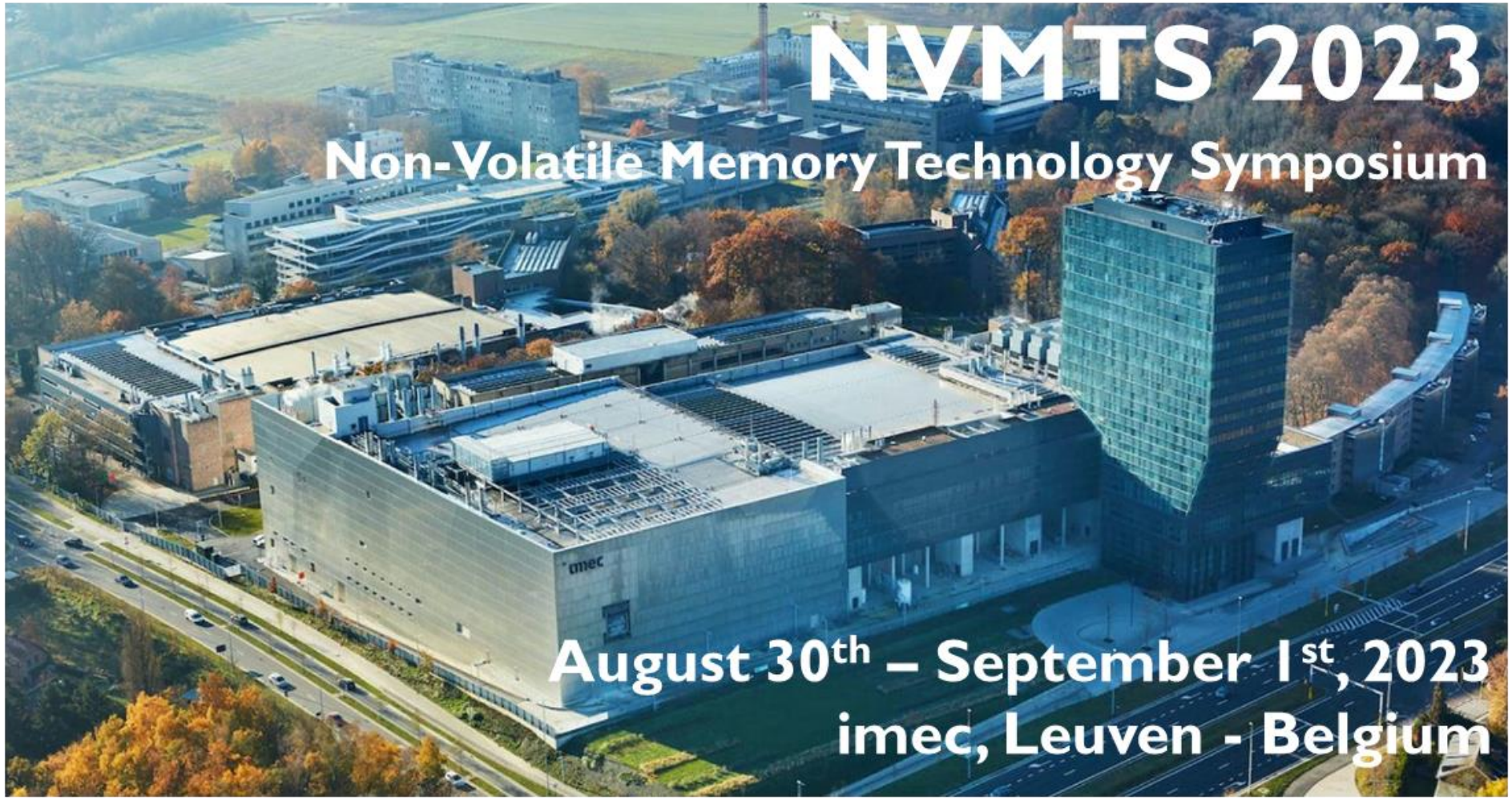
NVMTS 2023
Non-Volatile Memory Technology Symposium
August 30th – September 1st, 2023
imec, Leuven - Belgium

