INFOS 2025

DETAILED PROGRAM

WEDNESDAY, 25th June 2025	
08:30 – 09:00	Registration and Welcome
09:00 – 09:40	**Invited Talk 1 - Elvira Fortunato (NOVA FCT)** **The Last 20 Years of Oxide Thin Film Transistors** Chair: Carlos Sampedro
09:40 – 11:00	**SESSION 1 – Thin-Film Transistors** Chair: Elvira Fortunato & Sorin Cristoloveanu
09:40 – 10:00	**Positive Bias Temperature Instability (PBTI) in Polysilicon Thin-Film Transistors (TFTs) for High-Voltage Applications** Ben Kaczer (imec)
10:00 – 10:20	**Feasibility of PUFs based on pre-stressed OTFTs** Nazanin Baghban Bousari (Universitat Autònoma de Barcelona)
10:20 – 10:40	**Utilizing GeO_2 Interlayer in In_2O_3 TFTs for High Mobility and High Reliability** Shundong Hu (Institute of Microelectronics of the Chinese Academy of Sciences)
10:40 – 11:00	**Advanced Physics-Based Modeling of TFETs: A Comprehensive Geometric and Material Perspective** Marco Villegas (Universidad San Francisco de Quito)
11:00 – 11:30	Coffee Break
11:30 – 13:10	**SESSION 2 – Materials and Devices for Future Information Processing** Chair: Lorenzo Faraone & Edward Yi Chang
11:30 – 11:50	**Using capture and emission dynamics in insulating layers for information processing** Robin Degraeve (imec)
11:50 – 12:10	**Impact of Transistor Dimensions on the Performance of Multi-Level Programming Algorithms in 1T1R RRAM Devices** Eduardo Perez (Leibniz Institute for High Performance Microelectronics)

12:10 – 12:30	**A new opportunity for the emerging tellurium semiconductor: making neuromorphic devices** Huanglong Li (Tsinghua University)
12:30 – 12:50	**Integration of MTJ devices with cryo-CMOS readout circuitry for magnetic field sensing** Alexander Zaslavsky (Brown University)
12:50 – 13:10	**Ultra-low-light Perceptual Synaptic Devices for the Dark Visual Nervous System** Zishen Zhao (Xi'an Jiaotong-Liverpool University)
13:10 – 14:30	Lunch
14:30 – 15:10	**Invited Talk 2 - Dominique Noguet (FAMES Pilot Line – CEA-Leti) FAMES Pilot Line** Chair: Hiroshi Iwai
15:10 – 16:10	**SESSION 3 - Advances in Ferroelectric Materials and Device Engineering** Chair: Cor Claeys
15:10 – 15:30	**Enhanced Polarization and Reliability of Ferroelectric Capacitors Using Gradient-Temperature Deposited HfZrOx** Hsin-Yu Hsu (National Tsing Hua University)
15:30 – 15:50	**Short-Term Charge Trapping Effects in Ferroelectric FETs: Impact of pulse amplitude and timing** Dominik Kleimaier (GlobalFoundries)
15:50 – 16:10	**Role of the Topmost ZrO_2 Layer in Controlling the Crystal Phase of HfO_2/ZrO_2 Nanolaminate Thin Films** Rina Takahisa (The University of Tokyo)
16:10 – 16:40	Coffee Break
16:40 – 17:40	**SESSION 4 - Defect Dynamics and Reliability in Dielectrics** Chair: Valery Afanasiev & Cesar Lockhart
16:40 – 17:00	**Markov Model Describing Progressive Degradation of Local Percolation Path in Thin Oxides** Sara Sacchi (imec)

17:00 – 17:20	**Anomalous enhancement of carbon-related defect formation during high temperature Ar annealing in 4H-SiC by prior thermal oxidation** Chuyang Lyu (The University of Tokyo)
17:20 – 17:40	**Reducing Bonding Forces for creating Higher K Gate Dielectrics** Jun-Wei Luo (Institute of Semiconductors CAS)
19:00 – 21:00	**Albaicín Guided Tour**
21:00	**Welcome Cocktail at Carmen de la Victoria**

