammann¹, Martina Baeuulers¹, Vladimir Polyakov¹, Peter Bruckner¹, Helmer Konstanzer¹, Rüdiger Quay¹, Oliver Ambacher¹ (1. Fraunhofer IAF, Fraunhofer Institute for Applied Solid State Physics)

12:35pm 6C - Process Integration
International III & IV

6C.1 - A Generalized Approach to Determine the Switching Lifetime of A GaN FET
6C.1 - Study of the Walk-Out Effect of Junction Breakdown Instability of the High-Voltage Depletion-Mode N-Channel MOSFET for NAND Flash Peripheral Circuit and an Effective Layout Solution

» Chieh Lo¹, Teng-Hao Yeh¹, Yung-Hsiang Chen², Wei-Chen Chen¹, Hung-Ting Lue¹, Chu-Yung Liu², Yao-Wen Chang², Keh-Chung Wang¹, Chih-Yuan Lu² (1. Macronix Emerging Central Lab., Macronix International Co., Ltd., 2. Technology Development Center, Macronix International Co., Ltd., 3. Macronix Emerging Central Lab., Technology Development Center, Macronix International Co., Ltd.)

6C.2 - Relevance of fin dimensions and high-pressure anneals on hot-carrier degradation

» Adrian Chasin¹, Jacopo Franco², Erik Bury³, Romain Ritzenthaler², Eugenio Dentoni Litta³, Alessio Spessot³, Naoto Horiguchi¹, Dimitri Linten³, Ben Kaczer¹ (1. IMEC, Kapeldreef 75, B-3001 Leuven, Belgium, 3. IMEC)

6C.3 - A new technique for evaluating stacked nanosheet inner spacer TDDB reliability

» Tian Shen¹, Koji Watanabe¹, Huimei Zhou¹, Michael Belyansky¹, Erin Stuckert¹, Jingyun Zhang¹, Andrew Greene¹, Basker Veeraraghavan¹, Miaomiao Wang¹ (1. IBM Research)

6C.4 - Trap Density Modulation for IO FinFET NBTI Improvement

» Rakesh Ranjan¹, Charles Larow¹, Ki-Don Lee¹ (1. samsung Austin Semiconductor, LLC)

6C.5 - A New Implementation Approach for Reliability Design Rules against Plasma Induced Charging Damage from Well Configurations of Complex ICs

» Andreas Martin¹, Angelika Kamp¹ (1. Infineon Technologies AG)

6C.6 - First Insights into Electro-Thermal Stress Driven Time-Dependent Permanent Degradation & Failure of CVD Monolayer MoS2 Channel

» Ansh ¹, Gaurav Sheoran¹, Jeeshve Kumar¹, Mayank Shrivastava¹ (1. Indian Institute of Science)

7A.1 - Origins and Signatures of Tail Bit Failures in Ultrathin MgO Based STT-MRAM

» Jia Hao Lim¹, Nagarajan Raghavan², Jae Hyun Kwon¹, Tae Young Lee¹, Robin Chao¹, Nyuk Leong Chung¹, Kazutaka Yamane¹, Naganivetha Thiagarajah¹, Vinayak Bharat Naik¹, Kin Leong Pey² (1. GLOBALFOUNDRIES Singapore Pte. Ltd, 2. Singapore University of Technology and Design)

7A.2 - Magnetic Immunity Guideline for Embedded MRAM Reliability to Realize Mass Production

» Tae Young Lee¹, Kazutaka Yamane¹, LEE YONG HAU¹, Robin Chao¹, Nyuk Leong Chung¹, Vinayak Bharat Naik¹, SIVABALAN K¹, Jae Hyun Kwon¹, Jia Hao Lim¹, Wah Peng NEO¹, Kevin KHUA¹, Naganivetha Thiagarajah¹, Suk Hee JANG¹, Behtash Behin-Aein¹, Eng Huat TOH¹, YUICHI OTANI¹, DINGGUI ZENG¹, NIVETHA BALASANKARAN¹, Lian Choo GOH¹, Timothy LING¹, Jay HWANG¹, LEI ZHANG¹, Rachel LOW¹, Soon Leng TAN¹, Chimbeng SEET¹, Jia Wen TING¹, Stanley ONG¹, Young Seon YOU¹, Swee Tuck WOO¹, Elgin QUEK¹, Soh Yun SIAH¹ (1. GLOBALFOUNDRIES)
Continued from Wednesday, 1 April

7A.4 - Impact of Ferroelectric Wakeup on Reliability of Laminate based Si-doped Hafnium Oxide (HSO) FeFET Memory Cells

Tarek Ali1, Kati Kühnel2, Malte Czernohorsky2, Matthias Rudolph2, Björn Pätzold2, Ricardo Olivo2, David Lehninger2, Konstantin Mertens2, Franz Müller2, Maximilian Lederer2, Raik Hoffmann2, Clemens Mart2, Mahsa Kalkani2, Philipp Steinke2, Thomas Kämpfe2, Johannes Müller3, Jan Van Houdt3, Konrad Seidel2, Lukas M. Eng3 (1. Fraunhofer IPMS-Center Nanoelectronic Technologies (CNT), 2. Fraunhofer IPMS Center Nanoelectronic Technologies (CNT), 3. GLOBALFOUNDRIES Fab1 LLC and Co. KG, 4. imec, ESAT-Katholieke Universiteit Leuven, 5. Institut für Angewandte Physik, Technische Universität Dresden)

3:30pm 7B - IC Product Reliability I
International I & II

7B.1 - Estimation of Product Reliability using TDDB Simulation and Statistical EM Method

Jae-Gyung Ahn1, Ping-Chin Yeh1, Jonathan Chang1 (1. Xilinx, Inc.)

7B.2 - Thermal Characterization and TCAD Modeling of a Power Amplifier in 45RFSoI for 5G mmWave Applications

Peter Paliwoda1, Mohamed Rabie1, Oscar Restrepo1, Eduardo Silva1, Erdem Kaltaloglu2, Fernando Guarin1, Kenneth Barnett1, Jeffrey Johnson1, William Taylor2, Myra Boenke1, Byoung Min1 (1. GLOBALFOUNDRIES, 2. Globalfoundries US Inc)

7B.3 - Impact of X-Ray Radiation on the Reliability of Logic Integrated Circuits

Somayeh Rahimi1, Christian Schmidt1, Joy Liao1, Howard Lee Marks1, Kyung Mo Shin1 (1. NVIDIA Corp.)

