



23rd Conference on “Insulating Films on Semiconductors”

INFOS 2023

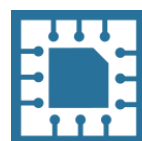
27 June – 30 June 2023, Pizzo (VV), Italy

Final Program



**SOLID-STATE
ELECTRONICS**

An International Journal



IPCEI
on Microelectronics

Tuesday, 27 June 2023

11:00-13:00	Conference Registration
13:00-14:00	Lunch
14:00-15:30	Conference Registration
15:30-15:45	Conference Opening
15:45-16:30	Opening Keynote Talk “Moore’s Law Device Scaling and 3D Heterogeneous Integration R&D for 2030+ Manufacturing” <u>Robert Chau</u> Intel Corporation, San Francisco, CA, USA
16:30-17:00	Coffee Break
17:00-18:00	Invited Talk Session (I)
From 21:00	Welcome “Tartufo” Ice Cream at Pizzo (VV)

Invited Talk Session (I) (17:00-18:00) Chair: <u>Sorin Cristoloveanu</u> , IMEP, France	
17:00-17:30	“Ferroelectric synapses in neuromorphic circuits: integration of perovskite- and hafnia-based crossbars” <u>Laura Begon-Lours</u> IBM Research Zurich, Zurich, Switzerland
17:30-18:00	“Gate oxide reliability: upcoming trends, challenges and opportunities” <u>Ben Kaczer</u> IMEC, Leuven, Belgium

Wednesday, 28 June 2023

9:00-10:30	Characterization and Reliability (I)
10:30-11:00	Coffee Break
11:00-12:45	Materials for power devices
12:45-14:00	Lunch
14:00-15:30	Characterization and Reliability (II)
15:30-17:30	Poster Session & IPCEI and Infineon Keynote (16:00-16:30) “IPCEI program @ Infineon Austria: making life easier, safer and greener” <u>Christian Lehner</u> and <u>Paolo Toniutti</u> Infineon Technologies Austria AG, Villach, Austria
From 18:00	Social Sport Events at “TUI Magic Life Calabria” resort

Characterization and Reliability (I) (9:00-10:30) Chair: <u>Hee-Dong Kim</u> , Sejong University, Korea	
9:00-9:30	“Atomic defect spectroscopy for MIM and MOS systems” (Invited) <u>Federico Nardi</u> Applied Materials, Reggio Emilia, Italy
9:30-9:45	“Origin of Interface Dipole Modulation in Perovskite Oxide Epitaxial Stacks by Monatomic Layer Insertion Characterized by Lateral Force Microscopy” <u>A. Tamura</u> ¹ , T. Onaya ² and K. Kita ^{1,2} ¹ Dept. of Materials Engineering, The University of Tokyo, Tokyo, Japan ² Dept. of Advanced Materials Science, The University of Tokyo, Tokyo, Japan
9:45-10:00	“Voltage Ramp Stress based Lifetime-Prediction Model of Advanced Al-Doped HfO₂ Dielectric for 2.5D MIMCAPs” <u>C. Fohn</u> ^{1,2} , E. Chery ¹ , K. Croes ¹ , M. Stucchi ¹ , V. Afanas'ev ^{1,2} ¹ IMEC, Leuven, Belgium ² KU Leuven, Department of Physics and Astronomy, Leuven, Belgium
10:00-10:15	“Experimental Study Of Time-Dependent Dielectric Degradation By Means Of Random Telegraph Noise Spectroscopy” <u>N. Saini</u> ^{1,2} , D. Tierno ¹ , K. Croes ¹ , V. Afanas'ev ^{1,2} , J. Van Houdt ^{1,2} ¹ IMEC, Leuven, Belgium ² KU Leuven, Leuven, Belgium

