

IPFA 2019 TECHNICAL PROGRAM 2 - 5 July

Time	2 July (Day 0) - Tutorials			
	Session TUT A: Tutorials (Reliability) Tutorial Session Chair		Session TUT B: Tutorials (Failure Analysis) Tutorial Session Chair	
08:30 - 10:30	TUT A1	Reliability Challenges for 3DIC (Dr. Chandrasekharan Kothandaraman, IBM Research, Yorktown Heights, USA)	TUT B1	Principles and Applications of TEM and FIB in the Semiconductor Industry (Dr. David Su, TSMC, Taiwan (Retired))
10:30 - 10:45	Tea Break			
10:45 - 12:45	TUT A2	BTI: Testing and Predictive Modeling (Prof. Jianfu Zhang, Liverpool John Moores University, UK)	TUT B2	Advanced 2.5D/3D Package Level Failure Analysis (Dr. Lihong Cao, ASE Group, TX, USA)
12:45 - 13:45	Lunch			
13:45 - 15:45	TUT A3	Testing for Reliability of Power Electronic Components (Prof. Francesco Iannuzzo, Aalborg University, Denmark)	TUT B3	Advanced Fault Isolation Technologies: Design House and Foundry Perspectives: PART I (Mr. Venkat Krishnan Ravikumar, AMD, Singapore)
15:45 - 16:00	Tea Break			
16:00 - 18:00	TUT A4	MOL & BEOL Reliability Challenges for Advanced Technology Nodes (Dr. Baozhen Li, IBM System and Technology Group, Essex Vermont, USA)	TUT B4	Advanced Fault Isolation Technologies: Design House and Foundry Perspectives: PART II (Dr. Goh Szu-Huat, GlobalFoundries, Singapore)
End of Day 0				

Time	3 July (Day 1)	
09:00 - 09:10	Opening Address by General Chair - Prof. Juin J. Liou, Zhengzhou University, China	
09:10 - 09:15	Technical Program Briefing by TPC Chair - Liu Zhiwei, UESTC, China	
09:15 - 09:20	IPFA 2018 Best Papers Award Presentation	
09:20 - 10:20	KN.1 Session chair: Juin J. Liou	Building Reliable Products Guided by Customer Obsession Prasad Chaparala Amazon Lab126, USA
10:20 - 10:40	Tea Break	
Session 1: Sample Preparation and Defect Characterisation Session Chair:		
10:40-11:10	Invited (1.1)	Invited Talk -TBD
11:10-11:30	Paper ID : 249 (1.2)	Application of Laser Deprocessing Technique in Physical Failure Analysis on Memory Bit-counting Authors: Yanlin Pan, Yuzhe Zhao, Pik Kee Tan, Patrick Khoo, Pui Ying Yeo, Siong Luong Ting, Hao TAN and Changqing Chen
11:30-11:50	Paper ID: 220 (1.3)	Application of SIMS for the characterization of Nitrogen in TaN film Authors: Yun Wang, Han Wei Teo, Kian Kok Ong, Nyuk Lin Phang, Poh Chuan Ang, Xiaoxuan Li, Ramesh Rao Nistala and Zhi Qiang Mo
11:50-12:10	Paper ID: 277 (1.4)	Three-dimensional Structure Recognition of Circuit Patterns on Semiconductor Devices Using Multiple SEM Images Detected in Different Electron Scattering Angles Authors: Kenji Yasui, Mayuka Osaki, Atsushi Miyamoto and Hitoshi Namai
12:10-13:10	Lunch	
Session 2A : Package Level Failure Analysis Session Chair		Session 2B : Logic / NVM Device Reliability Session Chair

13:10-13:40	Invited (2A.1)	Challenge for Advanced Package Level Fault Isolation Lihong Cao, ASE Group, Austin, TX, USA	Invited (2B.1)	Challenge and solution for characterizing NBTI-generated defects in nanoscale devices Jianfu Zhang, Liverpool John Moores University, UK