Program

Day 1 (Wednesday, August 30th)

8:00-9:00 AM	**Badge Collection**
9:00-9:15	**Opening:** Attilio Belmonte (imec) / Ilya Karpov (Intel)
	Keynote session – Chair: Takashima Daisaburo (Kioxia)
9:15-9:55	**Keynote: Gouri Sankar (imec), "Memory Technology: Challenges ahead of us"**
	Session 1: FLASH – Chair: Takashima Daisaburo (Kioxia)
9:55-10:20	**Biswajit Ray** (Colorado State University), "Towards Improving Ionizing Radiation Tolerance of 3-D NAND Flash Memory"
10:20-10:45	**Cristian Zambelli** (Università degli Studi di Ferrara), "Mitigating Cross-temperature effects in 3D NAND Flash"
10:45-11:10	**Break**
	Session 2: Ferroelectric Memory 1 – Chair: Laurent Grenouillet (CEA/LETI)
11:10-11:35	**Jan Van Houdt (imec)**, "Ferroelectrics for future electronics"
11:35-12:00	**Lorenzo Benatti (Università di Modena e Reggio Emilia)**, "The Role of Defects and Interface Degradation on Ferroelectric HZO Capacitors Aging"
12:00-1:00 PM	**Lunch**
	Session 3: New memory concepts – Chair: Attilio Belmonte (imec)
1:00-1:25	**Hyunsang Hwang** (Pohang University of Science and Technology), "Te-based binary OTS selector devices"
1:25-1:50	**Sonu Devi (National University of Singapore)**, "Ferroelectric Oxide-ITO/IGZO Heterojunction for Memtransistor with Record Performance by Channel Defect Self-Compensation Effect"
1:50-2:15	**Subhali Subhechha (imec)**, "Multilevel multiply accumulate operations for AiMC using a-IGZO transistors based 2T1C gain cell array"
2:15-2:40	**Taras Ravsher (imec)**, "Exploiting polarity effect in amorphous chalcogenides for self-selecting memory applications"
2:40-3:15	**Break**
	Session 4: MRAM – Chair: Yangyin Chen (Western Digital)
3:15-3:40	**Jeong-Heon Park (Samsung)**, "Advanced STT-MRAM with higher reliability enabled by controlled magnetic domain wall pinning "
3:40-4:05	**Siddharth Rao (imec)**, "Spin-orbit torque MRAM for ultrafast cache and neuromorphic computing applications"
4:05-4:30	**Raffaele De Rose (University of Calabria)**, "STT-MRAM for Logic-in-Memory Computing: from Device Modeling up to Architecture-Level Evaluation"
5:00-7:30	**Poster session**

Day 2 (Thursday, August 31st)

