



EPCOS 2023

EUROPEAN PHASE CHANGE AND OVONIC SIMPOSIUM
ROME, ITALY – 17-20 SEPTEMBER 2023

CEST	PROGRAMME - Sunday 17 September 2023
15:00-18:00	SOCIAL ACTIVITY (optional) Guided tour (3 hours) of the Colosseum and Imperial Forums
19:00-21:00	WELCOME COCKTAIL and REGISTRATION at The Apartment bar Roma (rooftop), recommended Metro Station: Castro Pretorio (Metro line B)
21:00	COMMITTEE DINNER and MEETING (restricted)



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CEST	PROGRAMME - Monday 18 September 2023
08:00-09:00	REGISTRATION
09:00-09:15	OPENING REMARKS
09:15-09:50	Ovshinsky Lecture Award: Daniele Ielmini- Politecnico di Milano, IT <i>Phase change memory technology: from emerging to emerged</i>
	SESSION-1: Machine Learning
09:50-10:15	Invited Speaker: Volker Deringer - University of Oxford, UK <i>Machine-learning-driven advances in modelling phase-change memory materials</i>
10:15-10:30	Omar Abou El Kheir - University of Milano-Bicocca, IT <i>A machine-learning interatomic potential for the Ge₂Sb₂Te₅ phase change compound</i>
10:30-11:05	COFFEE BREAK
	SESSION-2: Ab initio simulations
11:05-11:30	Invited Speaker: Wei Zhang - Xi'an Jiaotong University, CN <i>Multi-scale simulations of phase-change materials</i>
11:30-11:45	Riccardo Piombo - Università di Roma La Sapienza, IT <i>Structural and Dynamical Properties of the Liquid Phase of New Phase-Change Heterostructures</i>
11:45-12:10	Invited Speaker: Stephen Elliott - University of Oxford, UK <i>Charge-Trapping Defects in Amorphous Phase-Change Memory Materials</i>
12:10-12:25	Dasol Kim - RWTH Aachen University, DE <i>Electrons shared and transferred, quantum-chemical bonding descriptors projected onto density and energy bases</i>
12:25-12:50	Invited Speaker: Matthias Wuttig - RWTH Aachen University, DE <i>Metavalent versus Hypervalent Bonding: Is there a chance for reconciliation?</i>
12:50-15:20	LUNCH BREAK & POSTER PRESENTATIONS
	SESSION-3: Epitaxy, Multilayers and Superlattices
15:20-15:45	Invited Speaker: Asir I. Khan - Stanford University, US <i>Low-Power Nanoscale Phase-Change Memory Based on Nanocomposite-Superlattices</i>
15:45-16:00	Sonja Cremer - Leibniz Institute of Surface Engineering, DE <i>Growth and microstructure of pulsed laser deposited GeTe-Sb₂Te₃ based heterostructures</i>
16:00-16:15	Guy Cohen - IBM Research Yorktown Heights, US <i>1T1R mushroom PCM cell device using epitaxial GeSbTe</i>
16:15-16:30	Stefano Cecchi - University of Milano-Bicocca, IT <i>Unveiling the ferroelectric properties of GeTe-rich (GeTe)_m(Sb₂Te₃)_n epitaxial films</i>
16:30-17:05	COFFEE BREAK
	SESSION-4: Hexagonal GeTe-Sb ₂ Te ₃ films
17:05-17:20	Jiangjing Wang - Xi'an Jiaotong University, CN <i>Twin-like Defects in Layered Phase-Change Materials</i>
17:20-17:35	Salvatore Teresi - Université Grenoble Alpes / CEA / IRIG / SPINTEC, FR <i>Spin charge interconversion in Antimony Telluride topological insulator and ferroelectric Germanium Telluride nanodevices</i>
17:35-18:00	Invited Speaker: Peter Kerres - RWTH Aachen University, DE <i>Confinement effects in metavalent thin films</i>
	Free evening



