### IEEE International Interconnect Technology Conference (IITC) 2021

#### Program At-a-Glance

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All session times are listed in Japan Time (JST, UTC+9). as of May 11, 2021
IEEE International Interconnect Technology Conference (IITC) 2021
Program Schedule

Tuesday, July 6, 2021
9:00 am – 4:30 pm  Workshop

Session Chairs:

9:00 am - 9:15 am
Opening Remarks

9:15 am - 10:00 am
WS-1. Innovation to Open New Paradigm for ICAC5/GX/DX
Manabu Tsujimura
Company Executive, Fellow, Ebara

10:00 am - 10:45 am
WS-2. Metallization Challenges in 3D Flash Memory
Masayoshi Tagami
KIOXIA

10:45 am - 11:15 am
Break/Exhibition Hour

11:15 am - 12:00 pm
WS-3. STT-MRAM technology: applications and scalability challenges
Kangho Lee
Master, Foundry Business, Samsung Electronics, South Korea

12:00 pm - 1:00 pm
Break/Exhibition Hour

1:00 pm - 1:45 pm
WS-4. 3D Stacking Technologies for Advanced CIS
Yoshihisa Kagawa
Senior Manager, Research Division, Sony Semiconductor Solutions Corporation, Japan

1:45 pm - 2:30 pm
WS-5. NanoBridge Technology for Low-power and Rad-hard AIoT Applications
Munehiro Tada
VP Engineering, NanoBridge Semiconductor, Inc.
2:30 pm - 3:00 pm
**Break/Exhibition Hour**

3:00 pm - 3:45 pm
**WS-6. Reliability challenges in advanced interconnects**
Olalla Varela Pedreira  
R&D Engineer, IMEC, Belgium

3:45 pm - 4:30 pm
**WS-7. Extending silicon technology for high-bandwidth optical communications and neuromorphic computing**
Bert Jan Offrein  
Manager Neuromorphic Devices and Systems, Science& Technology department, IBM research Europe, Switzerland
Wednesday, July 7, 2021
8:00 am – 10:00 am  Session 1: Opening/Plenary
Session Chairs:

8:00 am - 8:15 am  Opening Remarks

8:15 am - 8:20 am  Award Ceremony

8:20 am - 9:10 am  
S1-1. Keynote Speech: 3D Heterogeneous Integration for Intelligent Mobile System  
Prof. Mitsumasa Koyanagi  
Senior Research Fellow, New Industry Creation Hatchery Center, Tohoku University, Japan

9:10 am - 10:00 am  
S1-2. Keynote Speech: Foundry Challenges and Opportunities Near the End of Moore’s Era  
Dr. Gitae Jeong  
Corporate EVP, Head of Corporate Office/ Technology Development, Samsung Electronics, South Korea

10:00 am - 10:30 am  Break/Exhibition Hour

Wednesday, July 7, 2021
10:30 am – 12:40 pm  Session 2: Advanced Interconnect

10:30 am - 11:00 am  
S2-1. Invited Speech: Advanced interconnect challenges beyond 5nm and possible solutions  
KC(Kichul) Park  
Samsung Electronics, South Korea

11:00 am - 11:25 am  
S2-2. Advanced Damascene Integration Using Selective Deposition of Barrier Metal with Self Assemble Monolayer  
Hiroaki Kawasaki{4}, Mitsuaki Iwashita{4}, Hisashi Warashina{4}, Hiroyuki Nagai{4}, Hiroyuki Komatsu{1}, Yuuki Ozaki{1}, Kazutoshi Iwai{3}, Gyana Pattanaik{2}  
{1}JSR corporation, Japan; {2}TEL Technology Center, America, LLC, United States; {3}Tokyo Electron America, Inc., United States; {4}Tokyo Electron Limited, Japan
11:25 am - 11:50 am
**S2-3. Low Resistance Subtractive Metal Interconnect Toward Sub 10nm Dimension**
He Ren, Hao Jiang, Shi You, Mehul Naik, Alice Lu, Lin Zhou, Chi-I Lang, Wenting Hou, Jianxin Lei, Martin Seamons, Ankit Pokhrel, Prakj. Jha, Jingmei Liang
Applied Materials, United States

11:50 am - 12:15 pm
**S2-4. Thermodynamic Evaluation of the Liner and Barrier Properties of a single-Phase Interlayer for Advanced Cu Interconnections**
Yuki Yamada, Masataka Yahagi, Junichi Koike
Tohoku University, Japan