3:30pm 7C - Failure Analysis
International III & IV

7C.1 - STEM EBIC for High-Resolution Electronic Characterization

William Hubbard1, Zachary Lingley1, Jesse Theiss1, Miles Brodie1, Brendan Foran1 (1. The Aerospace Corporation)

7C.2 - High-Current State triggered by Operating-Frequency Change

Lyuan Xu1, Jingchen Cao2, Shi-Jie Wen3, Rita Fung3, James Markevitch3, Dennis Belf2, Bharat Bhuvu3 (1. vanderbilt, 2. vanderbilt university, 3. Cisco Systems)

7C.3 - Investigation of Potential-Induced Degraded Silicon Solar Cell Using Scanning Nonlinear Dielectric Microscopy

Yasuo Cho1, Sachiko Jonai2, Atsushi Masuda2 (1. Tohoku University, 2. AIST)

7C.4 (Invited) - At-Speed Defect Localization by Combining Laser Scanning Microscopy and Power Spectrum Analysis

Edward Cole1, Mary Miller2, Garth Kraus2, Perry Robertson2 (1. Sandia, 2. Sandia National Labs)

3:30pm IEW Discussion Group III
Spicewood I
Continued from Wednesday, 1 April

3:30pm IEW Discussion Group IV
Spicewood II & III

5:25pm Break & Exhibits
Texas Grande

5:25pm IEW Closing
Spicewood I, II & III

6pm Joint Poster Session & Reception
Austin Ranch

P1 - Analysis of Hot Carrier Degradation in Cryo-CMOS
» Wriddhi Chakraborty, Uma Sharma, Souvik Mahapatra, Suman Datta (1. UNIVERSITY OF NOTREDALE, 2. India, 3. Indian Institute of Technology Bombay, 4. University of Notre Dame)

P2 - Inverse Design of FinFET SRAM Cells
» Rui Zhang, Zhaocheng Liu, Kexin Yang, Taizhi Liu, Wenshan Cai, Linda Milor (1. Georgia Institute of Technology)

P3 - Degradation Detection of Power Switches in a Three Phase Inverter using SSTDR Signal Embedded PWM Sequence
» Roy Sourov, Abu Hanif, Faisal Khan (1. University of Missouri-Kansas City)

P4 – Novel Re-Configurable Circuits for Aging Characterization: Connecting Devices to Circuits
» Ketul Sutaria, Jihan Standfest, Inanc Meric, Amirhossein Davoodt, Swaroop Kumar Namalapuri, Trinadh Mutyala, Supriya P, Balkaran Gill, Stephen Ramey, Jeffrey Hicks (1. Intel Corporation)

P5 - Evolution of Defect in AlGaN-based Deep Ultraviolet Light Emitting Diodes During Electrical Stress
» Yingzhe Wang, Xuefeng Zheng, Jiaduo Zhu, Linlin Xu, Shengrui Xu, Jiangnan Dai, Xiaohua Ma, Peixian Li, Jincheng Zhang, Yue Hao (1. Xidian University, 2. Huazhong University of Science and Technology)

P6 - Impact of Intrinsic Series Resistance on the Reversible Dielectric Breakdown Kinetics in HfO2 Memristors
» Mireia Bargallo-Gonzalez, Samuel Aldana, Marcos Maestro-Izquierdo, Francisco Jiménez-Molinos, Juan Bautista Roldan, Francesca Campabadal (1. Institut de Microelectrònica de Barcelona, IMB-CNM (CSIC), 2. Universidad de Granada)

P7 - Reversible dielectric breakdown in h-BN stacks: a statistical study of the switching voltages

P8 - Influence of the magnetic field on dielectric breakdown in memristors based on h-BN stacks
» David Maldonado, Juan Bautista Roldan, Andres Roldan, Francisco Jiménez-Molinos, Fei Huí, Y. Shi, X. Jing, C Wen, Mario Lanza (1. Universidad de Granada, 2. Soochow University, 3. IMEC, Kapeldreef 75, B-3001 Leuven)

P9 - Two-Regime Drift in Electrolytically Gated FETs and BioFETs
» Robin Wuytens, Svbren Santermans, Mihir Gupta, Bert Du Bois, Simone Severi, Liesbet Lagaë, Wim Van Roy, Koen Martens (1. imec + KU Leuven, 2. IMEC, 3. IMEC, Kapeldreef 75, B-3001 Leuven, Belgium)

P11 - No Trouble Found (NTF) Customer Return Analysis
» Thong Tran, Sudheer Gunda, Komal Soni, Aaron Baker, Adam Fogle, Sandhya Chandrashekhar (1. Cypress Semiconductor)
Continued from Wednesday, 1 April

P12 - High Frequency TDDB of Reinforced Isolation Dielectric Systems
  » Tom Bonifield1, Jeff West1, Honglin Guo2, Hisashi Shichijo2, Talha Tahiri2 (1. Texas Instruments, Inc., 2. University of Texas at Dallas)

P13 - Dynamic vs Static Burn-in for 16nm Production
  » Jeffrey Zhang1, Antai Xu1, Daniel Gitlin1, Desmond Yeo1 (1. Xilinx Inc.)

P14 - Physical Insights into Phosphorene Transistor Degradation Under Exposure to Atmospheric Conditions and Electrical Stress
  » Jeevesh Kumar1, Ansh1, Asha Yadav1, Anant Singh1, Andrew Naclerio2, Dmitri Zakharov3, Piran Kidambi2, Mayank Shrivastava1 (1. Indian Institute of Science, 2. vanderbilt university, 3. Brookhaven National Laboratory)

P15 - Impact of Extrinsic Variation Sources on the Device-to-Device Variation in Ferroelectric FET
  » Kai Ni1, Aniket Gupta2, Om Prakash3, Simon Thomann2, X. Sharon Hu1, Hussam Amrouch1 (1. Rochester Institute of Technology, 2. Karlsruhe Institute of Technology, 3. University of Notre Dame)

P16 - Temperature Dependence and Temperature-Aware Sensing in Ferroelectric FET
  » Aniket Gupta1, Kai Ni1, Om Prakash3, X. Sharon Hu1, Hussam Amrouch1 (1. Karlsruhe Institute of Technology, 2. Rochester Institute of Technology, 3. University of Notre Dame)