13:40-14:00	Paper ID: 261 (2A.2)	Improvement of sensitivity of ultrasonic beam induced resistance change (SOBIRCH) method with ultrasound resonance in the mold resin Authors: Takuto Matsui, Kosuke Tatsumi, Tomohiro Kawashima, Yoshinobu Murakami, Naohiro Hozumi, Shigeru Eura and Toru Matsumoto	Paper ID : 289 (2B.2)	Experiment Characterization of Front and Back Interfaces Impact on Back Gate Modulation in UTBB-FDSOI MOSFETs Authors: Wangyong Chen, Linlin Cai, Yongfeng Cao, Duanquan Liao, Ming Tian, Xing Zhang, Xiaoyan Liu and Gann Du
14:00-14:20	Paper ID: 298 (2A.3)	Enhancement of localization capability of lock-in thermography for power semiconductor devices by searching high-emissivity films Authors: Norimichi Chinone, Toru Matsumoto and Kazushige Koshikawa	Paper ID : 301 (2B.3)	Resistive switching in atomic layer deposited and sputtered TiO ₂ films: electroforming observed by constant voltage stress Authors: Tao Wang, Biyu Guo, Kaichen Zhu, Xianhu Liang, Kristýna Bukvišová, Miroslav Kolíbal and Mario Lanza
14:20-14:40	Paper ID: 128 (2A.4)	The probe marker discoloration on Al pad and wafer storage Authors: Wen-Fei Hsieh, Henry Lin, Vincent Chen, Irene Ou and ys Lou	Paper ID : 283 (2B.4)	Output Breakdown Characteristics and the Related Degradation Behaviors in Metal Oxide Thin Film Transistors Authors: Xiaotong Ma, Meng Zhang, Zhendong Jiang, Sunbin Deng, Yan Yan, Guijun Li, Rongsheng Chen, Man Wong and Hoi-Sing Kwok
14:40-15:10	Paper ID: 226 (2A.5)	Signal Processing Method for Scanning Acoustic Tomography Defect Detection based on a Correlation between Ultrasound Waveforms Authors: Masayuki Kobayashi, Kaoru Sakai, Kenta Sumikawa and Osamu Kikuchi	Invited (2B.5)	Advanced FinFET Device Reliability Mu-Chun Wang, MUST, Taiwan
15:10:15:30	Tea Break			
	Session 3A : Interconnect and Packaging Reliability Session Chair		Session 3B : Case Studies on Fault Isolation Session Chair	
15:30-16:00	Invited (3A.1)	Principles of Optical Electronic and Mechanical characterisation of Through Silicon Vias (TSV) for 3D integration Chandrasekharan Kothandaraman, IBM, USA	Invited (3B.1)	Invited Talk Track 2 (Case Studies Fault Isolation) #1
16:10-16:30	Paper ID: 162 (3A.2)	Self-heating aware EM Reliability Prediction of Advanced CMOS Technology by Kinetic Monte Carlo Method Authors: Linlin Cai, Yudi Zhao, Wangyong Chen, Peng Huang, Xiaoyan Liu and Xing Zhang	Paper ID : 200 (3B.2)	Using Microprobe to enhance Die Level Static Fault Isolation in Complex IC Authors: Dayanand Nagalingam, A.C.T. Quah, seungje moon, Siong Luong Ting, Hnin Hnin Ma and Changqing Chen
16:30-16:50	Paper ID: 275 (3A.3)	CPB fcCSP BGA Package Reliability assessment via the study of Bump Cross Section Morphology after Product Realiability stress testing Authors :Haitham Hamed and Vicky Wang	Paper ID: 114 (3B.3)	Integrating NI LabVIEW in Soft Defect Localization of Temperature Dependent Voltage Failure Authors: Paul Hubert Llamera, Camille Joyce Garcia-Awitan, Febus Reidj Cruz and Glenn Magwili
16:50-17:10	Paper ID: 156 (3A.4)	Comparison of Cl effects on Au-Al and Cu-Al HTS and bHAST reliability Author: Lois Jinzhi Liao	Paper ID : 185 (3B.4)	Increase Fault Isolation Efficiency by Using Scan Cell Visualizer for Scan Chain Failure Authors: Thin Wei Chua, Loke Sheng Foo, Kim Choo Ng and Keith Serrels