10:15-10:30	<p>“Investigating the Correlation between Interface and Dielectric Trap Densities in Aged p-MOSFETs Using Current-Voltage, Charge Pumping, and 1/f Noise Characterization Techniques”</p> <p><u>R. Asanovski</u>¹, J. Franco², P. Palestri³, B. Kaczer², L. Selmi¹</p> <p>¹ DIEF, University of Modena and Reggio Emilia, Modena, Italy ² IMEC, Leuven, Belgium ³ DPIA, University of Udine, Udine, Italy</p>
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Materials for power devices (11:00-12:45) Chair: <u>Hiroshi Iwai</u> , National Yang Ming Chiao Tung University, Taiwan	
11:00-11:30	<p>“E-mode GaN HEMT with Ferroelectric Gate Material for EV and PV Applications” (Invited)</p> <p><u>Edward Yi Chang</u></p> <p>National Yang Ming Chiao Tung University, Taiwan</p>
11:30-11:45	<p>“Opportunity to achieve an efficient SiC/SiO₂ interface N passivation by tuning the simultaneous oxidation modes during the SiC surface nitridation in N₂ + O₂ annealing”</p> <p><u>T. Yang</u>¹ and Koji Kita^{1,2}</p> <p>¹ Dept. of Materials Engineering, The University of Tokyo, Tokyo, Japan ² Dept. of Advanced Materials Science, The University of Tokyo, Tokyo, Japan</p>
11:45-12:00	<p>“Post-Deposition Annealing challenges for ALD Al_{0.5}Si_{0.5}O/n-GaN MOS devices”</p> <p><u>P. Fernandes Paes Pinto Rocha</u>^{1,2}, L. Vauche¹, M. Bedjaoui¹, S. Cadot¹, B. Mohamad¹, W. Vandendaele¹, E. Martinez¹, N. Gauthier¹, F. Pierre¹, H. Grampeix¹, G. Lefèvre², B. Salem², V. Sousa¹</p> <p>¹ CEA-Leti, Univ. Grenoble Alpes, Grenoble, France ² Univ. Grenoble Alpes, CNRS, CEA/ LETI Minatec, Grenoble INP, LTM, Grenoble, France</p>
12:00-12:15	<p>“Ultra-low turn-on voltage quasi-vertical GaN Schottky barrier diode with homogeneous barrier height”</p> <p><u>Y. Lin</u>^{1,2}, D.-S. Chao³, J.-H. Liang^{1,4}, Y.-L. Shen⁵, C.-F. Huang⁵, S. Hall², I. Z. Mitrovic²</p> <p>¹ Dept. of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan, ROC ² Dept. of Electrical Engineering and Electronics, University of Liverpool, Liverpool, UK ³ Nuclear Science and Technology Development Center, National Tsing Hua University, Hsinchu, Taiwan, ROC ⁴ Institute of Nuclear Engineering and Science, National Tsing Hua University, Hsinchu, Taiwan, ROC ⁵ Institute of Electronics Engineering, National Tsing Hua University, Hsinchu, Taiwan, ROC</p>
12:15-12:30	<p>“A Compact model based on the Lambert Function for AlGaIn/GaN Schottky Barrier Gated-Edge Termination”</p> <p><u>L. Trojman</u>^{1,2}, E. Acurio^{2,3}, B. De Jaeger⁴, N. Posthuma⁴, S. Decoutere⁴, B. Bakeroot^{4,5}</p> <p>¹ LISITE, ISEP, Issy-Les-Moulineaux, France ² IMNE, USFQ, Cumbaya, Ecuador ³ EPN, Quito, Ecuador ⁴ IMEC, Leuven, Belgium ⁵ CMST, IMEC and Ghent University, Ghent, Belgium</p>