P17 - A Pulsed RTN Transient Measurement Technique: Demonstration on the understanding of the Switching in Resistance memory
  » E R Hsieh1, H. W. Cheng1, Z. H. Huang1, C. H. Chuang2, S. P. Yang2, Steve Chung1 (1. Institute of Electronics, National Chiao-Tung University, 2. Institute of Electronics, National Chiao Tung University)

P18 - Reliability Analysis by Charge Migration of 3D SONOS Flash Memory
  » Jun Kyo Jeong1, gawon lee1, Heehun Yang1, Jaeyoung Sung1, Hi-Deok Lee1 (1. Chungnam National University)

P19 - Reliability of Industrial grade Embedded-STT-MRAM
  » Yongsung Ji1, Hyunjae Goo1, Jungman Lim1, Tae-Young Jeong1, Taiki Uemura1, Gun Rae Kim1, Boil Seo1, Seungbae Lee1, Goeun Park1, Jeongmin Jo1, Sang Il Han1, Kilho Lee1, Junghyuk Lee1, Sohee Hwang1, Daesop Lee1, Suksoo Pyo1, Hyun Taek Jung1, Shinhee Han1, Seungmo Noh1, Kiseok Suh1, Sungyoung Yoon1, Hyeonwoo Nam1, Hyewon Hwang1, Hai Jiang1, Jinwoo Kim1, Dongkyun Kwon1, Yoonjung Song1, Gwan-Hyeob Koh1, Hwasung Rhee1, Sangwoo Pae1, Brandon Lee1 (1. SAMSUNG ELECTRONICS)

P20 - Accelerated Temperature and Voltage Life Test on DRAM Cell Capacitor
  » KyungWoo Lee1 (1. SAMSUNG ELECTRONICS)

P21 - Double Layers Omega FETs with Ferroelectric HfZrO2 for One-Transistor Memory
  » Kuan-Ting Chen1, Shu-Tong Chang2, Jessie Tseng3, Min-Hung Lee1 (1. National Taiwan Normal University, 2. National Chung Hsing University, 3. synopsys)

P22 - Statistical Analysis of Bit-Errors Distribution for Reliability of 3-D NAND Flash Memories
  » Nian-Jia Wang1, Kuan-Yi Lee1, Hsin-Yi Lin1, Wei-Hao Hsiao1, Ming-Yi Lee1, Li-Kuang Kuo1, Ding-Jhang Lin1, Yen-Hai Chao1, Chih-Yuan Lu1 (1. Macronix International Co. Ltd.)

P23 - Physical Origin of RESET Failure in TaO2 RRAM
  » Yuanzhi Ma1, Phoebe Yeoh1, Liting Shen1, Jonathan Goodwill1, James Bain1, Marek Skowronski1 (1. Carnegie Mellon University)

P24 - ON-state retention of Atom Switch eNVM for IoT/AI Inference Solution
  » Koichiro Okamoto1, Ryusuke Nebashi1, Naoki Banno1, Xu Bai1, Hideaki Numata1, Noriyuki Iguchi1, Makoto Miyamura1, Hiromitsu Hada1, Kazunori Funahashi1, Tadahiko Sugibayashi1, Toshitsugu Sakamoto1, Munehiro Tada1 (1. NEC)
Continued from Wednesday, 1 April

P25 - Open Block Characterization and Read Voltage Calibration of 3D QLC NAND Flash
» Nikolaos Papandreou¹, Haralampos Pozidis¹, Nikolas Ioannou¹, Thomas Parnell², Roman Pletka¹, Milos Stanisavljevic¹, Radu Stoica¹, Sasa Tomic¹, Patrick Breen², Gary Tressler², Aaron Fry², Timothy Fisher², Andrew Walls² (1. IBM Research - Zurich, 2. IBM Systems)

P26 - Stress Induced Voiding Behavior of Electroplated Copper Thin Films in Highly Scaled Cu/low-k interconnects
» Clement Huang¹ (1. Reliability Technology & Assurance Division, UMC Inc.)

P27 - Physics based modeling of bimodal electromigration failure distributions and variation analysis for VLSI interconnects
» Sarath Mohanachandran Nair¹, Rajendra Bishnoi¹, Mehdi Tahoori¹, Houman Zahedmanesh², Kristof Croes², Kevin Garello², Gouri Kar², Francky Catthoor¹ (1. Karlsruhe Institute of Technology (KIT), 2. IMEC, Kapeldreef 75, B-3001 Leuven, Belgium)

P28 - BEoL Reliability, XPS and REELS Study on low-k Dielectrics to understand Breakdown Mechanisms
» Bettina Wehring¹, Raik Hoffmann¹, Lukas Gerlich¹, Malte Czernohorsky¹, Benjamin Uhlig¹, Robert Seidel¹, Tobias Barchewitz², Frank Schlaphof², Lutz Meinhausen², Christoph Leyens² (1. Fraunhofer IPMS Center Nanoelectronic Technologies (CNT), 2. GLOBALFOUNDRIES, 3. Technical University of Dresden)

P29 - Reliability Characterization of Logic-Compatible NAND Flash Memory based Synapses with 3-bit per Cell Weights and 1uA Current Steps
» Minsu Kim¹, Jeehwan Song¹, Chris Kim¹ (1. University of Minnesota)

P30 - Reliability Aspects of SONOS Based Analog Memory for Neuromorphic Computing
» Venkatraman Prabhakar¹, Krishnaswamy Ramkumar¹, Vineet Agrawal¹, Long Hinh¹, Swatilekha Saha¹, Santanu Samanta¹, Ravindra Kapre¹ (1. Cypress Semiconductor)

P31 - Radiation Tolerance of 3-D NAND Flash Based Neuromorphic Computing System
» MD MEHEDI HASAN¹, Md Raquibuzzaman², Indranil Chatterjee², Biswajit Ray¹ (1. The University of Alabama in Huntsville, 2. Airbus)

P32 - Effects of Wiring Density and Pillar Structure on Chip Package Interaction for Advanced Cu Low-k Chips
» Weishen Chu¹, Laura Spinella¹, Dwayne R. Shirley², Mark Patterson², Paul Ho¹ (1. The University of Texas at Austin, 2. Inphi Corporation, 3. Inphi)

P33 - Effect of Residual TiN on Reliability of Au Wire Bonds during High Temperature Storage
» John McGlone¹, Guy Brizari¹, Daniel Vanderstraeten¹, Dorai Iyer¹, Sallie Hose¹, Jeff Gambino¹ (1. ON Semiconductor)

P34 - Backside Die-Edge and Underfill Fillet Cracks Induced by Additional Tensile Stress from Increasing Die-to-Package Ratio in Bare-Die FCBGA
» Khai Nguyen¹, Ernie Opiniano¹, Randolph Mah¹ (1. NVIDIA Corp.)

