E\PCOS 2019 — TIMETABLE: Monday September 9

7:30-8:30	REGISTRATION (+ COFFEE)
8:30-8:45	OPENING REMARKS
8:45-9:15	*Ovshinsky Lecture* Abu Sebastian – IBM Research – Zurich, Switzerland ***Computational phase-change memory: Realizing Stanford Ovshinsky's dream***
SESSION-1 Neuromorphic & RESET	
9:15-9:40	*Invited* Daniele Ielmini – Politecnico di Milano, Italy ***Learning and computing with phase change memory networks***
9:40-9:55	Xinglong Ji –Singapore University of Technology and Design, Singapore ***A Unified Cross-Functional Device with Tunable Neuronal Firing and Synaptic Plasticity on Demand***
9:55-10:20	*Invited* Manuel Le Gallo – IBM Research – Zurich, Switzerland ***Hyperdimensional computing using phase-change memory devices***
10:20-10:35	Junji Tominaga – Nanoelectronics Research Institute, AIST, Japan ***Re-amorphization of a GeSbTe alloy film via a long-time thermal annealing under magnetic field (TAUM)***
10:35-11:00	COFFEE BREAK
SESSION-2 Spin, Transport, Growth & Bonding	
11:00-11:15	Johannes Reindl – RWTH Aachen University, Germany ***Persistence of spin memory in the insulting phase of a crystalline phase-change material***
11:15-11:30	Shogo Hatayama – Tohoku University, Japan ***Conduction mechanism of sputtered amorphous $Cr_2Ge_2Te_6$ film***
11:30-11:45	Yuta Saito – Nanoelectronics Research Institute, AIST, Japan/Univ. of Cambridge, UK ***Revisiting the growth mechanism of layered crystalline phase change materials by sputtering***
11:45-12:10	*Invited* Matthias Wuttig – RWTH Aachen University, Germany ***Chalcogenides by Design: The Power and Potential of Maps***
12:10-12:35	*Invited* Jean-Yves Raty – FNRS, Liège University, Belgium/CEA, LETI, France ***Ovonic Threshold Switching in Se-rich Ge_xSe_{1-x} Glasses from an Atomistic Point-of-View: the Crucial Role of the Metavalent Bonding Mechanism***
12:35-12:45	Group photo
12:45-15:15	LUNCH BREAK AND POSTER SESSION!
SESSION-3 Memory and Optical Applications	
15:15-15:40	*Invited* Paola Zuliani – STMicroelectronics, Italy ***Enlarged applications spectrum for Embedded Phase Change Memories***
15:40-16:05	*Invited* Harish Bhaskaran – University of Oxford, UK ***Non-volatile, optically and electrically programmable phase change memory on a silicon photonics platform***
16:05-16:20	Kotaro Makino – Nanoelectronics Research Institute, AIST, Japan ***Optical and dielectric properties of $Ge_2Sb_2Te_5$ phase change material in terahertz frequency region***

16:20-16:35 Lu Cai – University of Exeter, UK/ Zhejiang University, China
Terahertz Amplitude Modulators Using Phase-Change Metamaterials

16:35-17:00 COFFEE BREAK

SESSION-4 Optical applications, Photonics & Metamaterials

17:00-17:15 Jean-Baptiste Dory – CEA, LETI, France
Design rules for chalcogenide thin films toward on-chip highly nonlinear optical components in the Mid-Infrared

17:15-17:30 Emanuele Gemo – University of Exeter, UK
A plasmonic route towards the energy scaling of on-chip integrated all-photonic phase-change memories

17:30-17:45 Ann-Katrin Michel – ETH Zurich, Switzerland
Sub-diffraction limited patterning of phase-change-material thin films for tunable photonics

17:45-18:10 *Invited* David Wright – University of Exeter, UK
Reconfigurable phase-change metasurfaces for lidar, imaging, modulator and display applications

19:00-22:30 SOCIAL DINNER – LE FANTIN LATOUR

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E\PCOS 2019 — TIMETABLE: Tuesday September 10

8:30-9:00 REGISTRATION (+ COFFEE)

SESSION-5 Ovonic Switching and Selectors

9:00-9:25 *Invited* Sergiu Clima – IMEC, Belgium
OTS chalcogenides for SELECTOR materials: traps and material relaxation from first-principles

9:25-9:50 *Invited* Anthonin Verdy – CEA, LETI, France
Effect of nitrogen on the amorphous structure and subthreshold electrical conduction of GeSeSb-based OTS thin films

9:50-10:05 I-Ting Kuo – Macronix International Co. Ltd., Taiwan
TeAsGeSi OTS Characteristics as a Function of Compositions for Cross-point Memory