12:30-12:45	<p>“Role of interface/border traps on the threshold voltage instability of SiC power transistors”</p> <p><u>V. Volosov</u>¹, S. Cascino², M. Saggio², A. Imbruglia², F. Di Giovanni², C. Fiegna¹, E. Sangiorgi¹, A. N. Tallarico¹</p> <p>¹ ARCES-DEI, University of Bologna, Campus of Cesena, Cesena, Italy ² STMicroelectronics s.r.l., Catania, Italy</p>
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Characterization and Reliability (II) (14:00-15:30) Chair: <u>Paul Hurley</u> , Tyndall National Institute, Ireland	
14:00-14:15	<p>“Impact of Work Function Metal Stacks on the Performance and Reliability of multi-V_{th} RMG CMOS technology”</p> <p><u>J. Franco</u>, H. Arimura, S. Brus, E. Dentoni Litta, K. Croes, N. Horiguchi, B. Kaczer IMEC, Leuven, Belgium</p>
14:15-14:30	<p>“High-k/InGaAs interface defects at cryogenic temperature”</p> <p><u>K. Cherkaoui</u>¹, P. La Torraca⁵, J. Lin¹, N. Maraviglia¹, A. Andersen⁴, L.E. Wernersson⁴, A. Padovani², L. Larcher³, P.K. Hurley¹</p> <p>¹ Tyndall National Institute, University College Cork, Cork, Ireland ² DIEF Department, University of Modena and Reggio Emilia, Modena, Italy ³ Applied Materials, Reggio Emilia, Italy ⁴ Department of Electrical and Information Technology, Lund University, Lund, Sweden ⁵ DISMI Department, University of Modena and Reggio Emilia, Modena, Italy</p>
14:30-14:45	<p>“Hot-carrier induced degradation of Ge/STI interfaces in Ge-on-Si junction devices”</p> <p><u>S. Musibau</u>^{1,2}, J. Franco², A. Tsiara², I. De Wolf^{1,2}, K. Croes²</p> <p>¹ KU Leuven, Department of Materials Engineering, Leuven, Belgium ² IMEC, Leuven, Belgium</p>
14:45-15:00	<p>“Analysis of anomalous C-V behavior for extracting the traps density in the undoped polysilicon with a Double-BOX structure”</p> <p><u>Y. Huang</u>¹, Y. Yan², M. Nabet², F. Liu¹, Bo Li¹, Binhong Li¹, Z. Han¹, S. Cristoloveanu³, J.-P. Raskin²</p> <p>¹ Institute of Microelectronics and Key Laboratory of Science and Technology on Silicon Devices, CAS, and University of Chinese Academy of Sciences, China ² ICTEAM, Université catholique de Louvain (UCLouvain), Belgium ³ IMEP - INP Grenoble MINATEC, Grenoble, France</p>
15:00-15:15	<p>“Investigation and Modeling of Multifrequency CV Characteristics for 10-nm Bulk FinFETs at Cryogenic Temperatures”</p> <p><u>S. Gupta</u>¹, A. Amin¹, R. A. Vega², A. Dixit¹</p> <p>¹ Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India ² IBM Research, Albany, New York, USA</p>

15:15-15:30	<p>“Characterization of Trap Density in Indium-Gallium-Zinc-Oxide Thin Films by Admittance Measurements in Multi-finger MOS Structures”</p> <p><u>H. Tang</u>^{1,2}, A. Belmonte¹, D. Lin¹, V. Afanas'Ev^{1,2}, P. Verdonck¹, A. Chasin¹, H. Dekkers¹, R. Delhougne¹, J. Van Houdt^{1,2}, G. S. Kar¹</p> <p>¹ IMEC, Leuven, Belgium ² KU Leuven, Leuven, Belgium</p>
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Poster Session (15:30-17:30)	
	<p>“A Comprehensive Study of Negative Bias Temperature Instability in MOS Structures”</p> <p><u>F. Irrera</u> and G. Broccoli DIET, Sapienza University of Rome, Rome, Italy</p>
	<p>“Metal-insulator Transition of Vanadium Dioxide and the Role of Grain Boundaries”</p> <p><u>X. Zhang</u>¹, Y. Guo², D. Chu¹, J. Robertson¹</p> <p>¹ Dept. of Engineering, University of Cambridge, Cambridge, United Kingdom ² College of Engineering, Swansea University, Swansea, United Kingdom</p>
	<p>“Exploitation of OTFTs variability for PUFs implementation and impact of aging”</p> <p>S. Claramunt¹, G. Palau¹, A. Arnal², <u>A. Crespo-Yepes</u>¹, M. Porti¹, S. Ogier³, E. Ramon², M. Nafria¹</p> <p>¹ Universitat Autònoma de Barcelona, Dept. Eng., Bellaterra, Spain ² Institut de Microelectrònica de Barcelona (IMB-CNM), Bellaterra, Spain ³ SmartKem Ltd., Sedgefield, UK</p>
	<p>“High-sensitivity reduced graphene oxide and hematite composite-based gas sensor for detecting formaldehyde”</p> <p>I. Ahmad, <u>T. Kim</u>, H.-D. Kim Dept. of Electrical Engineering, Sejong University, Seoul, South Korea</p>
	<p>“Role of interface and bulk traps on the capacitance-voltage characteristics of WS₂/Al₂O₃/Si capacitors”</p> <p><u>K. Intonti</u>^{1,3}, E. Coleman², A. Blake², C. Lyons², A. Hydes², A. Di Bartolomeo^{1,3}, F. Gity², P. K. Hurley²</p> <p>¹ Dept. of Physics “E.R. Caianiello”, University of Salerno, Salerno, Italy ² Tyndall National Institute and University College Cork, Cork, Ireland ³ CNR-SPIN, Fisciano, Salerno, Italy</p>
	<p>“High temperature stability and low leakage current vertical GaN Schottky barrier diode with SiO₂ passivation layer”</p> <p><u>Y. Lin</u>^{1,2}, D.-S. Chao³, Y.-L. Shen⁴, J.-H. Liang^{1,5}, S. Hall², I. Z. Mitrovic²</p> <p>¹ Dept. of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan, ROC ² Dept. of Electrical Engineering and Electronics, University of Liverpool, Liverpool, UK ³ Nuclear Science and Technology Development Center, National Tsing Hua University, Hsinchu, Taiwan, ROC ⁴ Institute of Electronics Engineering, National Tsing Hua University, Hsinchu, Taiwan, ROC ⁵ Institute of Nuclear Engineering and Science, National Tsing Hua University, Hsinchu, Taiwan, ROC</p>