THURSDAY, 26th June 2025	
09:00 – 09:40	**Invited Talk 3 – Yani Chen (Chinese Academy of Sciences) A novel Double-SOI technology** Chair: Dominique Noguet
09:40 – 11:00	**SESSION 5 - Characterization and Modeling of Advanced Semiconductor Devices** Chair: Luca Selmi & Carlos Navarro
09:40 – 10:00	**Series Resistance Modulation by Back-Biasing in Ultrathin SOI Devices** Cunhua Dou (Nanjing University of Posts and Telecommunications)
10:00 – 10:20	**A new model to account for non-ideal impedance response of ionic capacitors** Sneka Prabhakaran (Murata Integrated Passive Solutions)
10:20 – 10:40	**Electrical characteristics of amorphous indium-gallium-zinc-oxide field-effect transistors from 100 to 300 K** Hongwei Tang (imec/KU Leuven)

10:40 – 11:00	**Enhanced Electrical Characteristics of Ge N+/P Junction with HfN Surface Passivation and Ion Implantation after Germanidation Process** Chih-Cheng Chin (National Tsing Hua University)
11:00 – 11:30	Coffee Break
11:30 – 13:10	**SESSION 6 - Memristive and Power Device Innovations** Chair: Ming Liu & Kuei-Shu Chang-Liao
11:30 – 11:50	**Wire Resistance Impact and Compensation Methods in Analog Switching 1R Memristive Crossbar Arrays** Eter Mgeladze (NaMLab gGmbH)
11:50 – 12:10	**CMOS-compatible Analog Memristive Devices Based on a-GaOx for On-Chip Neural Signal Processing** Onur Toprak (Helmholtz-Zentrum Berlin)
12:10 – 12:30	**Effect of Set and Reset Dynamics on HfO_2, Al_2O_3, and Bilayer Memristors** Guillermo Vinuesa (Universidad de Valladolid)
12:30 – 12:50	**Enhancing Ultra-Thin-Barrier AlGaN/GaN HEMTs with LPCVD SiN Passivation for High-Power Applications** Jui-Sheng Wu (National Yang Ming Chiao Tung University)
12:50 – 13:10	**Assessment of dual oxide options for LDMOS transistors in FinFET technology** Luca Selmi (University of Modena and Reggio Emilia)
13:10 – 14:30	Lunch
14:30 – 16:30	**SESSION 7 - Defect Physics and Reliability in Advanced Devices** Chair: John Robertson & Ben Kaczer
14:30 – 14:50	**Time-To-Failure Modelling of Defect Ensembles Using Random Telegraph Noise Data** Nishant Saini (KU Leuven/imec)
14:50 – 15:10	**Extraction of Trap Densities in Al:HfO_2 MIM Capacitors using Voltage Ramp Stress Measurements** Corinna Fohn (imec)
15:10 – 15:30	**Time-scale-based lifetime extrapolation from close-to-operating-voltage gate leakage current** Anirudh Varanasi (KU Leuven/imec)

15:30 – 15:50	**Hot Carrier Stress in Junctionless Gate-All-Around nMOSFETs Under Different Voltage Conditions** Wen-Teng Chang (National University of Kaohsiung)
15:50 – 16:10	**Characterization and simulation of the defect levels in InGaP MOS structures via admittance spectroscopy** Pavel Kirilenko (Tyndall National Institute)
16:10 – 16:30	**Exploring Low-k/High-k Multilayers as High Breakdown Strength Dielectrics for Capacitors** Julie Chaussard (CEA-LETI)
16:30 – 16:45	Micronanospain
16:45 – 17:00	NanoIC
17:00 – 17:30	Coffee Break and **Poster Session** **(Poster details in Appendix I)**
17:30 – 19:00	**Poster Session** **(Poster details in Appendix I)**
21:00	**Gala Dinner at Convent of Santa Paula**

