PCOS 2014 TECHNICAL PROGRAM

December 4 (Thursday), 2014

13:00 – 13:10 **Opening Remarks**

13:10 – 13:20 **Memorial address to Dr. Masahiro Okuda**

Session 1

13:20 –14:00 (Invited)

I01. **The structures and properties of Te nanoparticles**
H. Ikemoto
Department of Physics, University of Toyama

14:00 – 14:40 (Invited)

I02. **Frozen static heterogeneity and relaxation phenomena in metallic glasses**
Tetsu Ichitsubo and Eiichiro Matsubara
Department of Materials Science and Engineering, Kyoto University

14:40 – 15:00 **Coffee Break**

Session 2

15:00 – 15:40 (Invited)

I03. **A Consideration of (S,Se)-based and Te-based Chalcogenide Phase Change Phenomena for the Future Mass Memories Technologies for Achieving Higher Recording Capacity**
Sakae Zembutsu
Graduate School of Informatics and Engineering, Career Education Division, The University of Electro-Communications

15:40 – 16:20 (Invited)

I04. **Cognitive Computing Systems and Neuromorphic Chips**
Akihiro Horibe
IBM Research – Tokyo

16:20-16:45

S21. **Mach-Zehnder Interferometer Type Optical Switch Using Phase-Change Material**
Hiroyuki Tsuda[1], Takumi Moriyama[1], Yasuro Shimazaki[1], Masashi Kuwahara[2], Xiaomin Wang[2], and Hitoshi Kawashima[2]
[1] Graduate School of Science and Technology, Keio University
[2] National Institute of Advanced Industrial Science and Technology

Poster Session 16:45 – 18:15

Reception 19:00 – 21:00

December 5 (Friday), 2014

Session 3

9:00 – 9:40 (Invited)

I05. **Trial for Thermodynamic Calculation of Nano-particle Binary Alloy Phase Diagrams**
Toshihiro Tanaka
Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University

9:40 – 10:05

S31. **Pulsed light heating thermoreflectance technique for measuring thermophysical properties of interfacial phase-change thin film**
T. Yagi[1], R. E. Simpson[2], P. Fons[3], A. V. Kolobov[3] and J. Tominaga[3]
[1]National Metrology Institute of Japan, AIST
[2]Singapore University of Technology and Design
[3]Nanoelectronics Research Institute, AIST

10:05– 10:30

S32. **Thermal Conductivity of $Ge_2Sb_2Te_5$ at High Temperature**
Rui Lan[1], Rie Endo[2], Masashi Kuwahara[3], Yoshinao Kobayashi[2], Masahiro Susa[2]
[1]School of Material Science and Technology, Jiangsu University of Science and Technology
[2]Dept. of Metallurgy and Ceramics Science, Tokyo Institute of Technology
[3]Photonics Research Institute, National Institutes of Advanced Industrial Science and Technology

10:30 – 10:50 **Coffee Break**

Session 4

10:50– 11:15

S41. **Ultrafast Dynamics of Phase-Change Materials Observed Using Echelon-Based Single-Shot Setups**
Ikufumi Katayama[1], Wataru Oba[1], Yasuo Minami[1], Toshiharu Saiki[2] and Jun Takeda[1]
[1]Graduate School of Engineering, Yokohama National University
[2]Graduate School of Science and Technology, Keio University

11:15– 11:40

S42. **Structural dynamics in Ge2Sb2Te5 upon ultra-short laser excitation by time-resolved x-ray diffraction using a free-electron laser**
Kirill Mitrofanov[1], Paul Fons[1], Kotaro Makino[1], Ryo Terashima[2], Alexander V. Kolobov[1], Junji Tominaga[1], Alessandro Giussani[3], Raffella Calarco[3], Henning Riechert[3], Takahiro Sato[4], Tetsuo Katayama[5], Kanade Ogawa[4], Tadashi Togashi[5], Makina Yabashi[4] and Muneaki Hase[1,2]
[1]Nanoelectronics Research Institute, AIST
[2]Institute of Applied Physics, University of Tsukuba
[3]Paul-Drude-Institut fur Festkorperelektronik
[4]RIKEN SPring-8, XFEL Research and Development Division
[5]XFEL Project Head Office, Japan Synchrotron Radiation Research Institute

11:40 – 13:00 **Photo and Lunch**

Session 5

13:00 – 13:40 (Invited)