10:05-10:20 Jonas Keukelier – Ghent University, Belgium
Doped and un-doped $GeSe_2$ for OTS: Raman spectroscopy and electrical measurements

10:20-10:35 Yi Shuang – Tohoku University, Japan
PN Diode Properties of N-type Oxide/p-type N-doped $Cr_2Ge_2Te_6$ and Its Application for Self-Selective PCRAM

10:35-11:00 COFFEE BREAK

SESSION-6 Atomic Structure & Kinetics

11:00-11:25 *Invited* Francesco d'Acapito – CNR-IOM-OGG c/o ESRF – LISA-CRG, Italy
X-ray Absorption Spectroscopy study of the complex structure of Phase-Change Materials

11:25-11:50 *Invited* Min Zhu – Shanghai Institute of Micro-System and Information Technology, China

Direct Atomic Insight into the Role of Dopants in Phase-Change Materials

11:50-12:05 Andriy Lotnyk – Leibniz Institute of Surface Engineering (IOM), Germany
In situ observations of the reversible vacancy ordering in layered chalcogenide-based thin films

12:05-12:30 *Invited* Bart Kooi – University of Groningen, The Netherlands
Elemental mapping of GeTe and Sb_2Te_3 at Si(111) interfaces and crystallization kinetics of $Ge_2Sb_2Te_5$ nanoparticles

12:30-12:45 Julian Pries – RWTH Aachen University, Germany
Impact of Glass Transition on Crystallization in $Ge_2Sb_2Te_5$

12:45-13:00 Magali Putero – Aix-Marseille Université, CNRS, IM2NP, Marseille
Crystallization kinetics of GeTe thin film studied by in situ synchrotron X-ray diffraction: effect of thickness

13:00-14:00 LUNCH BREAK

SESSION-7 Interfaces & Conduction

14:00-14:25 *Invited* Martin Salinga – RWTH Aachen University, Germany
Single-element phase change memory

14:25-14:40 Giulia Samanni – STMicroelectronics, Italy
Impact of Deuterium in Final Anneal on Ge-Rich PCM behavior

14:40-14:55 Benedikt Kersting – RWTH Aachen University, Germany/IBM Research Zurich, Switzerland
The role of finite interface resistance in projected phase-change memory devices

14:55-15:10 Zhaofu Zhang – Cambridge University, UK
Ge-Sb-Te: Influence of Phase on Schottky Barrier Heights

15:10-15:25 Daniele Dragoni – University of Milano-Bicocca, Italy
A first principles study of the switching mechanism in GeTe-InSbTe superlattices

15:25-15:50 COFFEE BREAK

SESSION-8 Gap States & 3D XPoint

15:50-16:05 Stephen Elliott – Cambridge University, UK
Gap states in glassy models of the phase-change memory material, $Ge_2Sb_2Te_5$, simulated using a machine-learned
interatomic potential

16:05-16:20 Jose Martinez – Singapore University of Technology and Design, Singapore
Diagnostic for resistance drift in phase change materials

16:20-16:45 *Invited* Ruomeng Huang – University of Southampton, UK
3D cross-bar GeSbTe Phase Change Memory by non-aqueous electrodeposition

16:45-17:10 *Invited* Agostino Pirovano – Micron Semiconductor Italia, Italy
Breakthroughs and open questions for Phase-Change Memory Devices