“Novel Crossbar Array of Silicon Nitride Resistive Memories on SOI enables Memristor Rationed Logic”

N. Vasileiadis^{1,2}, A. Mavropoulis¹, I. Karafyllidis², G. C. Sirakoulis², P. Dimitrakis¹

¹ Institute of Nanoscience and Nanotechnology NCSR “Demokritos”, Ag. Paraskevi, Greece

² Dept. of Electrical and Computer Engineering, Democritus University of Thrace, Xanthi, Greece

“Drain Voltage Influence on Junctionless Nanowire Transistors NBTI”

N. Graziano Junior¹, R. T. Doria², R. Trevisoli³, M. G. Caño de Andrade¹

¹ Universidade Estadual Paulista (UNESP), Institute of Science and Technology, Sorocaba, Brazil

² Centro Universitário FEI, Department of Electrical Engineering, São Bernardo do Campo, Brazil

³ Pontifícia Universidade Católica de São Paulo, School of Science and Technology, PUC-SP, São Paulo, Brazil

“Anomalous increase of leakage current in epoxy molding compounds under wet conditions”

L. Balestra¹, L. Cirioni¹, A. Cavallini¹, S. Reggiani¹, M. Rossetti², M. Gallo², S. Guarnera², R. Depetro²

¹ ARCES and DEI, University of Bologna, Bologna, Italy

² Smart Power R&D, STMicroelectronics, Cornaredo, Italy

“Statistical Modeling of Degradation Behavior in Split-Gate Non-Volatile Memory Devices”

S. Mei, L. Luo, K. Shubhakar, N. Raghavan, K. L. Pey

Engineering Product Development (EPD) Pillar, Singapore University of Technology and Design (SUTD, Singapore)

“Impact of the W Etching Process on the Resistive Switching Properties of TiN/Ti/HfO₂/W Memristors”

M. Saludes-Tapia¹, F. Campabadal¹, E. Miranda², M.B. González¹

¹ Institut de Microelectrònica de Barcelona, IMB-CNM, CSIC. Campus UAB, Cerdanyola del Vallès, Spain

² Dept. d'Enginyeria Electrònica, Universitat Autònoma de Barcelona, Cerdanyola del Vallès, Spain

“High Response Characteristic of Zr₃N₄-based Memristor NO Gas Sensor Array at Room Temperature ”

J. Jung and H.-D. Kim

Dept. of Electrical Engineering, Sejong University, Seoul, South Korea

“Impact of Gate Oxide Thickness on Flicker Noise (1/f) in PDSOI n-channel FETs”

S. Pathak¹, S. Gupta¹, A. Rathi¹, P. Srinivasan², A. Dixit¹

¹ Dept. of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India

² GLOBALFOUNDRIES Inc, Malta, USA

“Impact of passivation layer on the subthreshold behavior of p-type CuO accumulation-mode thin-film transistors”

Q. Chen, X. Zeng, D. Flandre

Institute of Information and Comm. Tech., Electronics and Applied Math., UCLouvain, Louvain-la-Neuve, Belgium

“Liquid-gate 2D material-on-insulator transistors for sensing applications”

C. Marquez, E. Fuente-Zapico, P. Martinez-Mazon, J. C. Galdon, L. Donetti, C. Navarro, F. Gamiz

Nanoelectronics Research Group (CITIC-UGR), Dept. of Electronics, University of Granada, Granada, Spain