[^] 17:10-17:40 [*] 17:10-17:30	[^] Invited (3A.5)	Advanced On-Chip Interconnect Reliability Baozhen Li, IBM Essex Junction, USA	[*] Paper ID :305 (3B.5)	Methodology to Investigate the Root Cause of Threshold Voltage Drift of Transistor Devices using Capacitance Voltage Measurements Author: Chung Keow Ang
End of Day 1				

Time	4 July (Day 2)			
08:30-09:30	KN.2 Session chair: Juin J. Liou	Emerging Non-Volatile Memory's Applications in Neuro-Inspired Computing and Hardware Security Shimeng Yu Georgia Institute of Technology, USA		
Session 4: Best Paper Exchange Session Chair				
09:30-10:00	ISTFA 2018 Exchange Paper (4.1)	Scan Chain Fault Isolation using Single Event Upsets Induced by a Picosecond 1064 nm Laser Keith Serrels, NXP Semiconductors, USA		
10:00-10:30	ESREF 2018 Exchange Paper (4.2)	Further Improvements of an Extended Hakki-Paoli Method Massimo Vanzi University of Cagliari, Italy		
10:30:10:50	Tea Break			
	Session 5A: Transistor Reliability (ESD) Session Chair		Session 5B: Advanced Electrical Fault Isolation Techniques Session Chair	

10:50-11:20	Invited (5A.1)	ESD / advanced FinFET device reliability You Li, GLOBALFOUNDRIES, USA	Invited (5B.1)	Quantitative MIS Characterization Through Electro-Optical Signals Christian Boit, TU Berlin, Germany
11:20-11:40	Paper ID : 251 (5A.2)	Modeling and Simulation of Diode Triggered Silicon Controlled Rectifier Behavior Under ESD Stresses Authors: Meng Miao, You Li and Robert Gauthier	Paper ID :308 (5B.2)	EOFM measurements of lateral and vertical Bipolar Transistors in Silicon and SiGe:C Technologies Authors: Anne Beyreuther, Tomonori Nakamura, Stefan Keil and Christian Boit
11:40-12:00	Paper ID : 203 (5A.3)	Investigation of Electrical Parameters Degradations for 600V SOI-LIGBT under Repetitive ESD Stresses Authors: Li Lu, Ran Ye, Siyang Liu and Weifeng Sun	Paper ID : 307 (5B.3)	EOFM for contactless parameter extraction of low k dielectric MIS structures Authors: Norbert Herfurth, Stefan Keil, Tomonori Nakamura and Christian Boit
12:00-14:00	LUNCH Poster Session			
14:00-14:20	Paper ID : 237 (5A.4)	A Systematic Failure Analysis Approach to Determine True Electrical Overstress Failures on Integrated Circuits Author: Em Julius Dela Cruz	Paper ID :326 (5B.4)	Fault Localization Using Dynamic Optical-beam Induced Current Variation Mapping Authors: Man Hon Thor, Szu Huat Goh, Boonlian Yeoh, Hao Hu, Yin Hong Chan and Lin Zhao
14:20-14:40	Paper ID : 150 (5A.5)	New Approaches in ESD Risk Measurement of PCB Assembling Machines and ESD Countermeasures Author: Peter Jacob	Paper ID : 325 (5B.5)	Accurate Memory Bitmapping based on Built-in Self-Test: Challenges and Solutions Authors: Lin Zhao, Szu Huat Goh, Ngow Yee Ta and Patrick Chan
14:40-15:00	Paper ID : 285 (5A.6)	Failure Analysis of Microwave Module by ESD Effect Authors: Zhimin Ding, Chao Duan, Xiaoqing Wang, Zhaoxi Wu, Yang Tian and Meng Meng	Paper ID : 256 (5B.6)	Characterization of 112nm Laser for Laser Based Fault Isolation Applications Authors: Vasanth Somasundaram, Yi Xuan Seah, Venkat Krishnan Ravikumar, Angeline Phoa and Choon Meng Chua