17:10-17:25 CLOSING + AWARD CEREMONY

E\PCOS 2019 POSTER SESSION

P1	*Simulation on Etching Imperfections in Nanoscale PCM* Md. Khirul Anam – The University of Texas at San Antonio, USA
P2	*MOCVD growth of antimony telluride in high-density templates* R. Cecchini – CNR-IMM, Italy
P3	*Possible morphologies of crystalline phase distribution in $Ge_2Sb_2Te_5$: filamentary or interfacial* Seung Jae Baik – Hankyong National University, Republic of Korea
P4	*Structure-properties relationship in PCM investigated by a dual ^{125}Te NMR-ab initio calculation approach* A. Piarristeguy – ICGM, Université Montpellier, France
P5	*Novel Low-Resistance State of Interfacial Phase-Change Memory: First-Principles Calculation* H. Nohara – Nagoya University, Japan
P6	*Simulation of Phase-change Stress in Phase-change memory* Yongwoo Kwon – Hongik University, Republic of Korea
P7	*Structural change by annealing in sputtered MnTe film* Shunsuke Mori – Tohoku University, Japan
P8	*Multilevel Reflectivity Switching of Ultrathin Phase-Change Films* D.T. Yimam – Zernike Institute for Advanced Materials, The Netherlands
P9	*Electrical conductivity and dispersion of the electron states of off-stoichiometric and Si-doped $Ge_2Sb_2Te_5$ crystals* L. Calmels – CEMES, CNRS, Université de Toulouse, France
P10	*Ab initio Crystallization Simulations of Pure and Alloyed Sb* Yuhan Chen – Xi'an Jiaotong University, China
P11	*Chemical bonding analyses of Sc–Sb–Te phase-change materials* Yuxing Zhou – Xi'an Jiaotong University, China
P12	*E-beam induced progressive amorphization of GST* Ting-Ting Jiang – Xi'an Jiaotong University, China
P13	*Electrical switching behavior of $Ge_2Sb_2Se_xTe_{5-x}$ thin films using in-situ micro-heaters* Liam Trimby – University of Exeter, UK
P14	*Phase-change thin film based infrared reflective modulator* Yat-Yin Au – University of Exeter, UK
P15	*Analysis of structural transition dynamics of the GeTe–Sb_2Te_3 superlattice phase-change memory by current-induce force and local heating* Hisao Nakamura – AIST, Japan
P16	*Understanding the structure and properties of Pn_2Ch_3 (V_2VI_3) compounds from a bonding perspective* Yudong Cheng – RWTH Aachen University, Germany
P17	*A behavioural model for integrated phase-change photonics devices* Santiago G-C Carrillo – University of Exeter, UK
P18	*Low Temperature Resistance Drift in $Ge_2Sb_2Te_5$ and Contribution of Charge Traps* Raihan Sayeed Khan – University of Connecticut, USA
P19	*Ultrafast epitaxial crystal growth in phase-change material thin films* Mario Behrens – Leibniz Institute of Surface Engineering (IOM), Germany
P20	*Electron-polarized atom chains in phase-change memory material Ge-Sb-Te* Nian-Ke Chen – Jilin University, China
P21	*Switching effects in iPCM devices with TbFeCo contacts* Kirill V. Mitrofanov – AIST, Japan
P22	*Determining the dielectric function of GeTe nanoparticle films* Ann-Katrin U. Michel – ETH Zurich, Switzerland

P23 *Experimental and ab-initio investigations of sub-ps optical excitation effects in amorphous GeTe thin films*
P. Martinez – CELIA, France

P24 *Resistance Drift Model in Phase-Change Memory Based on Aging Kinetics of Glass Materials*
Rémi Dardaillon – CNRS-LTM, France

P25 *Crystallization of GeTe nanostructures studied by in situ synchrotron X-ray diffraction: effect of diameter and spacing*
O. Thomas – Aix-Marseille Université IM2NP, France

P26 *Phase segregation and crystallization of amorphous Ge-rich GST alloys during annealing*
Marta Agati – CEMES-CNRS, France

P27 *Zero-harmonicity and Phase Change Materials*
Jean-Pierre Gaspard – University of Liège, Belgium and ILL, France

P28 *Impedance spectroscopy studies of SET and RESET states of chalcogenide cells*
Louis Merle – LPCNO, CEMES, France

P29 *N-doped Ge and Ge-rich Ge-Sb-Te Systems Structural Investigation by Infrared and Raman Spectroscopy*
L. Prazakova – CEA, LETI, France

P30 *Simultaneous modulation in the O and C communications bands using hybrid dielectric-plasmonic phase-change metasurfaces*
Joe Shields – University of Exeter, UK

P31 *Intermixing between Sb_2Te_3/GeTe films and Si(111) substrates*
Jamo Momand – University of Groningen, the Netherlands

P32 *TCAD Investigation of Thermal Disturb During RESET Operation in 28nm ePCM Technology Node*
R. Simola – STMicroelectronics Rousset, France

P33 *Thermoelastic properties of GeTe thin films in the amorphous and crystalline states deduced from substrate curvature measurements*
R. Tholapi – Aix Marseille Univ, IM2NP, France

P34 *VO_2 metal-insulator transition: Density Functional Studies of Alloying to vary Band gap and T_C*
Haichang Lu – Cambridge University, UK

P35 *Connecting defects in amorphous chalcogenide to conduction and the threshold condition via GINESTRA™ simulations*
Enrico Piccinini – MDLx Italia R&D, Italy

P36 *Phase-change memory device based on solid-to-solid phase changes in layered crystalline In_2Se_3*
Min Sup Choi – Sungkyunkwan University, Rep. of Korea

P37 *Highly scalable and energy-efficient artificial neuron based on the Ovonic Threshold Switch (OTS)*
Suyoun Lee – KIST, Rep. of Korea

P38 *Dielectric study of PCM chalcogenide system $GeSb_2Te_4$*
A.A. Kononov – Herzen State Pedagogical University of Russia, Russia

P39 *Atomistic Simulations of Thermal Conductivity in GeTe Nanowires*
E. Bosoni – University of Milano-Bicocca, Italy