“SPICE Simulation of the Time-Dependent Clustering Model for Dielectric Breakdown”

E. Salvador, R. Rodriguez, E. Miranda

Universitat Autònoma de Barcelona, Cerdanyola del Valles, Spain

“Sub micro-accelerometer based on spintronic technology: a design optimization”

A. Meo¹, F. Garescì², D. Rodrigues¹, M. Carpentieri¹, G. Finocchio³

¹ Dept. of Electrical and Information Engineering, Politecnico of Bari, Bari, Italy

² Dept. of Engineering, University of Messina, Messina, Italy

³ Dept. of Math. and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy

“Influence of Interface Traps Position Along Channel in the Low-Frequency Noise of Junctionless Nanowire Transistors”

R. T. Doria¹, M. P. Picoli Junior¹, S. Barraud², R. Trevisoli³

¹ Centro Universitário FEI, Department of Electrical Engineering, São Bernardo do Campo, Brazil

² CEA-Leti, France

³ Pontifícia Universidade Católica de São Paulo, School of Science and Technology, PUC-SP, São Paulo, Brazil

“Resistive switching effect in MOS devices with highly doped silicon”

A. Mazurak¹, J. Jasiński¹, T. Płociński², B. Stonio^{1,3}, P. Wiśniewski³

¹ Institute of Microelectronics and Optoelectronics, Warsaw University of Technology, Poland

² Faculty of Materials Science and Engineering, Warsaw University of Technology, Poland

³ Centre for Advanced Materials and Technologies CEZAMAT, Poland

“Conformal Coating Thickness Estimation Based on THz Pulsed Imaging”

H. Shi^{1,2}, A. Locquet^{1,2}, S. Calvelli³, S. Laureti³, M. Ricci³, H. Fu⁴, P. Singh⁵, C. Xu⁶, D. S. Citrin^{1,2}

¹ Georgia Tech-CNS UMI2958, Georgia Tech Europe, Metz, France

² School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, USA

³ Dept. of Informatics, Modeling, Electronics and System Engineering, University of Calabria, Rende, Italy

⁴ International Electronics Manufacturing Initiative (iNEMI), Morrisville, NC, USA

⁵ IBM Corp, Poughkeepsie, NY, USA

⁶ Nokia, NJ, USA

“Electrical Parameters and Low-Frequency Noise of AlGaN/GaN High-Electron Mobility Transistors with Different Channel Orientation”

M. G. Cano de Andrade¹, C. Roberto Nogueira¹, N. Graziano Júnior¹, R. T. Doria², R. Trevisoli³, E. Simoen^{4,5}

¹ Universidade Estadual Paulista (UNESP), Institute of Science and Technology, Sorocaba, Brazil

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³ Pontifícia Universidade Católica de São Paulo, School of Science and Technology, PUC-SP, São Paulo, Brazil

⁴ Ghent University, Ghent, Belgium

⁵ IMEC, Leuven, Belgium

“Study of electrical parameters and thermal stability of hafnium oxynitride (HfOxNy) thin-films formed by HIPIMS”

R. Mroczyński¹, M. Puźniak^{1,2}, W. Gajewski², A. Seweryn³, M. Oźga³

¹ Warsaw University of Technology, Warsaw, Poland

² TRUMPF Huettinger, Zielonka, Poland

³ Institute of Physics of the Polish Academy of Sciences, Warsaw, Poland

“Impact of Conduction Band Offset on the Performance of Homojunction Perovskite Solar Cell”

N. Saha, G. Brunetti, C. Ciminelli

Optoelectronics Laboratory, Politecnico di Bari, Bari, Italy

“Effect of postannealing crystallization of FE:HfO₂ on dynamics of Hf_xSi_{1-x}O₂ formation at SiO₂/FE:HfO₂ interface depending on valence of doping impurity”

A. S. Konashuk, E. O. Filatova, A. V. Bugaev, S. S. Sakhonenkov
Institute of Physics, St. Petersburg State University, St. Petersburg, Russia

“Experimental analysis of variability in WS₂-based devices for hardware security”

M. Vatalaro¹, H. Neill², F. Gity², P. Magnone³, V. Maccaronio¹, C. Márquez⁴, J. C. Galdon⁴, F. Gamiz⁴, F. Crupi¹, P. Hurley², R. De Rose¹

¹DIMES, University of Calabria, Rende, Italy

²Nanoelectronic Materials and Devices Group, Tyndall National Institute, University College Cork, Cork, Ireland