15:00-15:20	Paper ID :204 (5A.7)	Capacitor Modeling Methodology for System-level ESD Simulation Authors: Li Xiang, Xie Xiaofei, Xia Nan and Gu Zhengdong	Paper ID : 121 (5B.7)	Cycle-Shift Scan Chain Failure Analysis Using Single Pulse Test Pattern Authors: Eric Paulraj, Chwee-Lin Choong and Yiang Won Chai
15:20:15:40	Tea Break			
	Session 6A: Transistor Reliability Session Chair		Session 6B: Case Studies on Fault Isolation Session Chair	
15:40-16:10	Invited (6A.1)	Reliability of STTRAM Devices You Wang, Beihang University, China	Invited (6B.1)	Challenges in laser probing at spatial resolution compromised technology nodes Venkat Krishnan Ravikumar, AMD Singapore
16:10-16:30	Paper ID :210 (6A.2)	Understanding lifetime prediction methodology for In _{0.53} Ga _{0.47} As nFETs under Positive Bias Temperature Instability (PBTI) condition Authors: Zhigang Ji, Xiong Zhang and Jianfu Zhang	Paper ID : 191 (6B.2)	Root cause analysis on analog circuit using TR-LADA Authors: Winson Lua, Venkat Krishnan Ravikumar, Angeline Phoa, Gopinath Ranganathan and Girish AS
16:30-16:50	Paper ID : 262 (6A.3)	Comparison of NBTI kinetics in RMG Si p-FinFETs featuring ALD W Filling Metal Using B2H6 and SiH4 Precursors Authors: Longda Zhou, Guilei Wang, Xiaogen Yin, Bo Tang, Qianqian Liu, Zhigang Ji, Hao Xu, Zhenzhen Kong, Eddy Simoen, Hong Yang, Huaxiang Yin, Anyan Du, Huihong Zhu, Chao Zhao, Wenwu Wang and Tianchun Ye	Paper ID : 178 (6B.3)	Optical Failure Analysis on Pulsed Signals Embedded in Logic Cloud – A Case Study of Laser Voltage Tracing Authors: Yuzhu Sun, Daisy Lu, Dave Mark, Chennian Di, Jenny Fan and Neel Leslie
16:50-17:10	Paper ID : 279 (6A.4)	Impact of Channel Doping on NBTI Reliability and Variability in Nanoscale FinFETs Authors: Zhe Zhang, Runsheng Wang, Yangyuan Wang and Ru Huang	Paper ID : 183 (6B.4)	Integration of Soft Defect Localization (SDL) and Electro-Optical Probing (EOP) in Root Cause Investigation for Time Delay Related Issue Authors: Loke Sheng Foo, Ley Teng Tan, Chik Hooi Liew, Mohd Alwi Pawet and Thin Wei Chua
17:10-17:30	Paper ID : 264 (6A.5)	Study of Internal Latchup Behaviors in Advanced Bulk FinFET Technology Author: Wei Liang	Paper ID : 321 (6B.5)	Application of EBIC/EBAC for Nanoscale Fault Isolation of FEOL Defect Authors: Fransiscus Rivai, Peng Tiong Ng, Yinzhe Ma, A.C.T. Quah, Naiyun Xu, Jerome Cuevas Alag and Changqing Chen
End of Day 2				
18:00 -21:30	IPFA 2019 BANQUET			

Time	5 July (Day 3)	
	Session 7A : Wide Bandgap Devices: Reliability and Failure Analysis Session Chair	Session 7B : Case Studies on Physical Failure Analysis Session Chair

08:30 - 09:00	Invited (7A.1)	Reduction of current collapse in GaN (MIS)-HEMTs using dual material gate Authors: Binit Syamal and Xing Zhou	Invited (7B.1)	Failure and Materials Analysis in the Logic Integrated Circuit Industry: Status and Challenges in Advanced Nodes David Su, TSMC (Retired)
09:00 -09:20	Paper ID : 272 (7A.2)	On the understanding of defects in β -Ga2O3 nFETs under X-ray radiation Authors: Jin-Xin Chen, Xiao-Xi Li, Wei Huang, Hong-Liang Lu, David Wei Zhang, Zhihong Feng, Zhigang Ji, Suzhen Wu, Zheng Xu, Xinjie Zhou, Wenbin Zhao and Zhiqiang Xiao	Paper ID : 219 (7B.2)	An Effective Monitored and Improved Method to Control Moisture for Outgoing FOSB Authors: Yi-Ying Chen, Chiu-E Tseng, Hsin-Wen Fan and Chih-Chao Pai