P35 - Reliability of Silicon Photonics Technology Using V-grooves for Self-Aligned Fiber Attach
» Zhuo-jie Wu¹ (1. GLOBALFOUNDRIES)

P36 - Study of Lower Voltage Protection against Plasma Process Induced Damage by Quantitative Prediction Technique
» Yohei Hiura¹, Shinichi Miyaake¹, Shigetaka Mori¹, Koichi Matsumoto¹, Hidetoshi Ohnuma¹ (1. Sony Semiconductor Solutions Corporation)

P37 - Reliability Characterization for 12V Application Using the 22FFL FinFET Technology
» Chen-Yi Su¹, Mark Armstrong¹, Sunny Chugh¹, Mohammed El-tanani¹, Hannes Greve¹, Hai Li¹, Mahjabin Maksud¹, Benjamin Orr¹, Christopher Perini¹, James Palmer¹, Leif Paulson¹, Stephen Ramey¹, James Waldemer¹, Yang Yang¹, Dave Young¹ (1. Intel Corporation)
Continued from Wednesday, 1 April

P38 - Facile Route for Low-temperature Eco-friendly Solution Processed ZnSnO Thin-film Transistors
   » Tianshi Zhao¹, Chun Zhao¹, Ivona Mitrovic², Enggee Lim¹, Li Yang¹, Chenghu Qiu¹, Cezhou Zhao¹ (1. Xi’an Jiaotong-Liverpool University, 2. University of Liverpool)

P39 - Investigation of VT Shift Extraction Techniques with Fast Measurement in NBTI
   » Yu-Hsing Cheng¹, Michael Cook¹, Chris Kendrick¹ (1. ON Semiconductor)

P40 - A Novel Calculation Method of Activation Energy for Accelerated Life Test
   » Youjin Jeon¹, Haedong No¹, Jongtaek Seong², Daewon Kim¹, Kirock Kwon¹, Kihwan Choi¹ (1. SAMSUNG ELECTRONICS)

P41 - A test method for MOSFET Voltage derating design verification in switching power supply circuit
   » Wei Li¹, ZeYa Peng¹, Jiahui Li¹ (1. China CEPREI Laboratory)

P43 - Reliability Stressing Control Using Jacobian Feedback Kelvin Measurement on Intel Technologies
   » Peng Xiao¹, Haris Hadziosmanovic¹, Rong Jiang¹, Misagh Rostami-asrabad¹, Stephen Ramey¹, Ilan Tsameret¹ (1. Intel Corporation)

P44 - Hybrid HCI Degradation in Sub-micron NMOSFET due to Mixed Back-end Process Damages
   » Kuilong Yu¹, Xiaojuan Zhu¹, Rui Fang¹, Tingting Ma¹, Kun Han¹, Zhongyi Xia¹ (1. Yangtze Memory Technologies Co., Ltd.)

P45 - Impact of Radiation on Negative Capacitance FinFET
   » Govind Bajpai¹, Aniket Gupta¹, Om Prakash¹, Girish Pahwa², Jörg Henkel¹, Yogesh Chauhan¹, Hussam Amrouch¹ (1. Karlsruhe Institute of Technology, 2. Indian Institute of Technology Kanpur)

P46 - Large-tilt Heavy Ions Induced SEU in Multiple Radiation Hardened 22 nm FDSOI SRAMs
   » Chang Cal¹, Luchang Ding¹, Kai Zhao², Bingyu Ning², Mingjie Shen¹, Tianqi Liu¹, Jie Liu¹, Gengsheng Chen¹ (1. Institute of Modern Physics, Chinese Academy of Sciences, 2. State Key Laboratory of ASIC and System, Fudan University)

P47 - Temperature Dependence of Single Event Transient Pulse Widths for 7-nm Bulk FinFET Technology
   » Jingchen Cao¹, Lyuan Xu¹, Shi-jie Wen², Rita Fung², Balaji Narasimham², Lloyd Massengill¹, Bharat Bhuva¹ (1. vanderbilt university, 2. Cisco Systems, 3. Broadcom Inc.)

P48 - Using Partial Duplication With Compare to Detect Radiation-Induced Failure in a Commercial FPGA-Based Networking System
   » Andrew Keller¹, Jared Anderson¹, Michael Wirthlin¹, Shi-jie Wen², Rita Fung², Conner Chambers² (1. Brigham Young University, 2. Cisco Systems)

P49 - Characterizing Energetic Dependence of Low-Energy Neutron-induced MCUs in 65 nm bulk SRAMs
   » Wang LIAO¹, Kojio Ito², Yukio MITSUYAMA¹, Masanori Hashimoto¹ (1. Kochi University of Technology, 2. Osaka University)

P50 - Comparing Variation-tolerance and SEU/TID-Resilience of Three SRAM Cells in 28nm FD-SOI Technology: 6T, Quatro, and we-Quatro
   » Le Dang Trang¹, Dinh Trinh Linh¹, Thanhs Nguyen Dat¹, Chang Hong Min¹, Jinsang Kim¹, Jin-Woo Han¹, Ik-Joon Chang¹ (1. Kyunghee University, 2. Kyoto, 3. NASA)

P51 - Trends and Functional Safety Certification Strategies for Advanced Railway Automation Systems
   » Jyotika Athavale¹, Andrea Baldwin¹, Michael Paulitsch¹ (1. Intel Corporation)

P52 - An Interpretable Predictive Model for Early Detection of Hardware Failure
   » Artsiom Balakir¹, Alan Yang¹, Elyse Rosenbaum² (1. University of Illinois - Urbana Champaign, 2. University of Illinois)
P53 - A Novel HCI Reliability Model for RF/mmWave Applications in FDSOI Technology
  » Wafa Arfaoui1 (1. Mrs.)