7:30-8:30 AM	**Badge Collection**
	Session 5: Ferroelectric Memory 2 – Chair: Milan Pesic (Applied Materials)
8:45-9:25	**Keynote: Ted Moise (UT Dallas), "Introducing New Ferroelectric Materials into Production: Lessons Learned from PZT Development"**
9:25-9:50	**Asif Khan** (Georgia Institute of Technology), "Ferroelectric memories"
9:50-10:15	**Michael Hoffmann** (UC Berkeley), "FeFET device design for ultra-low voltage operation and high endurance"
10:15-10:40	**Break**
10:40-11:05	**Laurent Grenouillet** (CEA-Leti), "Hf(Zr)O_2-based FeRAM scalability to nodes below 130 nm: material, integration and design challenges"
11:05-11:30	**Konrad Seidel** (Fraunhofer Institute for Photonic Microsystems IPMS), "Switching Performance Optimization of 1T-1C FeFET"
11:30-1:00 PM	**Lunch**
	Session 6: Neuromorphic devices 1 – Chair: Ilya Karpov (Intel)
1:00-1:25	**Yang Chai** (Hong Kong Polytechnic University), "Bioinspired in-sensor computing for artificial vision"
1:25-1:45	**Beatriz Noheda** (University of Groningen), "Ferroelectric Memories"
1:45-2:10	**John Paul Strachan** (Peter Grünberg Institute), "CAM-based computing with non-volatile, analog memristor circuits"
2:10-2:35	**Laura Begon-Lours** (IBM), "Ferroelectric Synapses for Neuromorphic Circuits: BiFeO3 and HfZrO4 Non-Volatile Memories in Passive Crossbars"
2:35-3:00	**Joshua Yang** (University of Southern California), "Memristors With Thousands of Conductance Levels for Analog Computing"
3:00-3:25	**Break**
	Session 7: RRAM/CBRAM – Chair: Adnan Mehonic (Intrinsic / University College of London)
3:25-3:50	**Gabriel Molas** (Weebit Nano), "ReRAM Gets Real – The Path from Concept to Market"
3:50-4:15	**Felix Tengler** (Infineon), "Automotive grade reliability for 28nm RRAM Data Memory"
4:15-4:40	**Stephan Menzel** (Peter Grünberg Institute), "Spatio-Temporal Correlations in Memristive Arrays of Valence Change Memory Cells"
4:40-5:05	**Huaqiang Wu** (Tsinghua University), "Towards Memristor-based Versatile Computing-in-Memory Systems with Software-Hardware Co-Development"
5:15-7:15	**Poster session**
7:30 – 10:00	**Gala Dinner (at Faculty Club Leuven)**

Day 3 (Friday, September 1st)

	Session 8: PCM – Chair: Eilam Yalon (Technion)
9:00-9:25	**Luca Laurin** (ST Microelectronics), "On the Retention Physics of Ge-rich GST ePCM technology "
9:25-9:50	**Matthias Wuttig** (RWTH Aachen University), "Tailoring the Switching in Phase Change Materials: The Role of Chemical Bonding"
9:50-10:15	**Manuel Le Gallo** (IBM), "Deep neural network inference with a 64-core in-memory compute chip based on phase-change memory"
10:15-10:40	**Break**
	Session 9: Neuromorphic devices 2 – Chair: Takashima Daisaburo (Kioxia)
10:40-11:05	**Damien Querlioz** (Université Paris-Saclay), "Tackling Unpredictability in Emerging Memory Devices: the Bayesian Approach"
11:05-11:30	**Yuchao Yang** (Peking University), "Integrated Memristor Networks and Chips for Neuromorphic Computing"
11:30-11:55	**Qing Cao** (University of Illinois Urbana-Champaign), "Electrochemical Transistor Array for Deep Learning Accelerators"
11:55-12:20	**Panagiotis Dimitrakis / Georgios Sirakoulis** (NCSR Demokritos), "Memristive Cellular Automata: A novel computing example"
12:30-1:00 PM	**Best Poster Award Ceremony and Closing Remarks**
1:00 – 1:10 PM	**Policy for extended abstract publication - Milan Pesic (Applied Materials)**
1:10 – 2:00 PM	**Lunch + Poster session**