09:20-09:40	Paper ID : 175 (7A.3)	Analysis of Interface Thermal Stability of High-k ZrO2 on GaN and AlGaIn Authors Wang Hong	Paper ID : 222 (7B.3)	The Application of Thermal Sensor to Locate IC Defects in Failure Analysis Authors: Kuan-Chieh Huang and Yi-Chen Lin
09:40-10:00	Paper ID : 212 (7A.4)	100V Integrated Bootstrap Diode with Dynamic Field Limiting Rings for Solving Reverse Recovery Failure in GaN Gate Driver ICs Authors: Ajiang Li, Shaohong Li, Jing Zhu, Long Zhang, Tian Tian, Guichaung Zhu, Yanqin Zou, Hao Zhu and Weifeng Sun	Paper ID : 165 (7B.4)	The Case of Failure Analysis of the PCBA Wire Corrosion under High Reliability Requirements Author: Zheng Jie
*10:00-10:30 *10:00-10:20	^(7A..5)	Invited Talk - TBD	*Paper ID : 247 (7B.5)	Metallic Trace Contaminant Detection Using SEM/EDX Authors: Aaron Lee, Bernice Zee and Fang Jie Foo
10:30-10:50	Tea Break			
	Session 8A : Wide Bandgap Devices: Reliability and Failure Analysis Session Chair		Session 8B : Advanced Physical Failure Analysis Techniques Session Chair	
10:50 -11:20	Invited (8A.1)	Wear- and Short-Circuit Testing of Silicon Carbide Power MOSFETs Francesco Iannuzzo, Aalborg University, Denmark	Invited (8B.1)	In-situ device microscopy Sun Litao, South East University, China
11:20-11:40	Paper ID : 132 (8A.2)	High Resolution Mapping of Defects at SiO2/SiC Interfaces by Local-DLTS Based on Time-Resolved Scanning Nonlinear Dielectric Microscopy Authors: Yuji Yamagishi and Yasuo Cho	Paper ID : 318 (8B.2)	Probing SRAM Signals for Yield Management Authors: Greg Johnson
11:40-12:00	Paper ID : 288 (8A.3)	Failure Analysis on TiAl Metallization Process for Ohmic Contact on 4H-SiC pMOSFET Authors: Chia Lung Hung, Jung-Chien Cheng and Bing-Yue Tsui	Paper ID : 146 (8B.3)	Simultaneous 2D carrier polarity (dC/dV) and density (dC/dz) distribution measurement of Si/SiC MOSFET based on scanning nonlinear dielectric microscopy Authors: Takehiro Yamaoka, Toru Aiso, Kazutoshi Watanabe, Yoshiteru Shikakura, Toshihiro Ueno, Keita Tamura and Katsunori Mizuguchi
12:00-12:20	Paper ID : 228 (8A.4)	Repetitive-avalanche-induced Electrical Degradation and Optimization for 1.2kV 4H-SiC MOSFETs Authors: Hao Fu, Jiaying Wei, Siyang Liu, Wangran Wu and Weifeng Sun	Paper ID : 173 (8B.4)	Si Nano-Crystal Size and Structural Defect Characterization Using Electron Microscopes Authors: Elizabeth Sebastian, Jie Zhu and Zhi Qiang Mo
12:20-13:20	LUNCH			
	Session 9A : 2D Materials and Devices : Reliability and Failure Analysis Session Chair		Session 9B : Emerging Technologies in Failure Analysis Techniques Session Chair	
13:20-13:50	Invited (9A.1)	Reliability of 2D-based FET Devices Yuri Illarionov, TU Wien, Austria	Invited (9B.1)	In situ TEM Study on Flexible Electronics Reliability and Failure Analysis Wu Xing, ECNU, China
