E\PCOS 2022
EUROPEAN PHASE-CHANGE AND OVONIC SYMPOSIUM
~ OXFORD, UK ~ 18 TO 21 SEPTEMBER ~

Program 2022

All timings are in local British Summer Time (BST)

MONDAY 19 SEPTEMBER 2022

08:00-09:00	REGISTRATION + MORNING REFRESHMENTS
09:00-09:15	**OPENING REMARKS**
SESSION 1 – PHOTONICS 1	
09:15-10:15	*Ovshinsky Award: Harish Bhaskaran* *Ovshinsky Award: David Wright*
10:15-10:30	Mengyun Wang – University of Oxford *Reconfigurable metasurfaces using lossless phase-change material*
10:30-10:45	Euan Humphreys – University of Exeter *Filtering and Modulation from Visible to Terahertz using Phase-Change Extraordinary Optical Transmission Metasurfaces*
10:45-11:20	COFFEE BREAK
SESSION 2 – PHOTONICS 2	
11:20-11:45	*Invited Speaker* Arka Majumdar – University of Washington
11:45-12:00	June Sang Lee – University of Oxford *Polarization-selective tunability in hybrid phase-change nanowires*
12:00-12:15	Zhuoran Fang – University of Washington *Ultra-low energy programmable non-volatile silicon photonics based on graphene heaters*
12:15-12:30	Daniel Yimam – University of Groningen *Structural colors and enhanced resolution at the nanoscale: Local structuring of phase change materials using focused ion beam*
12:30-12:55	*Invited Speaker* Otto Muskens – University of Southampton
12:55-13:00	GROUP PHOTO
13:00-15:00	LUNCH BREAK & POSTER PRESENTATIONS
SESSION 3 - DRIFT	
15:00-15:25	*Invited Speaker* Ghazi Sarwat Syed – IBM Research (Zurich) *Phase Change Computational Memory: the Materials of it*
15:25-15:40	Benedikt Kersting – IBM Research (Zurich) *Many-body thermal excitation and the collective relaxation model*
15:40-15:55	Konstantinos Konstantinou – Tampere University *Intrinsic electron and hole trapping in amorphous phase-change memory materials: connection to resistance drift*
15:55-16:10	Eilam Yalon – Israel Institute of Technology *Low Resistance Drift Multi-Level PCM By Constant Amplitude Sub-Nanosecond Reset Pulses*
16:10-16:45	COFFEE BREAK
SESSION 4 - IN-MEMORY COMPUTING	
16:45-17:10	*Invited Speaker* Irem Boybat – IBM Research (Zurich)
17:10-17:35	*Invited Speaker* Nicole Saulnier – IBM Research (Albany, NY)
17:35-17:50	Bokusui Nakayama – Keio University (Japan) *Mimicking the Pheromone Communication of Ant Swarm with Colloids and Phase Change Material*

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TUESDAY 20 SEPTEMBER 2022

08:30-09:00	REGISTRATION + MORNING REFRESHMENTS
SESSION 5 - THEORY	
09:00-09:25	*Invited Speaker* Riccardo Mazzarello – University of Rome *Atomistic study of the configurational entropy of supercooled liquid GeTe*
09:25-09:40	Wei Zhang – Xi'an Jiaotong University *Unraveling crystallization mechanisms and electronic structure of Ge-Sb-Te alloys by ab initio simulations*
09:40-09:55	Stephen Elliott – University of Cambridge *Hyperbonding in telluride memory materials*
09:55-10:10	Carl-Friedrich Schön – RWTH Aachen University *Chemical Bonding revisited: The Potential of Property Maps*
10:10-10:25	Matthias Wuttig – RWTH Aachen University *Phase Change Materials by Design: Developing Treasure Maps with Quantum Chemistry*
10:25-10:40	Xian-Bin Li – Jilin University *Entropy barrier controlled ultrafast reversible ferroelectric phase change in 2D III2-VI3 materials*
10:40-11:15	COFFEE BREAK
SESSION 6 - GE-RICH GST	
11:15-11:40	*Invited Speaker* Marco Bernasconi – Università di Milano-Bicocca *Atomistic simulations of the crystallization kinetics: Sb in confined geometry and asdep GeTe*
11:40-11:55	Eloïse Rahier – CEMES-CNRS and Université de Toulouse *Crystallization mechanism of Ge-rich GST unveiled by in-situ synchrotron XRD and (S)TEM.*
11:55-12:10	Elisa Petroni – STMicroelectronics *Advanced metrics for quantification of by-process segregation beyond ternary systems*
12:10-12:35	*Invited Speaker* Stefano Cecchi – Università di Milano-Bicocca
12:35-12:50	Sabrina Calvi – University of Tor Vergata *Ge-Sb-Te alloys on free-standing flexible substrates*
12:50-14:50	LUNCH BREAK & POSTER PRESENTATIONS
SESSION 7 - ePCM	
14:50-15:15	*Invited Speaker* Andrea Redaelli – STMicroelectronics
15:15-15:30	Martina Tomelleri – STMicroelectronics *Investigation of N-doped GeSe0.5Te0.5 films for Embedded Phase-Change Memories*
15:30-15:45	Fabrizio Arciprete – University of Tor Vergata *Electronic properties, interface formation and Sb confinement in In-based PCM heterostructures*
15:45-16:10	*Invited Speaker* Pierre Noé – CEA Grenoble (LETI) *Phase-Change and Ovonic Chalcogenide Materials: Unique and Uncommon Physical Properties behind Innovative Electronic and Photonic Devices*
16:10-16:45	COFFEE BREAK
SESSION 8 - THERMAL ENGINEERING	
16:45-17:10	*Invited Speaker* Rossella Ranica – STMicroelectronics *Optimization of Heater system in ePCM for robust reliability and scalability in 28nm FDSOI technology*
17:10-17:25	Rob Simpson – Singapore University of Technology and Design *Thermally Engineered Phase Change Materials and Superlattices*
17:25-17:50	*Invited Speaker* Eric Pop – Stanford University *Thermal Confinement and Low-Power Memory Devices Based on Superlattice Chalcogenides*