12:15 pm - 12:40 pm
**S2-5. Selective Barrier for Cu Interconnect Extension in 3nm Node and Beyond**
Shi You, He Ren, Mehul Naik, Lu Chen, Feng Chen, Carmen Leal Cervantes, Xiangjin Xie, Keyvan Kashefizadeh
Applied Materials, Inc., United States

12:40 pm - 1:00 pm
**Break**

1:00 pm - 2:00 pm
**Exhibitor Presentation 1**

**Wednesday, July 7, 2021**

2:00 pm – 4:10 pm **Session 3: 3D and Packaging**

Session Chairs:

2:00 pm - 2:30 pm
**S3-1. Invited Speech: Opportunities and challenges brought by 3D-sequential integration**
Dr. Perrine Batude
Senior scientist and project manager, CEA-Leti, France

2:30 pm - 2:55 pm
**S3-2. IR-Drop Analysis of Hybrid Bonded 3D-ICs with Backside Power Delivery and u- & n-TSVs**
Giuliano Sisto{2}, Bilal Chehab{3}, Bertrand Genneret{1}, Rogier Baert{3}, Rongmei Chen{3}, Pieter Weckx{3}, Julien Ryckaert{3}, Richard Chou{1}, Geert Van der Plas{3}, Eric Beyne{3}, Dragomir Milojovic{3}

{1}CADENCE, United States; {1}CADENCE, France; {2}Cadence Design Systems, United States; {3}IMEC, Belgium
2:55 pm - 3:20 pm  
**S3-3. Fabrication and Characterization of ISC Embedded Interposer for High Performance Interconnection**  
Won Ji Park, Min Guk Kang, Jae Hee Oh, Shaofeng Ding, Ji Hyung Kim, Je Gwan Hwang, Yun Ki Choi, Jung Ho Park, Won Hyoung Lee, Seung Ki Nam, Seong Wook Moon, Jong Mil Youn, Jeong Hoon Ahn  
Samsung Electronics, South Korea

3:20 pm - 3:45 pm  
**S3-4. BEoL Damage Evaluation Utilizing Sub Critical Cu-Pillar Shear Tests, Acoustic Emission, nXCT, and SEM/Fib Analysis**  
Jendrik Silomon{3}, Jürgen Gluch{1}, Juliane Posseckardt{1}, André Clausner{1}, Jens Paul{2}, Dirk Breuer{2}, Ehrenfried Zschech{1}  
{1}Fraunhofer IKTS, Germany; {2}Globalfoundries LLC & Co. KG, Germany; {3}Volkswagen AG, Germany

3:45 pm - 4:10 pm  
**S3-5. Characterization of Low-Temperature Selective Cobalt Atomic Layer Deposition (ALD) for Chip Bonding**  
Ming-Jui Li{3}, Michael Breeden{1}, Victor Wang{1}, Nyi Myat Khine Linn{2}, Charles Winter{2}, Andrew Kummel{1}, Muhannad Bakir{3}  
{1}Chemistry and Biochemistry Department, University of California San Diego, United States; {2}Chemistry Department, Wayne State University, United States; {3}Electrical and Computer Engineering Department, Georgia Institute of Technology, United States

4:10 pm - 4:25 pm  
**Break**

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**Wednesday, July 7, 2021**  
**4:25 pm – 5:40 pm**  
**Poster Session 1**  
Session Chairs:

4:25 pm - 4:30 pm  
**PS-1-01. Cu-Cu Bonding Using Optimized Copper Nitride Passivation for 3D Packaging Applications**  
Haesung Park, Seungmin Park, Yoonho Kim, Sarah Kim  
Seoul National University of Science & Technology, South Korea
4:30 pm - 4:35 pm
PS-1-02. Low Cost TSV Fabrication Technologies Using Anisotropic Si Wet Etching and Conformal Electroless Plating of Barrier and Seed Metals
Tomohiro Shimizu{1}, Shoso Shingubara{1}, Kosuke Matsui{5}, Yuichiro Torinari{5}, Shigeru Watariguchi{2}, Hideki Watanabe{3}, Makoto Motoyoshi{4}
{1}Kansai University, Japan; {2}Meltex Inc., Japan; {3}Meltex Inc., Japan; {4}tohoku-microtec, Japan; {5}Tosetsu Inc., Japan

