

PCOS 2018 TECHNICAL PROGRAM (tentative)

December 6th (Thursday), 2018

- 12:00 – 12:50 **Registration**
12:50 – 12:55 **Opening Remarks**
12:55 – 13:00 **Opening Speech**

Session 1. Optics, Photonics, Plasmonic properties

13:00 – 13:35 (Special)

1. Phase change materials for visible photonics

R. E. Simpson, W. Dong, L. Lu, J. K. Behera
University of Technology Singapore University of Technology and Design

13:35 – 14:00 (Invited)

2. Terahertz pulse technology for control of $\text{Ge}_2\text{Sb}_2\text{Te}_5$ phase changes via Zener tunneling

Y. Sanari¹ and H. Hirori^{1,2}

¹Institute for Chemical Research, Kyoto University

²Institute for Integrated Cell-Material Sciences (iCeMS), Kyoto University

14:00 – 14:25 (Invited)

3. Plasmonic metamaterials and phase change materials

T. Tanaka
Metamaterials Laboratory, RIKEN Cluster for Pioneering Research

14:25 – 14:45

4. Dynamics of Colloidal Particles in a Temperature-Responsive Polymer Solution

B. Nakayama¹, E. Yamamoto¹, Y. Hiruta¹, M. Kuwahara² and T. Saiki¹

¹Graduate School of Science and Technology, Keio University

²National Institute of Advanced Industrial Science and Technology

14:45 – 14:55 **Coffee Break**

Session 2. Phase change memory and materials 1

14:55 – 15:20 (Invited)

5. Switching effects in iPCM beyond standard operation

K. V. Mitrofanov, Y. Saito, N. Miyata, P. Fons, A. V. Kolobov and J. Tominaga
National Institute of Advanced Industrial Science and Technology (AIST)

15:20 – 15:45 (Invited)

6. Nanoscale manipulations of resistance states in GeTe-Sb₂Te₃ films using scanning probe methods

L. Bolotov, Y. Saito, J. Tominaga and N. Miyata
National Institute of Advanced Science and Technology (AIST)

15:45 – 16:10 (Invited)

7. Role of antimony in the switching mechanism of iPCM

A.V. Kolobov, P. Fons, Y. Saito and J. Tominaga
National Institute of Advanced Industrial Science & Technology

16:10 – 16:35 (Invited)

8. Electric Field Effects in GeTe/Sb₂Te₃ interfacial phase change memory

P. Fons^{1,2}, A. V. Kolobov¹, Y. Saito¹, K. V. Mitrofanov¹, K. Makino¹ and J. Tominaga¹
¹National Institute of Advanced Industrial Science and Technology (AIST)
²Japan Synchrotron Radiation Research Institute (JASRI), SPring-8

16:35 – 18:00 **Poster Session**

19:00 – 21:00 **Reception**

December 7th (Friday), 2018

Session 3. Phase change memory and materials 2

8:50 – 9:15 (Invited)

9. Laser-induced rattling motion in resonant-bonding materials

T. Ichitsubo¹, A. Hirata², T. Kawaguchi³, H. Tanimura¹, K. Tanimura⁴, N. Yamada³,
and E. Matsubara³

¹Institute for Materials Research, Tohoku University, Sendai 980-8577, Japan

²Faculty of Science and Engineering, Waseda University, Tokyo 169-8555, Japan

³Department of Materials Science and Engineering, Kyoto University, Kyoto 606-8501, Japan

⁴The Institute of Scientific and Industrial Research, Osaka University

9:15 – 9:40 (Invited)

10. Phase transition of GeTe/Sb₂Te₃ superlattice with magnetic properties

J. Tominaga, K. Mitrofanov, Y. Saito, K. Makino, L. Bolotov, P. Fons, A. V. Kolobov, T. Nakano
and N. Miyata
National Institute of Advanced Industrial Science and Technology

9:40 – 10:05 (Invited)

11. Investigation of the topological phase in a chalcogenide superlattice using magneto-optical Kerr effect

R. Mondal¹, Y. Aihara¹, Y. Saito², P. Fons², A. V. Kolobov², J. Tominaga² and M. Hase^{1,2}

¹Division of Applied Physics, Faculty of Pure and Applied Sciences, University of Tsukuba

²National Institute of Advanced Industrial Science and Technology

10:05 – 10:25

12. Understanding the switching mechanism of GeTe/Sb₂Te₃ interfacial phase change memory

Y. Saito^{1,2*}, A. V. Kolobov¹, P. Fons¹, K. V. Mitrofanov¹, K. Makino¹, J. Tominaga¹

and J. Robertson²

¹National Institute of Advanced Industrial Science and Technology

²Department of Engineering, University of Cambridge

10:25 – 10:35 **Coffee Break**

Session 4. Phase change memory and materials 3

10:35 – 11:00 (Invited)

13. Transistors Based on the Phase-Change Oxides Contacted with 2D Layered Materials

H. Tanaka and M. Yamamoto

The Institute of Scientific and Industrial Research, Osaka University

11:00 – 11:25 (Invited)