P54 - Anomalous accelerated negative-bias-instability (NBI) at low drain bias
  » Charles Cheung1 (1. NIST)

P55 - Analysis of The Hole Trapping Detrapping Component of NBTI Over Extended Temperature Range
  » Nilotpal Choudhury1, Narendra Parikh1, Souvik Mahapatra1 (1. Indian Institute of Technology Bombay)

P56 - Effect of Different Ambients on the Recovery of Hot-Carrier Degraded Devices
  » Maurits de Jong1, Cora Salm1, Jurriaan Schmitz2 (1. University of Twente)

P57 - “shift and match” (s&m) method for channel mobility correction in degraded mosfets
  » Linglin Jing1, Rui Gao1, ZHIGANG JI1, Runsheng Wang1 (1. National Key Laboratory of Science and Technology on Micro/Nano Fabrication, Shanghai Jiao Tong University, 2. China Electronic Product Reliability and Environment Research Institute, 3. Institute of Microelectronics, Peking University)

P58 - Self-healing LDMOSFET for high-voltage application on high-k/metal gate CMOS process
  » Jing-Chyi Liao1, Paul Ko2, M. H. Hsieh1, zheng zeng4 (1. j.c.liao@mediatek.com, 2. paul.ko@mediatek.com, 3. hank.hsieh@mediatek.com, 4. zheng.zeng@mediatek.com)

P59 - AC stress reliability study of a new high voltage transistor for logic memory circuits
  » Jordan Locati1, Vincenzo Della-Marca2, Christian Rivero4, Arnaud Regnier1, Stephan Niel1, Karine Coulie1 (1. STMicroelectronics, 190 avenue Célestin Coq, 13106 Rousset, France, 2. Aix-Marseille University, CNRS, IM2NP UMR 7334-F, 13997 Marseille, France, 3. STMicroelectronics, 190 avenue Célestin Coq, 13106 Rousset, France)

P60 - Analysis of charge-to-hot-carrier degradation in Ge pFinFETs
  » Wataru Mizubayashi1, Hiroshi Oka1, Koichi Fukuda1, Yuki Ishikawa1, Kazuhiko Endo1 (1. AIST)

P61 - Investigation of Random Telegraph Noise Characteristics with Intentional Hot Carrier Aging
  » Hyeong-Sub Song1, Sunil babu Eadi1, Hyung-dong Song1, Hyung-woong Choi1, gawon lee1, Hi-Deok Lee1 (1. Chungnam National University)

P62 - Full Understanding of Hot Electrons and Hot/Cold Holes in the Degradation of p-channel Power LDMOS Transistors
  » Andrea Natale Tallarico1 (1. University of Bologna)

P63 - Front-plane and Back-plane Bias Temperature Instability of 22 nm Gate-last FDSOI MOSFETs
  » Yang Wang1, Qiongqing Sun1, Chen Wang1, Tao Chen1, Hao Liu1, Chinte Kuo2, Ke Zhou2, Binfeng Yin2, Lin Chen2 (1. State Key Laboratory of ASIC and System, Fudan University, 2. Shanghai Huali Microelectronics Corporation)

P64 - Comparative Study on the Energy Profile of NBTI-Related Defects in Si and Ferroelectric p-FinFETs
  » Longda Zhou1, Qingzhu Zhang2, HONG YANG2, ZHIGANG JI3, Zhaohao Zhang2, Renren Xu2, Huaxiang Yin2, Wenwu Wang2 (1. Institute of Microelectronics of the Chinese Academy of Sciences, 2. Institute of Microelectronics of Chinese Academy of Sciences, 3. School of Microelectronics, Shanghai Jiao Tong University)

P65 - Oxide Leakage Currents and E’ Centers in 4H-SiC MOSFETs with Barium Passivation
  » James P. Ashton1, Patrick M. Lenahan1, Daniel J. Lichtenwalner2, Andreas J. Leiss1 (1. The Pennsylvania State University, 2. Wolfspeed, a Cree Company, 3. United States Army Research Laboratory)

P66 - Effect of High- and Low-Side Blocking on Short-Circuit Characteristics of SiC MOSFET
  » Kun Bai1, Shiwei Feng1, Yamin Zhang1, Bangbing Shi1, Xiang Zheng1, Yuxuan Xiao1, Shijie Pan1 (1. Laboratory of Semiconductor Device Reliability Physics, Beijing University of Technology)
P67 - Channel mobility degradation caused by non-uniform interface defect distribution in SiC MOSFETs studied by using local deep level transient spectroscopy and device simulation
» Kohei Yamasue¹, Yasuo Cho¹ (1. Tohoku University)

P68 - Measurement of the Pre-Breakdown Characteristics in Silicon Carbide Power Devices by the Use of Radioactive Gamma Sources
» Mauro Ciappa¹, Marco Pocaterra¹ (1. ETH Zurich, Integrated Systems Laboratory)

P69 - Constant-Gate-Charge Scaling for Increased Short-Circuit Withstand Time in SiC Power Devices
» Madan Sampath¹, Dallas Morisette¹, James Cooper² (1. Purdue University, 2. Sonrisa Research, Inc. and Purdue University)

P70 - On the Root Cause of Dynamic ON Resistance Behavior in AlGaN/GaN HEMTs
» Sayak Dutta Gupta¹, Vipin Joshi¹, Rajarshi Roy Chaudhuri¹, Anant Singh¹, Sirsha Guha¹, Mayank Shrivastava¹ (1. Indian Institute of Science)

P71 - Effects of Thermal Boundary Resistance on the Thermal Performance of GaN HEMT on Diamond
» Assaad El Helou¹, Marko Tadjer², Karl Hobart², Peter Raad¹ (1. Southern Methodist University, 2. Naval Research Laboratory)

P72 - Specific aspects regarding evaluation of power cycling tests with SiC devices
» Martina Gerlach¹, Peter Seidel¹, Josef Lutz² (1. Technische Universität Chemnitz, 2. Technische Universität Chemnitz)

P74 - Gate Oxide Reliability Studies of Commercial 1.2 kV SiC Power MOSFETs
» Tianshi Liu¹, Shengnan Zhu¹, Susanna Yu¹, Diang Xing¹, Arash Salemi¹, Minseok Kang¹, Kristen Booth¹, Marvin White¹, Anant Agarwal¹ (1. The ohio state University)

P75 - Influence of Strain in 4H-SiC wafers on Power Device Reliability
» Nadeem Mahadik¹, Bob Stahlbush¹, Stanislav Stoupín², Hrishikesh Das³, Peter Bonanno¹, Xueping Xu¹, Rajan Rengarajan³, Gary Ruland² (1. Naval Research Laboratory, 2. Cornell High Energy Synchrotron Source, 3. ON Semiconductor, 4. II-VI Advanced Materials)

P76 - Thermomechanical behaviour of inverse diode in SiC MOSFETs under surge current stress
» Shanmuganathan Palanisamy¹, Roman Boldyrev¹, Thomas Basler², Josef Lutz² (1. Technische Universität Chemnitz, 2. Infineon Technologies AG, 3. Technische Universität Chemnitz)

P77 - Analysis of Transient HTRB Leakage in a SiC Field Ring Termination
» Rahul Potera¹, Tony Witt¹, Yongju Zheng¹ (1. SemiQ Inc.)