4:35 pm - 4:40 pm
PS-1-03. A Thin Adhesive for 3D/2.5D Si Chip Stacking at Low Temperature
Yuzo Nakamura, Takashi Kozeki, Jun Kamada, Kazuo Kohmura
Mitsui Chemicals, Inc., Japan

4:40 pm - 4:45 pm
PS-1-04. An Investigation for Electromagnetic and Electrothermal Coupling Characteristics of Hybrid Bond in Stacked Embedded DRAM with MRPIIM
Jingrui Chai{1}, Xiping Jiang{1}, Xudong Gao{1}, Bing Yu{1}, Xiaofeng Zhou{1}, Peng Yin{1}, Song Wang{1}, Jie Tan{1}, Zhengwen Wang{1}, Gang Dong{2}, Qiwai Ren{1}
{1}Xi'an UniIC Semiconductors, China; {2}Xidian University, China

4:45 pm - 4:50 pm
PS-1-05. Copper Large-Scale Grain Growth by UV Nanosecond Pulsed Laser Annealing
Toshiyuki Tabata{2}, Pierre-Edouard Rayna{2}, Fabien Roz{2}, Sébastien Halty{2}, Louis Thuries{2}, Fuccio Cristiano{1}, Emmanuel Scheid{1}, Fulvio Mazzamuto{2}
{1}LAAS-CNRS, France; {2}Laser Systems & Solutions of Europe (LASSE), France

4:50 pm - 4:55 pm
PS-1-06. Mechanical Properties of Low-K Dielectric Deposited on Subtractively Patterned Cu Lines for Advanced Interconnects
Ivan Ovchinnikov{3}, Askar Rezvanov{2}, Dmitry Seregin{3}, Daniil Abdullaev{3}, Konstantin Vorotilov{3}, Vladimir Gvozdev{1}, Tom Blomberg{5}, Alexey Veselov{5}, Mikhail Baklanov{4}
{1}MERI, Russia; {2}MIPT, MERI, Russia; {3}MIREA-Russian Technological University, Russia; {4}NCUT, China; {5}Picosun, Finland

4:55 pm - 5:00 pm
PS-1-07. The via Resistance Analysis at ALD-to-PVD Tan Transition Layer
Changhyun Kim, Junki Cang, Kichang Sung, Hoon Kim, Yunki Choi, Jeonghoon Ahn, Wonkyu Han, Woojin Jang, Rakhwan Kim, Juheon Kim, Youngju Lim, Hyunju Yim, Wonmo Kang
Samsung Electronics Inc., South Korea
5:00 pm - 5:05 pm
**PS-1-08. Multi-level Metallization on an Elastomer PDMS for FOWLP-based Flexible Hybrid Electronics**
Zhe Wang{3}, Ikumi Ozawa{2}, Yuki Susumago{3}, Tomo Odashima{3}, Noriyuki Takahashi{2}, Hisashi Kino{1}, Tetsu Tanaka{4}, Takafulumi Fukushima{4}
{1}Frontier Research Institute for Interdisciplinary Sciences, Japan; {2}Graduate School of Biomedical Engineering, Japan; {3}Graduate School of Engineering, Japan; {4}Graduate School of Engineering, Graduate School of Biomedical Engineering, Japan

5:05 pm - 5:10 pm
**PS-1-09. Comparison of Copper and Cobalt Surface Reactivity for Advanced Interconnects**
Amine Lakhdari{1}, Mathieu Frégnaux{2}, Louis Caillard{1}, Anne Marie Goncalves{2}, Mikailou Thiam{1}, Frédéric Raynal{1}, Arnaud Etcheberry{2}
{1}aveni, France; {2}Institut Lavoisier de Versailles, France

5:10 pm - 5:15 pm
**PS-1-10. Grain Structure-Resistivity Relationship of Ru ALD Precursors**
Michael Breeden{3}, Victor Wang{3}, Ravindra Kanjolia{1}, Mansour Moinpour{1}, Jacob Woodruff{1}, Harsono Simka{2}, Andrew Kummel{3}
{1}Merck KGaA, Darmstadt, Germany; {2}Samsung, United States; {3}UC San Diego, United States