19:30	GALA DINNER

WEDNESDAY 21 SEPTEMBER 2022

08:00-08:40	MORNING REFRESHMENTS
SESSION 9 – OTS & MULTILAYERS	
08:40-09:05	*Invited Speaker* Elia Ambrosi – TSMC
09:05-09:20	Chanyoung Yoo – Seoul National University *Atomic Layer Deposition of GeTe/Sb2Te3 Superlattice and Its Switching Mechanism*
09:20-09:35	Michelle Huai-Yu Cheng – Macronix International Co., LTD *Multilayer InAsSeGe OTS Selectors Engineering for High Thermal Stability and Improved Endurance 3D Crosspoint Memory*
09:35-10:00	*Invited Speaker* Hyunsang Hwang – Pohang University of Science and Technology (POSTECH) *Switching Mechanism of Ovonic Threshold Switch Devices*
10:00-10:35	COFFEE BREAK
SESSION 10 – OTS & MULTILAYERS	
10:35-11:00	*Invited Speaker* Taras Ravsher – IMEC *Polarity-dependent effects in OTS materials and their application as self-selective memory*
11:00-11:15	Damien Terebenec – CEA Grenoble (LETI) *PCM Heterostructures for Low Power Phase-Change Memory: from multilayers to van der Waals stacks*
11:15-11:30	Vitomir Sever – CEA Grenoble (LETI) *HAADF-STEM analysis of the local structure of GeTe-Sb2Te3 heterostructures obtained by van der Waals epitaxy*
11:30-11:45	Jaemin Park – Korea University *Sb2Te3/TiTe2 superlattice like based phase change memory*
11:45-12:10	*Invited Speaker* Min Zhu – Shanghai Institute of Microsystem and Information Technology *Single Element Switch*
12:10-12:30	BREAK
12:30-13:00	**AWARD CEREMONY & CLOSING**
13:00-14:00	LUNCH & END

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P-19 Arun Kumar
Structural and Interface analysis of Ge-(Sb)-Te/Sb2Te3 core-shell nanowires grown by MOCVD

P-20 Md Tashfiq Bin Kashem
Modeling Phase Change Memory Devices

P-21 Nils Holle
Influence of density on elemental antimony glass

P-22 Flavia Righi Riva
Interdiffusion at the interface in thermally stable Ge-Sb-Te heterostructures: a photoemission study

P-23 Suyoun Lee
Gate-tunable three-terminal Ovonic threshold switch (OTS) for a highly-scalable artificial retinal ganglion cell (RGC)

P-24 Peter Kerres
Combinatorial Material Synthesis of Chalcogenides by Sputter Deposition: A case study of the Sb-Te Binary Line

P-25 Anbarasu Manivannan
Realization of Tunable Reflective Optical Limiter using GeTe Phase Change Material

P-26 George Braid
Lens Numerical Aperture Control with Phase-Change Metasurfaces

P-27 Joe Shields
Phase-change spatial light modulators with amplitude-only control

P-28 J. Luchtenveld
Phase-change properties of ultrathin PLD-fabricated GexSb100-x thin films

P-29 Jessy Paterson
Electronic and thermal transport in nanocomposite phase-change material thin films

P-30 Akash Patil
Raman Thermometry Characterization of GeSbTe Based Phase Change Materials

P-31 Роман Степанов
Van der Waals interactions in ab-initio studies of two dimensional functional chalcogenides

P-32 Angel-Theodor Buruiana
Exhaustive in-situ evaluation of phase transitions in GST 225 thin films

P-33 Yuxing Zhou
Ab initio molecular dynamics simulations of Ge-rich Ge–Sb–Te alloys

P-34 Hao Tong
Trade-off between multi-level characteristics and power consumption of high aspect ratio phase change memory

P-35 Samarth Aggarwal
Reconfigurable Silicon Carbide photonics using Phase Change Materials

P-36 Yuhan He
Ultra-Efficient Plasmonic Phase-Change Devices by Improved Mode Coupling

P-37 Utku Emre Ali
Phase Change Nanowires as Tunable NEMS