FRIDAY, 27th June 2025	
09:00 – 09:40	**Invited Talk 4 - Cesar Lockhart (imec)** **Roadmap for the FAB compatible integration of 2D materials devices: strategy, challenges and opportunities** Chair: Eric Pop
09:40 – 11:00	**SESSION 8 - 2D and CMOS-Compatible Materials (I)** Chair: Alexander Zaslavsky & Robert Mroczyński
09:40 – 10:00	**Density Functional Analysis of Polarity and Vth Control in Si and MoS_2 Hi-K CMOS** Ruyue Cao (UCAM, Cambridge University)

10:00 – 10:20	**The Electronic Structure and Properties of $SiO_2/H_2O/WS_2$ Interface** Alexander Shluger (University College London)
10:20 – 10:40	**On the Evaluation of Interfaces in CMOS-Compatible 2D Materials on SiO_2/Si Substrates for Enhanced Performance** Alberto Martinez (University of Granada)
10:40 – 11:00	**Native Oxides of Two-dimensional Bi_2SeO_2: Insulator for Next-Generation Nanoelectronics** Pedram Khakbaz (TU Wien)
11:00 – 11:30	Coffee Break
11:30 – 12:10	**Invited Talk 5 - Eric Pop (Stanford University)** **What Role Can 2D Materials Play in Future Electronics?** Chair: Koji Kita
12:10 – 13:10	**SESSION 9 - 2D and CMOS-Compatible Materials (II)** Chair: Carlos Marquez
12:10 – 12:30	**Impact of remote phonon scattering on carrier transport in monolayer MoS_2 MOSFETs** Marco Introna (Imec, KU Leuven)
12:30 – 12:50	**Composition-Structure-Property Relations in Atomic Layer Deposited Indium Tungsten Oxide Semiconductors for BEOL-Compatible Transistor Channels** Paul McIntyre (Stanford University)
12:50 – 13:10	**Impact of Thermal ALD Oxidizers on Interface and Bulk Properties of Al_2O_3 on (¯("2")01) β-Ga_2O_3** Chadwin Young (University of Texas at Dallas)
13:10 – 14:30	Closing Remarks and Lunch

Appendix I

17:00 – 19:00	Poster Session
	P1: Tunneling through the Schottky barrier Bogdan Majkusiak (Institute of Microelectronics and Optoelectronics, Warsaw University of Technology)
	P2: Nature of Acceptor Polarons in p-doped amorphous TeO_2 John Robertson (Cambridge University)
	P3: Improved Electrical Characteristics of Ge nMOSFET with Suitably Rapid Oxidation on Hafnium Nitride Interfacial Layer Yi-Hsuan Cheng (National Tsing Hua University)
	P4: Impact of Interface Traps on the Subthreshold Performance of InGaAs Nanosheet Transistors Simone Di Stasi (University of Bologna)
	P5: Impact of Electrode Materials on Resistive Switching Characteristics of TiOx-based MIM Structures Robert Mroczyński (Warsaw University of Technology)
	P6: Unveiling Temperature Effects on Dielectric and Electrical Performance of HfO_2 Thin Film via TiO_2 Incorporation Robert Mroczyński (Warsaw University of Technology)
	P7: Multilevel capability of HfO_2 and Al_2O_3-based memristors Héctor García (Universidad de Valladolid)
	P8: Memristor Stochastic Model for Synapses and Neurons Jordi Suñé (Universitat Autònoma de Barcelona)