5:15 pm - 5:20 pm
**PS-1-11. Fabrication of Highly Doped MLG Patterns Using Selective CVD and MoCl5 Intercalation**
Ekkaphop Ketsombun, Tomoki Akimoto, Kazuyoshi Ueno
Shibaura Institute of Technology, Japan

5:20 pm - 5:25 pm
**PS-1-12. Automated Voids Detection for Metal Filled Trenches with Bottom CD of 10nm**
Maryamsadat Hosseini, Gerardo Martinez, Marleen van der Veen, Nicolas Jourdan, Eugenio Dentoni Litta, Naoto Horiguchi
imec, Belgium

5:25 pm - 5:40 pm
**Poster Session 1 - Authors Interview**

5:50 pm - 7:00 pm
**Networking Reception**
Thursday, July 8, 2021
8:00 am – 10:15 am  Session 4: Integration
Session Chairs:

8:00 am - 8:30 am
S4-1. Invited Speech:
Nelson Felix
IBM, USA

8:30 am - 9:00 am
S4-2. Invited Speech: Analysis of edge placement error (EPE) at the 5nm node and beyond
Dr. Robert Socha
Fellow, ASML Brion

9:00 am - 9:25 am
S4-3. Advanced Air Gap Formation Scheme Using Volatile Material
Hisashi Warashina{2}, Hiroaki Kawasaki{2}, Hiroyuki Nagai{2}, Nagisa Sato{2}, Tatsuya Yamaguchi{3}, Yuki Kikuchi{1}, Xinghua Sun{1}
{1}TEL TECHNOLOGY CENTER, AMERICA, LLC, United States; {2}TOKYO ELECTRON LIMITED, Japan; {3}TOKYO ELECTRON TECHNOLOGY SOLUTIONS LIMITED, Japan

9:25 am - 9:50 am
S4-4. Process Integration of High Aspect Ratio Vias with a Comparison Between Co and Ru Metallizations
Victor Hugo Vega-Gonzalez{1}, Daniel Montero{1}, Janko Versluijs{1}, Olalla Varela Pedreira{1}, Nicolas Jourdan{1}, Harinarayanan Puliyalil{1}, Bilal Chehab{1}, Tobias Peissker{2}, Ali Haider{2}, Dmitry Batuk{1}, Gerardo Tadeo Martinez Alanis{1}, Jef Geyp
{1}IMEC, Belgium; {2}LAM, United States

9:50 am - 10:15 am
S4-5. Advanced 5nm BEOL Integration Development for manufacuring
Jungil Park, Jeong Hoon Ahn, Youngsoo Yoon, Yunki Choi, Junki Jang, Miji Lee
Samsung electronics, South Korea

10:15 am - 10:30 am
Break
Thursday, July 8, 2021
10:30 am – 12:45 pm  Session 5: Contact/Unit Process

Session Chairs:

10:30 am - 11:00 am
S5-1. Invited Speech:
Nicolas Breil
AMAT, USA

11:00 am - 11:30 am
S5-2. Invited Speech: Intermetallic compounds for Interconnect metal beyond 3 nm node
Prof. Junichi Koike
Professor, Dept. of Materials Science, Tohoku University, Japan

11:30 am - 11:55 am
S5-3. Contact Interface Characterization of graphene Contacted MoS2 Fets
Vivek Koladi Mootheri{2}, Albert Minj{1}, Goutham Arutchelvan{1}, Alessandra Leonhardt{2},
Inge Asselberghs{1}, Marc Heyns{2}, Iuliana Radu{1}, Dennis Lin{1}
{1}IMEC, Belgium; {2}KU Leuven/IMEC, Belgium

11:55 am - 12:20 pm
S5-4. Metal Wet Recess Challenges and Solutions for Beyond 7nm Fully Aligned via Integration
Brown Peethala{1}, Devika Sil{1}, Benjamin Briggs{1}, David Rath{1}, Nick Lanzillo{1}, Kedari Matam{1}, Shobha Hosadurga{1}, Terry Spooner{1}, Donald Canaperi{1}, Minnal Packiam{2},
Dustin Janes{2}, John Casey{2}
{1}IBM Research, United States; {2}Screen, Albany, United States

12:20 pm - 12:45 pm
S5-5. Improved Contacts to Synthetic Monolayer MoS2 - a Statistical Study
Aravindh Kumar, Alvin Tang, Philip Wong, Krishna Saraswat
Stanford University, United States