I06. **Magneto-optical Kerr effect of $[(GeTe)_2(Sb_2Te_3)_1]_n$ superlattice without any magnetic**

elements
H. Awano[1], D. Bang[1], J. Tominaga[2], A. Kolobov[2], P. Fons[2], Y. Saito[2], K. Makino[2], T. Nakano[2], M. Hase[3], Y. Takagaki[4], A. Giussani[4], R. Calarco[4], and S. Murakami[5]
[1]Information Storage Materials Laboratory, Toyota Technological Institute
[2]Nanoelectronics Research Institute, National Institute of Advanced Industrial Science & Technology (AIST)
[3]Faculty of Pure and Applied Sciences, University of Tsukuba
[4]Paul-Drude-Institut für Festkörperelektronik
[5]Department of Physics, Tokyo Institute of Technology

13:40 – 14:05
S51. Electronic structure and deposition behavior of superlattice chalcogenide films
Yuta Saito, Junji Tominaga, Kotaro Makino, Xiaomin Wang, Alexander V. Kolobov, Paul Fons, and Takashi Nakano
National Institute of Advanced Industrial Science and Technology (AIST)

14:05 – 14:30
S52. Proposal on Hypothesis for Ultra-low Power Switching in Superlattice Phase Change Memories
Toshimichi Shintani[1,2], Susumu Soeya[1] and Toshiharu Saiki[2]
[1]Institute of Advanced Industrial Science and Technology
[2]Keio University

14:30 – 14:50 **Coffee Break**

Session 6

14:50-15:30
I07. To be announced (Speaker: E. Matsubara)

15:30 – 15:55
S61. A study on phase change characteristics of $(GeTe)_{1-x}Si_x$ films
Y. Sutou[1], Y. Saito[2], and J. Koike[1]
[1]Department of Materials Science, Graduate School of Engineering, Tohoku University
[2]Nanoelectronics Research Institute, AIST

15:55 – 16:20
S62. Computing based on coupled plasmon particles with phase change material
Takashi Hira, Kenta Kuwamura, Yuya Kihara, Tasuku Yawatari, Yusuke Hirukawa, Shohei Kanazawa, and Toshiharu Saiki
Graduate School of Science and Technology, Keio University

16:20 – 16:30 **Best Paper Awarding**

16:30 – 16:40 **Closing Remarks** (**Memorial address to Dr. Tatsuo Kinoshita**)

Poster Session

P01. Contact resistivity of GeCu2Te3 on metal electrode measured by CTLM
Satoshi Shindo[1], Yuji Sutou[1], Junichi Koike[1], and Yuta Saito[2]
[1]Dept. of Materials Science, Tohoku University

[2]Nanoelectronics Research Institute, AIST

P02. **Ultrafast Amorphization of GeTe Induced by Femtosecond Laser Pulses**
Wataru Oba[1], Ikufumi Katayama[1], Yasuo Minami[1], Toshiharu Saiki[2] and Jun Takeda[1]
[1]Graduate School of Engineering, Yokohama National University
[2]Graduate School of Science and Technology, Keio University

P03. **Phase Error Compensation of Si Waveguide Using Phase-Change Material**
Ryutaro Eguchi, Yasuro Shimazaki, and Hiroyuki Tsuda
Graduate School of Science and Technology, Keio University

P04. **First principles calculation study of electronic and optical properties of liquid InSb**
H. Sano[1] and G. Mizutani[2]
[1]Department of General Education, Ishikawa National College of Technology
[2]School of Materials Science, Japan Advanced Institute of Science and Technology

P05. **Fitting Model for Electric Conduction of Amorphous GeSbTe in Wide Field Range**
Toshimichi Shintani, Yumiko Anzai, and Hiroyuki Minemura
Central Research Laboratory, Hitachi, Ltd.

P06. **Emission energy control of semiconductor quantum dots using phase change mask and its applications**
Yu Sato, Shohei Kanazawa, Ariyoshi Yamamura, and Toshiharu Saiki
Graduate School of Science and Technology, Keio University

P07. **Mechanism of the crystal /amorphous phase periodic structure formation by pulsed laser irradiation**
Takanori Morita, Yusuke Morimoto, Ryota Akimoto and Toshiharu Saiki
Graduate School of Science and Technology, Keio University

P08. **Spectroscopic study of localized surface plasmon resonance switching of single Au nanoparticles induced by phase change of GeSbTe**
Yuya Kihara, Takashi Hira, Kenta Kuwamura, and Toshiharu Saiki
Department of Electronics and Electrical Engineering, Keio University

P09. **Solving spin glass problems using coupled plasmon particles with phase change material**
Shohei Kanazawa, Y. hirukawa, and Toshiharu Saiki
Graduate School of Science and Technology, Keio University