	P9: Investigating Programming Behavior & Read Disturb in HfO_2-based OTP Memory Cells Disha Gajjar (Technical University of Munich)
	P10: Anomalous mechanism of bilayer island formation during MOCVD growth of a monolayer MoS_2 on sapphire Yevhenii Rybalchenko (KU Leuven, imec)
	P11: Study of Zinc-Tin-Oxide / Molybdenum-Oxide heterostructures for photovoltaic applications Vladimir Dulev (Central Laboratory of Solar Energy and New Energy Sources)
	P12: AlGaN/GaN HEMT with Low Contact Resistivity Using Patterned Ohmic Recess Technology Howie Tseng (National Yang Ming Chiao Tung University)
	P13: Impact of Thermal Annealing on the Performance of SnO_x Thin-Film Transistors Wenjie Lei (Fuzhou University)
	P14: Numerical Analysis of Defects Passivation for Tungsten-Doped Indium Oxide Thin Film by Using Hydrogen Peroxide as Cosolvent in a Supercritical Fluid System Zeqiu Tang (Fuzhou University)
	P15: Intrinsic GAA Si NS CFETs Parameter Fluctuation Min-Hui Chuang (National Yang Ming Chiao Tung University)
	P16: Kinetic studies on thermal nitridation and radical nitridation processes of 4H-SiC surface considering simultaneous N-incorporation and N-desorption reactions Haruki Yoshida (University of Tokyo)
	P17: Band gap and Defects of AlScN and GaScN ferroelectric alloys for BEOL nonvolatile memories John Robertson (Cambridge University)
	P18: All-Optical Synaptic Device Based on DTT-TCNQ for Neuromorphic Motion Recognition Ivona Z. Mitrovic (University of Liverpool)
	P19: Multi-functional Photonic Synaptic Devices for Hybrid Neural Networks Ivona Z. Mitrovic (University of Liverpool)

	P21: Combined clockwise and anti-clockwise hysteresis dynamics in Al_2O_3/MoS_2-based FETs Juan Cuesta-Lopez (University of Granada)
	P22: Neuromorphic Visual TFT with PbS Quantum Dots and Carbon Nanotubes for Neural Network Ivona Mitrovic (University of Liverpool)
	P23: Junctionless Nanowire Transistors as a Diagnosis Tool to Evaluate Interface Traps through Low-Frequency Noise Rodrigo Doria (Centro Universitário FEI)
	P24: Frequency Dependence on the Capacitance in ReRAM Devices Fernando Costa (Centro Universitario FEI)
	P25: Towards an Oxide Topological Insulator: Fluorine Doping of Barium Bismuthate Thin Films Luca Ceccon (imec)
	P26: Random Telegraph Noise characterization dependence on temperature, gate voltage and biasing time Javier Martin-Martinez (Universidad Autónoma de Barcelona)
	P27: Thermal Effects on AlGaN/GaN HEMTs: Performance Optimization Through Channel Length Rodrigo Doria (Centro Universitário FEI)
	P28: Characterization and simulation of the resistance window variability in Ti/HfO_2-based memristors: Effect of the Ti layer thickness Mercedes Saludes-Tapia (IMB-CNM CSIC)
	P29: Low frequency noise evolution in thin SiNx films after sequential constant voltage stress Panagiotis Dimitrakis (NCSR Demokritos)
	P30: Novel Approaches to Objective Function Design for Optimizing Process TCAD Model Parameters Roman Kostal (Institute for Microelectronics, TU Vienna)

	P31: Optimized Liquid-gated Graphene Biosensors on SiO_2/Si Substrates for Portable Sensing with PCB Integration Elsa Fuente-Zapico (University of Granada)
	P32: A probabilistic compact model for ReRAM Memories in HSPICE for high performance simulation Silvana Guitarra (Universidad San Francisco de Quito)
	P33: Investigation of Compliance Current Effect on Resistive Switching Properties in Ag/SiOx/Cr RRAM Devices Piotr Wiśniewski (Warsaw University of Technology)
	P34: A mechanism of defect creation in amorphous Ta_2O_5 Alexander Shluger (University College London)