12:45 pm - 1:00 pm
Break

1:00 pm - 2:00 pm
Exhibitor Presentation 2
Thursday, July 8, 2021
2:00 pm – 4:15 pm  Session 6: Memory

Session Chairs:

2:00 pm - 2:30 pm
S6-1. Invited Speech: Commercialization of MRAM – Historical and Future perspective
Dr. Sumio Ikegawa
Distinguished Member of the Technical Staff in Technology R&D Department, Everspin Technologies Inc., USA

2:30 pm - 3:00 pm
S6-2. Invited Speech: Enabling Ferroelectric Memories in BEOL - towards advanced neuromorphic computing architectures
Mr. David Lehninger
Project manager, Fraunhofer Center for Nanoelectronic Materials, Fraunhofer, Germany

3:00 pm - 3:25 pm
S6-3. Controlled ALE-Type Recess of Molybdenum for Future Logic and Memory Applications
Antoine Pacco{1}, Teppei Nakano{2}, Akihisa Iwasaki{2}, Shota Iwahata{3}, Efrain Altamirano Sanchez{1}
{1}imec, Belgium; {2} SCREEN, Germany; {3} SCREEN, Japan

3:25 pm - 3:50 pm
S6-4. Multi-Scale Modeling Approach to Assess and mitigate Wafer Warpage in 3-D NAND Fabrication
Oguzhan Orkut Okudur, Mario Gonzalez, Geert Van Den Bosch, Maarten Rosmeulen
imec, Belgium

3:50 pm - 4:15 pm
S6-5. Materials Impact on SRAM Timing: an Ab Initio Study of Interconnects
Shela Aboud, Tue Gunst, Jonathan Cobb, Joanne Huang, Plamen Asenov, Vaida Arcisauskaite
Synopsys, United States; Synopsys, Belgium; Synopsys, United Kingdom

4:15 pm - 4:25 pm
Break
Thursday, July 8, 2021
4:25 pm – 5:45 pm  Poster Session 2

Session Chairs:

4:25 pm - 4:30 pm  
**PS-2-01. A Method of chemical-Mechanical Polishing of a Thick Silver Layer on Patterned Silicon Wafer**
Evgeny Danilkin{2}, Valentina Gaydeday{2}, Jose Valdez{2}, Vladimir Krupnik{2}, Igor Ivanov{1}, Sergey Ermakov{3}, Daria Navolotskaya{3}
{1}AxBio inc., United States; {2}Crocus Nano Electronics, Russia; {3}Saint Petersburg State University, Russia

4:30 pm - 4:35 pm  
**PS-2-02. Atomic Layer Deposition of Titanium Silicate for Multi-Patterning Process**
Sanghun Lee{3}, Seunggi Seo{3}, Wonate Noh{1}, Il-Kwon Oh{2}, Hyungjun Kim{3}
{1}Air Liquide Laboratory Korea, South Korea; {2}Ajou University, South Korea; {3}Yonsei University, South Korea

4:35 pm - 4:40 pm  
**PS-2-03. Microstructural Optimization of Tungsten for Low Resistivity Using Ion Beam Deposition**
Frank Cerio{1}, Rutvik Mehta{1}, Paul Turner{2}, Robert Caldwell{1}, Jinho Kim{1}
{1}Veeco Instruments Inc, United States; {2}Veeco Instruments Inc., United States

4:40 pm - 4:45 pm  
**PS-2-04. An Alternative to Tungsten in 3D-NAND Technology**
Dominique Suhr, Vincent Mevellec, Mikailou Thiam, Jonathan Idier, Frédéric Raynal, Hermine Berthon, Elisa Perrault, Nicolas Hann, Céline Doussot, Yeeseul Kim, Mathilde Baus, Amine Lakhdari, Gaëlle Guittet
aveni, France

4:45 pm - 4:50 pm  
**PS-2-05. Atomic Layer Deposition of RuO2 Using a New metalorganic Precursor As a Diffusion Barrier for Ru Interconnect**
Youn-Hye Kim{3}, Yohei Kotsugi{2}, Taehoon Cheon{1}, Rahul Ramesh{3}, Soo-Hyun Kim{3}
{1}Daegu Gyeongbuk Institute of Science and Technology, South Korea; {2}Tanaka Precious Metals, South Korea; {3}Yeungnam University, South Korea
4:50 pm - 4:55 pm  
**PS-2-06. An All-Wet, Low Cost RDL Fabrication Process with Electroless Plated Seed/Barrier Layers**  
Ziru Cai, Yingtao Ding, Zhaohu Wu, Ziyue Zhang, Yuwen Su, Zhiming Chen  
Beijing Institute of Technology, China