³Dept. of Management and Engineering, University of Padova, Vicenza, Italy

⁴Nanoelectronics Research Group (CITIC-UGR), Dept. of Electronics, University of Granada, Granada, Spain

“Assessment of a universal logic gate and a full adder circuit based on CMOS-memdiode technology”

S. Guitarra, R. Taco, M. Gaviláñez, J. Yépez, U. Espinoza

Universidad San Francisco de Quito, Colegio de Ciencias e Ingeniería, IMNE, Quito, Ecuador

“Thermal Desorption from Zeolite Layer for VOC Detection”

G. Oliva¹, A. S. Fiorillo¹, T. Antonić Jelić², S. Valić², S. A. Pullano¹

¹BATS Laboratory, Dept. of Health Sciences, Magna Græcia University of Catanzaro, Catanzaro, Italy

²Ruder Bošković Institute, Zagreb, Croatia

“Contact Resistance of n- and p-type 2D Semiconductors MoS₂ and WSe₂ with Moire Lattice Interfaces”

J. Chen¹, Z. Zhang¹, Y. Guo², X. Zhang¹, J. Robertson¹

¹Dept. of Engineering, University of Cambridge, Cambridge, United Kingdom

²National Electrical Engineering, Wuhan University, Wuhan, China

“An eco-friendly bandgap engineering of semiconductor graphene oxide”

T. Tene¹, S. Bellucci², M. Guevara¹, C. Vacacela Gomez², I. Caicedo³, J. Buñay³, S. López³, D. Mayorga³, A. Scarcello^{1,4}, Y. Cruz Salazar^{1,4}, M. Arias Polanco^{1,5}, S. Straface⁶, L. S. Caputi^{1,4}

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⁴Surface Nanoscience Group, Dept. of Physics, University of Calabria, Rende, Italy

⁵Instituto Tecnológico de Santo Domingo, Santo Domingo, República Dominicana

⁶Dept. of Environmental Engineering (DIAM), University of Calabria, Rende, Italy

Thursday, 29 June 2023

9:00-10:30	Materials for TFTs, Sensors, Neuromorphic and In-Memory Computing
10:30-11:00	Coffee Break
11:00-12:45	Ferroelectrics
12:45-14:00	Lunch
14:00-15:15	2D Materials
17:30-20:00	Social Tour at Tropea (VV)
From 20:30	Social Dinner at “3Nodi” Restaurant, Tropea (VV)

Materials for TFTs, Sensors, Neuromorphic and In-Memory Computing (9:00-10:30) Chair: <u>Luca Selmi</u> , University of Modena and Reggio Emilia, Italy	
9:00-9:15	<p>“Performance Investigation of Low-Temperature Processed IGZO-based Thin-Film Transistors with Al₂O₃ Gate Dielectrics for Backend Integration”</p> <p>R. A. Rodriguez Davila, K. Nawaby, S. Ponciano Valdez, M. Quevedo-Lopez, <u>C. D. Young</u> University of Texas at Dallas, Materials Science and Engineering Dept., Richardson, TX, USA</p>
9:15-9:30	<p>“Fully Parallel, Highly Linear Weight Update Characteristics of ECRAM Synaptic Arrays Using Fab-Friendly Materials for Neuromorphic Systems”</p> <p>H. Kang, N. Kim, H. W. Kim, E. Hong, S. Jeon, <u>J. Woo</u> School of Electronics and Electrical Engineering, Kyungpook National University, Daegu, South Korea</p>
9:30-9:45	<p>“Amorphous GaO_x based charge trap memory device for neuromorphic applications”</p> <p><u>C. Van Dijk</u>^{1,2}, F. Maudet¹, C. Dubourdieu^{1,2}, V. Deshpande¹ ¹ Helmholtz-Zentrum Berlin, Institute Functional Oxides for energy efficient IT, Berlin, Germany ² Freie Universität Berlin, Physical Chemistry, Berlin, Germany</p>
9:45-10:00	<p>“First-principles screening for sustainable OTS materials”</p> <p><u>S. Clima</u>¹, D. Matsubayashi,¹ T. Ravsher^{1,2}, D. Garbin¹, R. Delhougne¹, G. S. Kar¹, G. Pourtois¹ ¹ IMEC, Leuven, Belgium ² KU Leuven, Leuven, Belgium</p>
10:00-10:15	<p>“Synaptic Response for Periodic NO Gas Stimulus of BN-based Memristor Sensor”</p> <p><u>D. Lee</u>, H.-D. Kim Dept. of Electrical Engineering, Sejong University, Seoul, South Korea</p>