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CEST	PROGRAMME - Tuesday 19 September 2023
08:30-09:00	REGISTRATION
	SESSION-5: Multilevel and Neuromorphic computing
09:00-9:25	Invited Speaker: Manuel Le Gallo - IBM Research Europe, CH <i>Deep neural network inference with a 64-core in-memory compute chip based on phase-change memory</i>
09:25-9:40	Letizia Pistolesi - Politecnico di Milano, IT <i>Accurate multilevel programming from weak reset state in phase change memory (PCM) devices</i>
09:40-10:05	Invited Speaker: Suyoun Lee - Korea Institute of Science and Technology, KR <i>Artificial sensory neuron based on Ovonic Threshold Switch (OTS) toward in-sensor computing</i>
10:05-10:20	Rivka Nir Harwood - Israel Institute of Technology, IL <i>Contact Dominated Manifestation of Resistance Drift in Phase Change Materials</i>
10:20-10:45	Invited Speaker: Valeria Bragaglia - IBM Research Europe, CH <i>Exploiting Phase-Change-Material Physics for Unconventional Computing: VO₂-based Oscillators and Phase-Change-Memories for Neuronal & Synaptic functions</i>
10:45-11:20	COFFEE BREAK
	SESSION-6: OTS
11:20-11:45	Invited Speaker: Daisuke Matsubayashi - IMEC, BE0 <i>Computational screening towards eco-friendly ovonic threshold switching materials</i>
11:45-12:00	Shogo Hatayama - National Institute of Advanced Industrial Science and Technology, JP <i>Realizing a selector function for amorphous transition metal oxytellurides as a new class of As- and Se-free OTS materials</i>
12:00-12:15	Jangseop Lee - Pohang University of Science and Technology (POSTECH), KR <i>Excellent Reliability Characteristics of Ovonic Threshold Switch Device with High Temperature Forming Technique</i>
12:15-12:30	Kentaro Saito - National Institute of Advanced Industrial Science and Technology, JP <i>Improved thermal stability and modified electronic structure of amorphous Si-Te by addition of transition-metal for selector application</i>
12:30-12:45	Group photo
12:45-15:00	LUNCH BREAK & POSTER PRESENTATIONS
	SESSION-7: Ge-rich GST
15:00-15:25	Invited Speaker: Elisa Petroni - STMicroelectronics, IT <i>Physical analysis of the main reliability mechanisms of the Ge-rich GST ePCM technology</i>
15:25-15:40	Eloïse Rahier - CEMES-CNRS, FR <i>Crystallization of amorphous Ge-rich GST layers deposited on polycrystalline GST-225</i>
15:40-15:55	Thomas Fernandes - Aix Marseille Univ, Université de Toulon, CNRS, IM2NP, FR <i>Investigation of phase segregation dynamics in Ge-rich GST thin films by in-situ X-ray fluorescence mapping</i>
15:55-16:10	Stefania Privitera - Institute for Microelectronic and Microsystems (IMM) National Research Council (CNR), IT <i>Electrical and structural characterization of Ge-rich Ge₂Sb₂Te₅ single memory cell</i>
16:10-16:40	COFFEE BREAK
	SESSION-8: Mixed modes
16:40-17:05	Invited Speaker: Sabrina Calvi - University of Rome Tor Vergata, IT <i>Insights into phase change materials for flexible embedded electronics</i>
17:05-17:20	Huai-Yu Cheng - IBM/Macronix, US <i>Self-Selecting Indium Doped AsSeGe Memory Materials for 3D Crosspoint Memory</i>
17:20-17:35	Maksym Yarema - ETH Zürich, CH <i>Liquid Borne Phase Change Nanomaterials</i>
17:35-18:00	Invited Speaker: Yuhan He - University of Oxford, UK <i>Mixed-Mode Phase-Change Devices with Picojoule Switching Energy</i>
20:00 - 24:00	GALA DINNER at the Roof Garden Restaurant, recommended Metro Station: Colosseo (Metro line B).



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CEST	PROGRAMME - Wednesday 20 September 2023
	SESSION-9: Fast and low power dynamics
09:00-9:25	Invited Speaker: Ming Xu - Huazhong University of Science and Technology, CN <i>Design of low-power phase-change memory</i>
09:25-9:40	Melissa Santala - Oregon State University, US <i>Thermodynamics and kinetics of the crystallization of phase change materials from simultaneous nanocalorimetry and in situ microscopy</i>
09:40-10:05	Invited Speaker: Eilam Yalon - Technion – Israel Institute of Technology, IL <i>Approaching PCM energy limits by sub-nanosecond probing of power dissipation dynamics</i>
10:05-10:40	COFFEE BREAK
	SESSION-10: Photonics
10:40-11:05	Invited Speaker: Anthony Albanese - University Grenoble Alpes, CEA, LETI, FR <i>Emerging Amorphous and Phase-Change Chalcogenide Thin Films with Unconventional Bonding Mechanism for Photonic Devices and Applications</i>
11:05-11:20	Mengyun Wang - University of Oxford, UK <i>Wide-steering-angle optical phased array using phase- change materials for tunable gratings</i>
11:20-11:35	Magali Putero - Aix Marseille University, CNRS, IM2NP UMR7334, FR <i>Combining soft-NIL dielectric metasurfaces to GeSbTe phase change material: a route towards large scale tunable optics</i>
11:35-11:50	Ting Yu Teo - Singapore University of Technology and Design, Singapore <i>Designing Sb₂S₃ Tunable Integrated Photonics</i>
11:50-12:15	Invited Speaker: Harish Bhaskaran - University of Oxford, UK <i>Phase Change Tunable NEMS</i>
12:15-12:30	BREAK
12:30-13:00	CLOSING REMARKS and AWARD CEREMONY
13:00-14:00	LUNCH (Take away option)