4:55 pm - 5:00 pm  
**PS-2-07. Low Resistivity Titanium Nitride Thin Film Fabricated by Atomic Layer Deposition on Silicon**  
Cheng-Hsuan Kuo{3}, Victor Wang{3}, Zichen Zhang{3}, Seonguk Yun{3}, Jeffrey Spiegelman{1}, Daniel Alvarez{1}, Harsono Simka{2}, Andrew Kummel{3}  
{1}Rasirc, United States; {2}Samsung, United States; {3}UCSD, United States

5:00 pm - 5:05 pm  
**PS-2-08. Impact of Nanosecond Laser Anneal on PVD Ru Films**  
Devika Sil{1}, Yasir Sulehria{1}, Oleg Gluschenkov{1}, Takeshi Nogami{1}, Roger Cornell{1}, Andrew Simon{1}, Juntao Li{1}, Bala Haran{1}, Christian Lavoie{1}, Jean L Sweet{1}, Junjun Liu{4}, Karim Huet{2}, Fulvio Mazzamuto{3}  
{1}IBM Research, United States; {2}Laser Systems & Solutions of Europe, France; {3}Laser Systems & Solutions of Europe, Gennevilliers, France; {4}Screen, Albany, United States

5:05 pm - 5:10 pm  
**PS-2-09. Development of Manganese Nitride Resistor with Near-Zero Temperature-Coefficient of Resistance to Achieve High-Thermal-Stability ICs**  
Hisashi Kino, Takafumi Fukushima, Tetsu Tanaka  
Tohoku University, Japan

5:10 pm - 5:15 pm  
**PS-2-10. Design of an Integrated III-V on Silicon Semiconductor Laser for Spiking Neural Networks**  
Keshia Mekemeza Ona, Benoit Charbonnier, Karim Hassan  
CEA-Leti, Université Grenoble Alpes, F-38000 Grenoble, France, France

5:15 pm - 5:20 pm  
**PS-2-11. Virtual Metrology Equipped with a Variability Analyzer in Chemical Mechanical Polishing**  
Lingyen Yeh, Shu Chun Huang  
Sun Innovation Co., Ltd., Taiwan
5:20 pm - 5:25 pm
**PS-2-12. Interconnects Variability Control for High Voltage Applications**  
Kwang Sing Yew, Yi Jiang, Wanbing Yi, Ramasamy Chockalingam, Ran Xing Ong, Bo Li, Juan Boon Tan  
GlobalFoundries, Singapore

5:25 pm - 5:30 pm
**PS-2-13. A Study on the nitridation of Barrier Liner Contribution to Galvanic Corrosion of Copper bondpad**  
Xiaodong Li, Ramasamy Chockalingam, Poh Chuan Ang, Wah Peng Neo, Juan Boon Tan  
globalfoundries singapore, Singapore

5:30 pm - 5:45 pm  
**Poster Session 2 - Authors Interview**
**Friday, July 9, 2021**

8:00 am – 10:15 am  **Session 7: Advanced Interconnect**

Session Chairs:

8:00 am - 8:30 am  
**S7-1. Invited Speech:**  
Koichi Motoyama  
IBM

8:30 am - 8:55 am  
**S7-2. XPS Diffusion Analysis of Ta(N)/Ru Diffusion Barriers for Cobalt Interconnects**  
Bettina Wehring, Lukas Gerlich, Benjamin Uhlig  
Fraunhofer IPMS, Germany

8:55 am - 9:20 am  
**S7-3. Exploring W-Cu Hybrid Dual Damascene metallization for Future Nodes**  
Marleen van der Veen{2}, Olalla Varela Pedreir{2}, Nancy Heylen{2}, Nicolas Jourdan{2}, Stéphane Lariviére{2}, Seongho Park{2}, Herbert Struyf{2}, Zsolt Tökei{2}, Wei Lei{1}, Shirish Pethe{1}, Shinjae Hwang Feng Chen{1}, Zhiyan Wu Jérôme Machillot{1}, An  
{1}Applied Materials Inc., United States; {2}imec, Belgium