P78 - Fast Neutron Irradiation Effects on Multiple Gallium Nitride (GaN) Device Reliability in Presence of Ambient Variations
» Luis Soriano¹, Hector Valencia¹, Ronald Nelson², Ke-Xun Sun¹ (1. University of Nevada, Las Vegas, 2. Los Alamos National Laboratory)

P79 - Enhanced Threshold Voltage Stability in ZnO Thin-Film-Transistors by Excess Oxygen in Atomic Layer Deposited Al2O3
» Rodolfo A. Rodriguez-Davila¹, Richard A. Chapman¹, Massimo Catalano¹, Manuel Quevedo-Lopez¹, Chadwin Young¹ (1. University of Texas at Dallas)

P80 - Reliability and Robustness Performance of 1200 V SiC DMOSFETs
» Siddarth Sundaresan¹, Vamsi Mulpuri¹, Jaehoon Park¹, Ranbir Singh¹ (1. GeneSiC Semiconductor)

P81 - Substrate Bias Effect on Dynamic Characteristics of Monolithic Integration GaN Half-Bridge
» Wen Yang¹, Jiann-Shiun Yuan¹, Balakrishnan Krishnan², An-Jye Tzou², Wen-Kuan Yeh¹ (1. University of Central Florida, 2. BRIDG, 3. Taiwan semiconductor research institutue)
Continued from Wednesday, 1 April

P82 - ESD Robustness of GaN-on-Si Power Devices under Substrate Biases by means of TLP/VFTLP Tests
» Wen Yang¹, Nicholas Stoll¹, Jiann-Shiun Yuan¹ (1. University of Central Florida)

P83 - Threshold Voltage Instability of Commercial 1.2 kV SiC Power MOSFETs
» Susanna Yu¹, Minseok Kang¹, Tianshi Liu¹, Shengnan Zhu¹, Diang Xing¹, Arash Salemi¹, Kristen Booth¹, Marvin White¹, Anant Agarwal¹ (1. The ohio state University)

P84 - Reliability of 200mm E-mode GaN-on-Si Power HEMTs
» David Zhou¹ (1. Innoscience Technology)

P85 - Design Optimization of MV-NMOS for ESD Self-protection in 28nm CMOS technology
» Kyongjin Hwang¹, Sagarpremnath Karalkar¹, Vishal Ganesan¹, Sevashanmugam Marimuthu¹, Alban Zaka¹, Tom Herrmann¹, Bhoopendra Singh¹, Robert Gauthier jr¹ (1. GLOBALFOUNDRIES, 2. GI)

P86 - Triggering Optimization on NAND ESD Clamp and Its ESD Protection IO Scheme for CMOS Designs
» Jian Liu¹, Divya Acharya¹, Nathaniel Peachey¹ (1. Qorvo Inc.)

P87 - A Method to Analyze Aging Effect on ESD Protection Design
» Kuo-Hsuan Meng¹ (1. NXP Semiconductors)

P88 - Understanding ESD Induced Thermal Mechanism in FinFETs Through Predictive TCAD Simulation
» Zhiqing Li¹, Baofu Zhu¹, Anindy Nath¹, Meng Miao¹, Alain Loiseau¹, You Li¹, Jeffrey Johnson¹, Souvik Mitra¹, Robert Gauthier jr¹ (1. GLOBALFOUNDRIES)

P91 (IEW) - Inductor Current Ramping Induced the Unexpected Bipolar Turn-on for a 5A Buck-Converter
» Chung-Yu Hung¹, Jian-Hsing Lee², Wu-Yang Liu¹ (1. Richtek Technology Corporation, 2. Vanguard International Semiconductor Corporation)

P92 (IEW) - A Methodology to Eliminate the Current Crowding Effect for ESD Improvement on Power Transistor
» Jian-Hsing Lee¹, Karuna Nidhi², Ming-Dou Ker³ (1. Vanguard International Semi. Corp., 2. National Chiao Tung University, 3. Institute of Electronics, National Chiao-Tung University)

P93 (IEW) - Transient Thermal Analysis for ESD Events
» Prabhakar Marepalli¹, Lei Jiang¹, Daniel Pantuso¹, Steven Poon¹, Benjamin Orr¹, Jeffrey Hicks¹, Feng Xia¹, Mohammad A Ahmed¹, Muhammad Ali¹ (1. Intel Corporation)

P94 (IEW) - Latch-up Physical Verification of 2.5D/3D Integrated Circuits with no Marker Layers
» Dina Medhat¹, Mohamed Dessouky², DiaaEldin Khalil² (1. Mentor, a Siemens Business / ECE Department, Faculty of Engineering, Ain Shames University, 2. ECE Department, Faculty of Engineering, Ain Shames University)

P95 (IEW) - A New Charge based Analysis Technique to Mitigate CDM Failures in FinFET Technology
* Woonjin Seo¹, Sukjin Kim¹, Radhakrishnan Sithanandam², Kitae Lee³, Chanhee Jeon¹ (1. SAMSUNG ELECTRONICS, 2. sam, 3. samsung)

P96 (IEW) - ‘Can’t Touch This’ (ESD Gun)
» Hans Kunz¹, Pedro Escalona Cruz² (1. Texas Instruments, Inc., 2. Texas Instruments)

P97 (IEW) - Using a Circuit Path Traversal Method to Identify Pins Needing ESD Simulation
» Chhaya Patil¹, Minas Hambardzumyan¹, Jonathan Brodsky¹ (1. Texas Instruments, Inc.)
Thursday, 2 April

7am  Breakfast  
Texas Grande

8am  8A Gate/MOL Dielectrics  
Texas Grande

8A.1 - The Mysterious Bipolar Bias Temperature Stress from the Perspective of Gate-Sided Hydrogen Release
» Tibor Grasser¹, Ben Kaczer², Barry O’Sullivan³, Gerhard Rzepa³, Bernhard Stampfer¹, Michael Waltl¹ (1. Institute for Microelectronics, TU Wien, Gußhausstr. 27-29, 1040 Vienna, Austria, 2. IMEC, Kapeldreef 75, B-3001 Leuven, Belgium, 3. Global TCAD Solutions)