13:50-14:10	Paper ID : 181 (9A.2)	Performance Variability and Analog Behaviors of Memristive Devices with New Transition Metal Carbide Authors: Fei Gao, Yihao Chen, Yuefeng Li, Miaocheng Zhang, Yu Wang, Nan He, Xinyi Shen, Ertao Hu, Xiang Wan, Xiao Gong, Yufeng Guo, Xiaojuan Lian and Yi Tong	Paper ID : 290 (9B.2)	Study of Front-Side Approach to Retrieve Stored Data in Non Volatile Memory Devices Using Scanning Capacitance Microscopy Authors: Jing Yun Tay, Jason Cheah, Qing Liu and Chee Lip Gan
14:10-14:30	Paper ID : 324 (9A.3)	Low Power Resistance Switching Devices and Its High-Density Crossbar Arrays with a Novel 2D Material MXene for Performance Improvement of Reliability Authors: Nan He, Xinwei Liu, Fei Gao, Yu Wang, Miaocheng Zhang, Xinyi Shen, Ertao Hu, Xiang Wan, Xiao Gong, Lin He, Xiaojuan Lian and Yi Tong	Paper ID: 276 (9B.3)	The impact of endurance degradation in Analog RRAM for in-situ training Authors: Yuyi Liu, Bin Gao, Huaqiang Wu, Meiran Zhao and He Qian
*14:30-15:00 *14:30-14:50	*Invited (9A.4)	Reliability Assessment for HfOx based Neuromorphic Devices / Systems Bin Gao, Tsinghua University	*Paper ID : 265 (9B.4)	Generation and tracking of optical signals inside the IC to improve device security and failure analysis Authors: Elham Amini, Jean-Pierre Seifert and Christian Boit
15:00-15:20	Tea Break			

	Session 10A: Transistor and 2D Materials Reliability Session Chair		Session 10B : Sample Preparation and Defect Characterisation Session Chair	
15:20-15:50	Invited 10A.1	Erroneous fabrication and reliability characterization of memristors: how to detect it? Mario Lanza, Soochow University	Invited 10B.1	Invited Talk - TBD
15:50-16:10	Paper ID : 284 (10A.2)	Light-Illumination-Induced Degradation and Its Long-Term Recovery in Indium-Tin- Zinc Oxide Thin-Film Transistors Authors: Meng Zhang, Xiaotong Ma, Zhendong Jiang, Sunbin Deng, Guijun Li, Rongsheng Chen, Yan Yan, Man Wong and Hoi-Sing Kwok	Paper ID : 223 (10B.2)	Application of Nanoindentation method to characterize adhesion strength of polyimide films Authors: Xiaoxuan Li, Xintong Zhu, Xiaodong Li, Yi Liu, Ramasamy Chockalingam, Ramesh Rao Nistala and Zhi Qiang Mo
16:10-16:30	Paper ID : 299 (10A.3)	Tristate resistive switching analysis in graphene/hexagonal boron nitride/graphene cross-point memristors Authors: Kaichen Zhu, Xianhu Liang, Bin Yuan, Marco Villena, Chao Wen, Tao Wang, Shaochuan Chen, Fei Hui, Yuanyuan Shi and Mario Lanza	Paper ID : 273 (10B.3)	Poly-Si Unetch Failure Due to Etching Rate Dependence of Si Orientation Authors: Dahyun Nam, Sukchan Song, Eunbee Go, Bongsu Chae, Ara Kim, BoMi Kim, Haeran Kim, Ji-Sun Yang, SoYeon Han, Hyunjun Ryu, Shinyoung Chung and Brandon Lee
[*] 16:30-17:00 [*] 16:30-16:50	[*]Invited (10A.4)	Defect Properties and Charge Transport in h-BN / MoS₂-based FET devices Kosuke Nagashio, University of Tokyo, Japan	[*] Paper ID : 214 (10B.4)	4-Point-Bending Characterization of Interfacial Adhesion Strength of Co-Zr-Ta and Co-Zr-Ta Variant Thin-Film Stacks Authors: Xintong Zhu, Xiaoxuan Li, Ramesh Rao Nistala, Zishan Ali, Lulu Peng, Lawrence Selvaraj, Chor Shu Cheng and Zhiqiang Mo
17:00 -17:20	Conference Closing Ceremony Best Best Poster Awards - Annoucement Introduction to IPFA 2020, Marina Bay Sands, Singapore			
End of Day 3				