9:20 am - 9:45 am  
**S7-4. Selective Deposition of AlOx for Fully Aligned via in Nano Cu Interconnects**  
Son Nguyen{2}, Hosadurga Shobha{2}, Corneliu Peethala{2}, Thomas Haigh{2}, Huai Huang{1}, Juntao Li{2}, James Demarest{2}, Balasubramanian Pranatharthi Haran{2}, Dennis Hausmann{3}, Paul Lemaire{4}, Kashish Sharma{3}, Pankaj Ramani{3}, Arpan Mahorowala{3}  
{1}IBM Research Center, United States; {2}IBM Research center, United States; {3}Lam Research, United States; {4}Lam Ressearch, United States

9:45 am - 10:10 am  
**S7-5. Aluminide Intermetallics for Advanced Interconnect metallization: Thin Film Studies**  
Jean-Philippe Soulie, Zsolt Tőkei, Johan Swerts, Christoph Adelmann  
Imec, Belgium

10:10 am - 10:15 am  
Next Conference Announcement

10:15 am – 10:30 am  
Break
**Friday, July 9, 2021**

**10:30 am – 12:50 pm  Session 8: RC Scaling/Reliability**

**Session Chairs:**

10:30 am - 11:00 am

**S8-1. Invited Speech:**
Mauro Kobrinsky
Intel

11:00 am - 11:30 am

**S8-2. Invited Speech:**
Kihyun Choi
Samsung Electronics, South Korea

11:30 am - 11:55 am

**S8-3. Reliability of Barrierless PVD Mo**
Davide Tierno, Maryam Hosseini, Marleen van der Veen, Anish Dagol, Kristof Croes, Steven Demuynck, Zsolt Tőkei, Eugenio Dentoni Litta, Naoto Horiguchi
imec, Belgium

11:55 am - 12:20 pm

**S8-4. Joule Heating Investigation for Advanced Interconnect Schemes with airgaps**
Melina Lofrano, Olalla Varela Pedreira, Ivan Ciofi, Herman Oprins, Seongho Park Park, Zsolt Tokei
imec, Belgium

12:20 pm - 12:45 pm

**S8-5. Effects of Composition Deviation of CuAl2 on BTS and TDDB Reliability**
Toshihiro Kuge, Masataka Yahagi, Junichi Koike
Tohoku University, Japan

12:45 pm - 12:50 pm

**Next Conference Announcement**

12:50 pm - 1:00 pm

**Break**

1:00 pm - 2:00 pm

**Exhibitor Presentation 3**
Friday, July 9, 2021
2:00 pm – 4:20 pm  Session 9: DTCO/Novel System & Closing Remarks

Session Chairs:

2:00 pm - 2:30 pm  
S9-1. Invited Speech:
Gary Lauterback  
Cerebras

2:30 pm - 3:00 pm  
S9-2. Invited Speech: Resistive memories for neuromorphic hardware
Ms. Elisa Vianello  
senior scientist, CEA-Leti, France

3:00 pm - 3:25 pm  
S9-3. Advanced CMP Process Control by Using Machine Learning Image Analysis
Min-Hsuan Hsu, Chih-Chen Lin, Hsiang-Meng Yu, Kuang-Wei Chen, Tuung Luoh, Ling-Wuu Yang,  
Ta-Hone Yang, Kuang-Chao Chen
Macronix International Co. Ltd., Technology Development Center, Taiwan

3:25 pm - 3:50 pm  
S9-4. Two-Level MOL and VHV Routing Style to Enable Extreme Height Scaling Beyond 2nm Technology Node
Bilal Chehab, Odysseas Zografos, Eugenio Dentoni Litta, Zubair Ahmed, Pieter Schuddinck, Doyoung Jang, Geert Hellings, Alessio Spessot, Pieter Weckx, Julien Ryckaert
IMEC, Belgium

3:50 pm - 4:15 pm  
S9-5. Novel IR/EM-Aware Power Grid Design and Analysis Methodologies for Optimal PPA at Sub-10nm Technology Nodes
Grant Miller, Saurabh Jain, Santosh Kelgeri, Pranav Raganathan, Ahmet Ceyhan
Advanced Design, United States

4:15 pm - 4:20 pm  
Closing Remarks