Posters - I

Sl. no	Name	Primary affiliation	Topic	Title
1	Aakash Yadav	Ulsan National Institute of Science & Technology, Ulsan, South Korea	PCM	Mitigation of directional multi-level cell operation in a novel variant of double mushroom phase change memory cells
3	Bowen Wang	imec, KU Leuven	MRAM	Probabilistic Switching and Process Variation Aware Compact Modeling of Voltage Controlled Magnetic Anisotropy MRAM
4	C. P. Jiang	Beihang University, Beijing; Truth Memory Corporation, Beijing	MRAM	High endurance of the 1Kb SOT-MRAM multiplexer array
5	Chun-Kuei Chen	National University of Singapore	Ferroelectrics	Material-Device Co-Optimization of High-Performance Top-Gated Oxide-Based Ferroelectric Memtransistor
6	Daniel Drury	Army Research Laboratory, Adelphi, USA	Ferroelectrics	Development of Elevated Temperature Test Protocol for Nitride Ferroelectrics
7	Dongmyung Jung	Hongik University, Seoul	RRAM	Simulation of Conductive Filament Evolution in Unipolar and Bipolar Switching by Fully Coupling Electrothermal Phase-field Models
8	Efrat Ordan	Technion -Israel Institute of Technology, Israel	PCM	Exploring GST Solidification Towards Fast SET in Phase Change Memory Cells
9	Hongwei Tang	imec, KU Leuven	New memory concepts	Trap Density Characterization in Magnesium-doped Amorphous Indium-Gallium-Zinc-Oxide Thin Films for DRAM applications
10	Julius Rasbach	fz-Jülich GmbH, RWTH Aachen University	RRAM\Neuromorphic	Ag-based diffusive memristors: Analysis and control of SET and relaxation times
11	Killian Veyret	CEA-Leti , Univ Grenoble Alpes	RRAM	ReRAM based on operando created V-Ti-O alloy in V2O3 thin films
12	Meike Hindenberg	ipms Fraunhofer, Dresden; Global Foundries, Dresden	MRAM	Synthetic antiferromagnet reversal defect – role of external stress and impact on functionality of STT-MRAM
13	Mor M Dahan	Technion -Israel Institute of Technology, Israel; GlobalFoundries, Dresden	Ferroelectrics	Bulk vs Triple-Well FeFETs and How (Not) to Measure Their Endurance
14	Pratik Bagul	imec, KU Leuven	Ferroelectrics	High remanent polarisation in ultrathin polycrystalline ferroelectric BaTiO3 films grown by pulsed laser deposition
15	Ruihua Yu	Tsinghua University, Beijing, China	RRAM	Fusing Model-guided and Simulation-guided deployment methods for RRAM based Compute-in-memory System

Posters - II

Sl. no	Name	Primary affiliation	Topic	Title
16	Saad Saleh	University of Groningen, Netherlands	Neuromorphic	pCAM: Probabilistic Content Addressable Memory using Nb-doped SrTiO3 for Neuromorphic Systems
17	Serdar B. Tekin	Lancaster University, UK	New memory concepts	Advances in ULTRARAM
18	Shankha Mukherjee	imec, KU Leuven	Ferroelectrics	On the Non-Volatile Ferroelectric Capacitive Memory Window and How to Achieve It
19	Shunham R Pande	Indian Institute of Technology Madras, India	New memory concepts	Leveraging MOSFET Vth Temperature Sensitivity for Memory Applications
20	Solfronk Oliver	fz-Jülich GmbH, RWTH Aachen University	RRAM	Exploiting the Variability of HfO2/TiOx-based ReRAM Cells for Synapse Applications
22	Vaishnavi Kateel	imec, KU Leuven	MRAM	Field Free Switching in Spin-Orbit Torque Memories with spin current gradient
24	Yibei Zhang	Tsinghua University, Beijing; Peking University, Beijing	RRAM	A 3D Stackable CNTFET/RRAM 1T1R Array with CNT CMOS Peripheral Circuits
25	Yiming Zhou	RWTH Aachen University; fz-Jülich GmbH	PCM	In3SbTe2 - SnTe alloys for phase change memory: a chemical bond view
26	Yonghui Zheng	East China Normal University, Shanghai; Chinese Academy of Sciences	PCM	Atomic scale phase transitions of phase change materials
27	Yuan-Chun Luo	Georgia Institute of Technology, USA	Ferroelectrics	Programmable Non-volatile Gate-to-Source/Drain Capacitance of FeFET for Capacitive Synapse
28	Yuyan Wang	Tsinghua University, Beijing; TU Munich, Germany	MRAM	Time-resolved detection of multilevel spin–orbit torque switching of magnetization and exchange bias