8A.2 - Conduction and Breakdown Mechanisms in Low-k Spacer and Nitride Spacer Dielectric Stacks in Middle of Line Interconnects
» Chen Wu¹, Adrian Chasin¹, Steven Demuynck¹, Naoto Horiguchi¹, Kristof Croes¹ (1. IMEC, Kapeldreef 75, B-3001 Leuven)

8A.3 - Generation of Hot-Carrier Induced Border and Interface Traps, Investigated by Spectroscopic Carg Pumping
» Bernhard Ruch¹, Gregor Pobegen¹, Christian Schleich², Tibor Grasser² (1. KAI Kompetenzzentrum Automobil- und Industrieelektronik GmbH, Europastr. 8, 9524 Villach, Austria, 2. Institute for Microelectronics, TU Wien, Gußhausstr. 27-29, 1040 Vienna, Austria)

8A.4 - Reliability and Breakdown Study of Erase Gate Oxide in Split-Gate Non-Volatile Memory Device
» Luo Laiqiang¹, Shubhakar Kalya², Sen Mei², Nagarajan Raghavan², Fan Zhang¹, Danny Shum¹, Kin Leong Pey² (1. GLOBALFOUNDRIES, 2. Singapore University of Technology and Design)

8A.5 - Correlation of Dielectric Breakdown and Nanoscale Adhesion in SiO2 Thin Films
» Alok Ranjan¹, Sean O’Shea³, Michel Bosman³, Joel Molina⁴, Nagarajan Raghavan¹, Kin Leong Pey² (1. Singapore University of Technology and Design, 2. Institute of Materials Research and Engineering, 3. National University of Singapore, 4. National Institute of Astrophysics, Optics and Electronics)

8B - Neuromorphic Computing Reliability II

8B.1 (Invited) - Embracing the Unreliability of Memory Devices for Neuromorphic Computing
» Marc Bocquet¹, Tifenn Hirtzlin², Jacques-Olivier Klein², Etienne Nowak³, Elisa Vianello³, Jean-Michel Portal¹, Damien Querlioz² (1. Aix-Marseille Université, CNRS, 2. Université Paris-Saclay, CNRS, 3. Université Grenoble-Alpes, CEA, LETI)

8B.2 - Impact of Read Disturb on Multilevel RRAM based Inference Engine: Experiments and Model Prediction
» WONBO SHIM¹, YANDONG LUO¹, JAE-SUN SEO², Shimeng Yu¹ (1. Georgia Tech, 2. Arizona State University)

8B.3 - Circuit Reliability Analysis of RRAM-based Logic-in-Memory Crossbar Architectures Including Line Parasitic Effects, Variability, and Random Telegraph Noise
» Tommaso Zanotti¹, Francesco Maria Puglisi¹, Paolo Pavan¹ (1. University of Modena and Reggio Emilia)

8B.4 - Breakdown Lifetime Analysis of HfO2-based Ferroelectric Tunnel Junction (FTJ) Memory for In-Memory Reinforcement Learning
» Marina Yamaguchi¹, Shosuke Fujii¹, Kensuke Ota¹, Masumi Saitoh¹ (1. Kioxia Corporation)

8B.5 (Invited) - Neuromorphic Computing with Phase Change, Device Reliability, and Variability Challenges
» Charles Mackin¹, Pritish Narayanani¹, Stefano Ambrogio¹, Hsinyu Tsai¹, Katie Spoon¹, Andrea Fasoli¹, An Chen¹, Alexander Friz¹, Robert Shelby¹, Geoffrey Burr¹ (1. IBM Research)
8C.1 - Investigating of SER in 28 nm FDSOI-Planar Technology and Comparing with SER in Bulk-FinFET Technology

- Taiki Uemura¹, Byungjin Chung¹, Jeongmin Jo¹, Hai Jiang¹, Yongsung Ji¹, Tae-Young Jeong¹, Rakesh Ranjan³, Youngin Park¹, Kiil Hong¹, Seungbæe Lee¹, Hwasung Rhee¹, Sangwoo Pae¹, Euncheol Lee¹, Jaehee Choi¹, Shota Ohnishi¹, Ken Machida¹ (1. SAMSUNG ELECTRONICS)

8C.2 - Thermal Neutron Induced Soft Errors in 7-nm Bulk FinFET Node

- Lyuan Xu¹, Jingchen Cao¹, John Brockman², Carlo Cazzaniga³, Christopher Frost¹, Shi-Jie Wen⁸, Rita Fung⁸, Bharat Bhuya¹ (1. vanderbilt university, 2. University of Missouri Research Reactor, 3. Rutherford Appleton Laboratory, 4. Cisco Systems)

8C.3 - Backside Alpha-Irradiation Test in Flip-Chip Package in EUV 7 nm FinFET SRAM

- Taiki Uemura¹, Byungjin Chung¹, Jeongmin Jo¹, Hai Jiang¹, Yongsung Ji¹, Tae-Young Jeong¹, Rakesh Ranjan³, Seungbæe Lee¹, Hwasung Rhee¹, Sangwoo Pae¹, Euncheol Lee¹, Jaehee Choi¹, Shota Ohnishi¹, Ken Machida¹ (1. SAMSUNG ELECTRONICS)

8C.4 - On the Correlation of Laser-induced and High-Energy Proton Beam-induced Single Event Latchup

- Norbert Seifert¹, Bahar Ajdari¹, Samwel Sekwao¹, Ricardo Ascazubi¹, Adam Neale¹ (1. Intel Corporation)

8C.5 - Impact of Hydrided and Non-Hydrided Materials Near Transistors on Neutron-Induced Single Event Upsets

- Shinichiro Abe¹, Tatsuhiko Sato¹, Junya Kuroda², Seiya Manabe², Yukinobu Watanabe¹, Wang LIAO², Kojiro Ito³, Masanori Hashimoto³, Masahide Harada⁴, Kenichi Oikawa⁴, Yasuhiro Miyake² (1. Japan Atomic Energy Agency, 2. Kyushu University, 3. Kochi University of Technology, 4. Osaka University, 5. J-PARC Center, 6. High Energy Accelerator Research Organization)
PKS (Plenary Keynote) - Culture and Communication: An Evolutionary Perspective
» Vasu Duvvury¹, Gaudenzio Meneghesso² (1. Anthropologist, 2. UniPD)