14. Perpendicular magnetic anisotropy in CoPd films induced by inverse magnetostrictive effect

T. Harumoto, J. Shi and Y. Nakamura

Department of Materials Science and Engineering, Tokyo Institute of Technology

11:25 – 11:50 (Invited)

15. Direct observation of impact ionization in InSb by time- and angle resolved photoemission spectroscopy

H. Tanimura¹, T. Ichitsubo¹, J. Kanasaki² and K. Tanimura²

¹Institute for Materials Research, Tohoku University, Sendai 980-8577, Japan

²The Institute of Scientific and Industrial Research, Osaka University

11:50 – 12:10

16. Terahertz spectroscopic characterization of Ge-Sb-Te phase change memory materials toward photonic applications

K. Makino¹, K. Kato², Y. Saito¹, P. Fons¹, A. V. Kolobov¹, J. Tominaga¹, M. Nakajima² and T. Nakano¹

¹National Institute of Advanced Industrial Science and Technology

²Institute of Laser Engineering (ILE), Osaka University

12:10 – 13:50 **Group Photo and Lunch Break**

Session 5. Phononic properties, energy conversion

13:50 – 14:25 (Special)

17. Thermoelectric properties of Fermi level tuned single wall carbon nanotube thin films

K. Yanagi

Department of Physics, Tokyo Metropolitan University 4 SPring-8/JASRI

14:25 – 14:50 (Invited)

18. Thermoelectric Ge-Sb-Te Bulk: Processing and Transport Properties

A. Kosuga^{1,2}

¹ Department of Physical Science, Graduate School of Science, Osaka Prefecture University

² JST PRESTO

14:50 – 15:15 (Invited)

19. Thermal conduction in Magnéli phase titanium oxides with an ordered arrangement of planar defects

S. Harada

Center for Integrated Research for Future Electronics (CIRFE), Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University

15:15 – 15:40 (Invited)

20. Coming soon

T. Totani

Hokkaido University

15:40 – 16:00 **Coffee Break**

16:00 – 16:10 **Best Paper Award**

16:10 – 16:15 **Closing Remarks**

1. **Crystal Structure and Low-Temperature Thermoelectric Properties of $\text{Ge}_2\text{Sb}_{2-x}\text{Bi}_x\text{Te}_5$ ($x = 0, 0.1, 0.3, \text{ and } 0.5$)**
Y. Kagomoto¹, Y. Kubota¹, I. Yamada² and A. Kosuga^{1,3}
¹Department of Physical Science, Graduate School of Science, Osaka Prefecture University
²Department of Materials Science, Graduate School of Engineering, Osaka Prefecture University
³JST PRESTO
2. **Non-isothermal crystallization kinetics of amorphous $\text{Cr}_2\text{Ge}_2\text{Te}_6$ film**
S. Hatayama, Y. Sutou, D. Ando and J. Koike
Dept. of Material Science, Tohoku University
3. **Gamma-ray irradiation induced effects on GeTe thin films**
H. Park¹, T. Watanabe¹, I. Yoda², Y. Shohmitsu³, S. Kawasaki³ and T. Nakaoka¹
¹ Faculty of Science and Technology, Sophia University, Tokyo 102-8554, Japan
² Tokyo Institute of Technology, Tokyo 152-8550, Japan
³ Japan Aerospace Exploration Agency
4. **Fabrication of convex VO_2 nano-channels toward electronic phase-controlled FETs**
Y. Tsuji, T. Kanki and H. Tanaka
ISIR, Osaka Univ.
5. **Ag_2Te nanowire growth at room temperature by RF magnetron sputtering**
K. Nakaya and T. Nakaoka
Faculty of Science and Technology, Sophia University
6. **Dynamical control of phase-change material coated Janus particles**
R. Soma¹, E. Yamamoto¹, M. Kuwahara² and T. Saiki¹
¹Graduate School of Science and Technology, Keio University
²National Institute of Advanced Industrial Science and Technology
7. **Phase transition induced by annealing in MnTe film**
S. Mori, Y. Sutou, D. Ando and J. Koike
Dept. of Materials Science, Sch. of Engineering, Tohoku University
8. **Synthesis of Thermoelectric Cubic $\text{Ge}_{12}\text{Sb}_2\text{Te}_{15}$ by Mechanical Alloying**
P. Pilasuta^{1,2,3}, T. Oku¹, Y. Ohkita¹, T. Seetawan^{2,3} and A. Kosuga
¹ Department of Physical Science, Graduate School of Science, Osaka Prefecture University
² Program of Physics, Faculty of Science and Technology, Sakon Nakhon Rajabhat University
³ Thermoelectric Research Laboratory, Center of Excellence on Alternative Energy, Research and Development Institution, Sakon Nakhon Rajabhat University
⁴JST, PRESTO
9. **Analysis of optical response of resonantly bonded crystalline PbTe thin-film by ultrafast pump-probe spectroscopy**
S. Watanabe¹, H. Tanimura¹, H. Takamura² and T. Ichitsubo¹
¹Institute for Materials Research, Tohoku University
²Department of Metallurgy, Materials Science and Materials Processing, Tohoku University