10:15-10:30	<p>“p-type NiOx ultra-thin film as highly efficient holes extraction layer in n-type PbS quantum dots based NIR photodiode”</p> <p><u>L. D. Mohgouk Zouknak</u>¹, M. Gros-Jean², S. Blonkowski³, C. Leroux³, G. Ghibaudo⁴</p> <p>¹ Université de Grenoble Alpes, Grenoble, France ² STMicroelectronics, Digital FEM, France ³ CEA-Leti, Grenoble, France ⁴ Université de Grenoble Alpes, IMEP-LAHC, MINATEC/INPG, Grenoble, France</p>
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Ferroelectrics (11:00-12:45) Chair: <u>Valeri Afanasiev</u> , KU Leuven, Belgium	
11:00-11:15	<p>“Ferroelectric-Antiferroelectric Hf_{1-x}Zr_xO₂ on Indium Arsenide: Enhanced Non-volatile Behavior for Hf_{0.2}Zr_{0.8}O₂”</p> <p><u>H. Dahlberg</u>, A. E. O. Persson, R. Athle, L.-E. Wernersson Dept. of Electrical and Information Technology, Lund University, Lund, Sweden</p>
11:15-11:30	<p>“Field-Induced Ferroelectric Phase Evolution During Polarization “Wake-Up” in Hf_{0.5}Zr_{0.5}O₂ Thin Film Capacitors”</p> <p>B. Saini¹, F. Huang², Y.-Y. Choi², Z. Yu², V. Thampy³, J. D. Baniecki³, W. Tsai¹, <u>P. C. McIntyre</u>^{1,3}</p> <p>¹ Dept. of Materials Science and Engineering, Stanford University, Stanford, CA, USA ² Dept. of Electrical Engineering, Stanford University, Stanford, CA, USA ³ SLAC National Accelerator Laboratory, Menlo Park, CA, USA</p>
11:30-11:45	<p>“Resolving the discrepancy between coercive voltages extracted from C-V and P-V measurements in a ferroelectric capacitor”</p> <p><u>S. Mukherjee</u>^{1,2}, J. Bizindavyi¹, S. Clima¹, M.I. Popovici¹, V. Afanas'ev^{1,2}, J. Van Houdt^{1,2}</p> <p>¹ IMEC, Leuven, Belgium ² KU Leuven, Semiconductor Physics Laboratory, Leuven, Belgium</p>
11:45-12:00	<p>“Role of interface reaction layer between ferroelectric Hf_xZr_{1-x}O₂ thin film and TiN electrode on endurance properties”</p> <p><u>T. Onaya</u>^{1,2}, T. Nabatame², T. Nagata², K. Tsukagoshi², J. Kim³, C.-Y. Nam⁴, E. H. R. Tsai⁴, Koji Kita¹</p> <p>¹ Dept. of Advanced Materials Science, The University of Tokyo, Chiba, Japan ² National Institute for Materials Science (NIMS), Ibaraki, Japan ³ Dept. of Materials Science and Engineering, The University of Texas at Dallas, Richardson, Texas, USA ⁴ Center for Functional Nanomaterials, Brookhaven National Laboratory, Upton, New York, USA</p>
12:00-12:15	<p>“Reliability characterization of non-hysteretic charge amplification in MFIM device”</p> <p><u>M. Engl</u>¹, T. Mikolajick^{1,2}, S. Slesazek¹</p> <p>¹ NaMLab gGmbH, Dresden, Germany ² Chair of Nanoelectronics, Technical University of Dresden, Dresden, Germany</p>