9A.1 - Advanced self-heating model and methodology for layout proximity effect in FinFET technology
» Hai Jiang¹, Hyun-Chul Sagong¹, Jinju Kim¹, Hyewon Shim¹, Yoohwan Kim¹, Junekyun Park¹, Taiki Uemura¹, Yongsung Ji¹, Tae-Young Jeong¹, Dongkyun Kwon¹, Hwasung Rhee¹, Sangwoo Pae¹, Brandon Lee¹ (1. SAMSUNG ELECTRONICS)

9A.2 - Effect of Drain-to-Source Voltage on Random Telegraph Noise Based on Statistical Analysis of MOSFETs with Various Gate Shapes
» Ryo Akimoto¹, Rihito Kuroda¹, Akinobu Teramoto², Takezo Mawaki¹, Shinya Ichino¹, Tomoyuki Suwa¹, Shigetoshi Sugawa¹ (1. Tohoku University, 2. Hiroshima University)

9A.3 - On the impact of mechanical stress on gate oxide trapping
» Anastasija Kruc¹, Ben Kaczer¹, Alexander Grill¹, Mario Gonzalez¹, Jacopo Franco¹, Dimitri Linten¹, Wolfgang Goes², Tibor Grasser³, Ingrid De Wolf¹ (1. IMEC, Kapeldreef 75, B-3001 Leuven, Belgium, 2. TU Wien, 3. Institute for Microelectronics, TU Wien, Gußhausstr. 27-29, 1040 Vienna, Austria)

9A.4 - NBTI Impact of Surface Orientation in Stacked Gate-All-Around Nanosheet Transistor
» Huimei Zhou¹, Miaomiao Wang¹, Jingyun Zhang¹, Koji Watanabe¹, Curtis Durfee², SHOGO MOCHIZUKI², Ruqiang Bao², Ricki Southwick², Maruf Bhuiyan³, Basker Veeraraghavan¹ (1. IBM Research)

9B.1 - eNVM RRAM reliability performance and modeling in 22FFL FinFET technology
» Yao-Feng Chang¹, James A. O'Donnell¹, Tony Acosta¹, Roza Kotlyar¹, Albert Chen¹, Pedro A Quintero¹, Nathan Strutt¹, Oleg Golonzka¹, Chris Connor¹, Jeffrey Hicks¹ (1. Intel Corporation)

9B.2 - Modeling of Charge Failure Mechanisms during the Short Term Retention Depending on Program/Erase Cycle Counts in 3-D NAND Flash Memories
» Changbeom Woo¹, Shinkeun Kim¹, Jaeyeol Park¹, Haesoo Kim², Gil-Bok Choi¹, Moon-Sik Seo², Keum Hwan Noh², Hyungcheol Shin¹ (1. Seoul National University, 2. SK hynix Inc.)

9B.3 - Write Disturb Mechanism in Embedded SuperFlash Technology
» Clyde Dunn¹, Alex Microchip² (1. Texas Instruments, 2. Microchip)

9B.4 - Further Investigation on Mechanism of Trap Level Modulation in Silicon Nitride Films by Fluorine Incorporation
» Harumi Seki¹, Yasushi Nakasaki¹, Yuichiro Mitani¹ (1. Kioxia Corporation)

9C.1 - Reliability on EUV Interconnect Technology for 7 nm and beyond
» Tae-Young Leong¹, Miji Lee¹, Yunkyoung Jo¹, Jinwoon Kim¹, Min Kim¹, Myungsoo Yeo¹, Jinseok Kim¹, Hyunjun Choi¹, Joosung Kim¹, Yoojin Jo¹, Yongsoo Ji¹, Taiki Uemura¹, Hai Jiang¹, Dongkyun Kwon¹, Hwasung Rhee¹, Sangwoo Pae¹, Brandon Lee¹ (1. SAMSUNG ELECTRONICS)
Continued from Thursday, 2 April

9C.2 - Metal reliability mechanisms in Ruthenium interconnects
- Olalla Varela Pedreira¹, Michele Stucchi¹, Anshul Gupta¹, Victor Vega Gonzalez¹, Marleen van der Veen¹, Stephane Lariviere¹, Christopher J. Wilson¹, Zsolt Tokei¹, Kristof Croes¹ (1. IMEC, Kapeldreef 75, B-3001 Leuven, Belgium, 2. IMEC, Kapeldreef 75, B-3001 Leuven)

9C.3 - Reliability of Metal-Dielectric Structures Under Intermittent Current Pulsing
- Chung-Shuo Lee¹, Pavan Kumar Vaitheeswaran¹, Ganesh Subbarayan¹, Young-Joon Park², Jayhoon Chung², Srikanth Krishnan² (1. Purdue University, 2. Texas Instruments)

11:10am 9D - IC Product Reliability II
Val Verde

9D.1 - Comprehensive Quality and Reliability Management for Automotive Product
- M. H. Hsieh¹ (1. Mediatek.inc)

9D.2 - Advanced methods for CPU product reliability modeling and enhancement
- Oren Zonensain¹, Roman Rechter¹, Rob Kwasnick¹, Keun Woo Park¹, Anisur Rahman¹, Almog Reshef¹, Tal Raz¹, Maxim Levit¹ (1. Intel Corporation)

9D.3 - A Reliability Overview of Intel’s 10+ Logic Technology
- Rohit Grover¹, Tony Acosta¹, Craig AnDyke¹, Emre Armagan¹, Chris Auth¹, Sunny Chugh¹, Katherine Downes¹, Michael Hattendorf¹, Nathan Jack¹, Subhash Joshi¹, Rahim Kasim¹, Gerald Leatherman¹, Se-hoon Lee¹, Cheyun Lin², Atul Madhavan¹, Haijing Mao¹, Anthony Lowrie¹, Gregory Martin¹, Gray McPherson¹, Pinakpani Nayak¹, Adam Neale¹, David Nminibapeli¹, Benjamin Orr¹, James Palmer¹, Christopher Pelto¹, Steven Poon¹, Ian Post¹, Tanmoy Pramanik¹, Anisur Rahman¹, Stephen Ramey¹, Norbert Seifert¹, Kanika Sethi¹, Anthony Schmitz¹, Hsinwei Wu¹, Andrew Yeoh¹ (1. Intel Corporation, 2. Intel)

1:05pm Break & Exhibits
Texas Grande

1:15pm IRPS Closing & 2021 Introduction
Texas Grande

1:25pm Lunch
Vineyard