12:15-12:30	<p>“Interface chemistry and electronic structure of bi-layer Hf0.5Zr0.5O2/Al2O3 ferroelectric tunnel junction devices studied by X-ray photoelectron spectroscopy”</p> <p><u>W. Hamouda</u>¹, I. Haeussler², F. Maudet¹, M. H. Raza¹, K.S. Nair^{1,3}, M. Holzer^{1,3}, Z. Chalkley^{1,3}, A. Hammud⁴, C. Schlüter⁵, C.T. Koch³, V. Deshpande¹, C. Dubourdieu^{1,3}</p> <p>¹ Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany ² Humboldt-Universität zu Berlin, Dept. of Physics, Berlin, Germany ³ Freie Universität Berlin, Physical Chemistry, Berlin, Germany ⁴ Fritz-Haber Institute of the Max-Planck Society, Dept. of Inorganic Chemistry, Berlin, Germany ⁵ Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany</p>
12:30-12:45	<p>“Ferroelectric Capacitor with Oxide Interlayer for Engineered Volatility”</p> <p><u>L. Fehlings</u>¹, S. Slesazeck¹, T. Mikolajick^{1,2}, E. Covi¹</p> <p>¹ NaMLab gGmbH, Dresden, Germany ² Chair of Nanoelectronics, Technical University of Dresden, Dresden, Germany</p>

2D Materials (14:00-15:15) Chair: <u>Jacopo Franco</u> , IMEC, Belgium	
14:00-14:30	<p>“van der Waals dielectrics suitable for 2D transistors” (<u>Invited</u>)</p> <p><u>William Vandenberghe</u> University of Texas at Dallas, Dallas, TX, USA</p>
14:30-14:45	<p>“Quantifying the charge components of dual-gate WS₂ MOS devices”</p> <p>V. Mootheri^{1,2}, X. Wu¹, D. Cott¹, D. Verreck¹, M. Introna^{1,2}, B. Groven¹, I. Asselberghs¹, C. J. Lockhart de la Rosa¹, G. S. Kar¹, M. Heyns^{1,2}, <u>D. Lin</u>¹</p> <p>¹ IMEC, Leuven, Belgium ² KU Leuven, Leuven, Belgium</p>
14:45-15:00	<p>“Impact of CVD chemistry on band alignment at the MoS₂/SiO₂ interface”</p> <p><u>P. P. Tummala</u>^{1,2,3}, G. Delie^{2,5}, A. Cataldo^{1,4}, S. Ghomi^{1,4}, C. Martella¹, G. Ferrini³, A. Molle¹, A. Lamperti¹, Valeri Afanas'ev^{2,5}</p> <p>¹ CNR IMM, Unit of Agrate Brianza, Agrate Brianza, Italy ² KU Leuven, Dept. of Physics and Astronomy, Leuven, Belgium ³ Interdisciplinary Laboratories for Advanced Materials Physics (I-LAMP), Dept. of Math and Physics, Università Cattolica del Sacro Cuore, Brescia, Italy ⁴ Dept. of Energy, Politecnico di Milano, Milano, Italy ⁵ IMEC, Leuven, Belgium</p>
15:00-15:15	<p>“Scanning tunneling microscopy for imaging and quantification of defects in MoS₂ monolayers grown on sapphire substrates”</p> <p><u>Y. Rybalchenko</u>^{1,2}, A. Minj¹, H. Medina¹, R. Villarreal³, B. Groven¹, D. Lin¹, L. M. C. Pereira³, P. Morin¹, T. Hantschel¹, V. Afanas'ev^{1,2}</p> <p>¹ IMEC, Leuven, Belgium ² KU Leuven, Semiconductor Physics, Leuven, Belgium ³ KU Leuven, Quantum Solid State Physics, Leuven, Belgium</p>

Friday, 30 June 2023

9:30-10:30	Invited Talk Session (II)
10:30-11:00	Coffee Break
11:00-12:00	Invited Talk Session (III)
12:00-13:00	Best Student Paper Award & Conference Closing

Invited Talk Session (II) (9:30-10:30) Chair: <u>Raffaele De Rose</u> , University of Calabria, Italy	
9:30-10:00	“SmartSiC™ for high-voltage power applications” <u>Walter Schwarzenbach</u> Soitec SA, Grenoble, France
10:00-10:30	“Integrating emerging devices with CMOS: building the bridge we need to cross” <u>Erika Covi</u> NaMLab gGmbH, Dresden, Germany

Invited Talk Session (III) (11:00-12:00) Chair: <u>Felice Crupi</u> , University of Calabria, Italy	
11:00-11:30	“2D-FET Technologies for p/n-Vertically-Stacked FETs and Thermoelectric Devices” <u>Hitoshi Wakabayashi</u> Tokyo Institute of Technology, Tokyo, Japan
11:30-12:00	“The case for analog machine learning chips based on silicon and 2D materials: opportunities and challenges” <u>Giuseppe Iannaccone</u> University of Pisa, Pisa, Italy