

# e-Therm 2010 Program

\* Only the first author's affiliation is shown.

## 15<sup>th</sup> December (Wednesday)

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**10:00-10:40 Opening Talk (2F Conference Room)**

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*Tetsuya Baba / National Metrology Institute of Japan, AIST, Japan  
General Chair of e-Therm2010*

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**10:40-12:00 Invited Talks 1 (2F Conference Room)**

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10:40 Plenary 1

**Measurement Methods and Applications for Thermophysical Properties at  
Micro/nanoscales**

*Xing Zhang, Jianli Wang / Tsinghua University, China*

11:20 Plenary 2

**Thermal Conductivity of Nano-porous Materials**

*Koji Miyazaki, Saburo Tanaka, Daisuke Nagai / Kyushu Institute of Technology, Japan*

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**13:00-15:00 Session 1 (2F Conference Room)**

**Thermophysical Properties of Material for Conservation of Energy 1**

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13:00 Keynote 1

**Silicon Nitride Ceramics with High Thermal Conductivity and Good Mechanical Properties**

*You Zhou, Hideki Hyuga, Yu-ichi Yoshizawa, Kiyoshi Hirao / Advanced Manufacturing  
Research Institute, AIST, Japan*

13:40 **Characterization of Thermoelectric Materials Using Advanced Thermal Analysis Techniques**

*Juergen Blumm, Alexander Schindler, Andre Lindemann / NETZSCH-Gerätebau GmbH, Germany*

14:00 **Application of Thermal Probe method to 3D Mapping of Seebeck coefficient**

*Atsushi Yamamoto / Energy Technology Research Institute, AIST, Japan*

14:20 **Development of New KRISS Apparatus for Evaluation of Figure of Merit of Thermoelectric Devices**

*Su Yong Kwon, Yong-Gyoo Kim, Sang Hyun Lee / Korea Research Institute of Standards and Science, Korea*

14:40 **Thermophysical Properties Measurement of Dye-sensitized Solar Cell with Different Coloring Matter and Density of Electrolyte Solution**

*Eiji Nemoto, Yasunori Ouchi, and Takahiro Ishizaki / Ibaraki National College of Technology, Japan*

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**13:00-15:00 Session 2 (1F Conference Room)**

**Thermal Simulation and Thermal Design**

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13:00 Keynote 2

**Thermal Simulations for Development of Rewritable Blu-ray Disc**

*Kenji Narumi / Panasonic Corporation, Japan*

13:40 **Small Loop Heat Pipe with Plastic Wick for Electronics Cooling**

*Hosei Nagano, Masahito Nishigawara, Tarik Kaya, Roger R. Riehl, Hiroki Nagai / Nagoya University, Japan*

14:00 **First-Principles Study of Thermal Diffusion in Single Walled Carbon Nanotubes**

*Makoto Fushiki / Nanosystem Research Institute, AIST, Japan*

14:20 **MD Study of Coherent Phonon Formation at Localized Pulse Heating of the LJ nanoribbon**

*Tatiana Zolotoukhina, Bin Setu / Toyama University, Japan*

14:40 **Thickness Control of a Thin Film after Drying Through Thermal Management in Drying Process of a Polymer Solution Coated on a Flat Substrate : Application of the Dynamical Model of the Drying Process**

*Hiroyuki Kagami, Hiroshi Kubota / Nagoya College, Japan*

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**15:10-15:40 Poster Session (2F Conference Room)**  
**Shot gun presentations**

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**No.1 Photoacoustic Signal Sensing of Depletion Layer in Planar Metal-Semiconductor-Metal Structure**

*Masahiko Murakami, Nobuya Takabatake, Kazunori Sato, Toshihiko Arai /  
Kanagawa Institute of Technology, Japan*

**No.2 Development of a Procedure to Obtain Inherent Thermal Diffusivity as the Standard Using Laser Flash Method**

*Megumi Akoshima, Masami Neda, Haruka Abe, Tetsuya Baba / National Metrology Institute of Japan, AIST, Japan*

**No.3 Effect of Nb Concentration on Thermal Diffusivity of Nb-doped TiO<sub>2</sub> Thin Film**

*Chihiro Tasaki, Nobuto Oka, Takashi Yagi, Naoyuki Taketoshi, Tetsuya Baba, Toshihisa Kamiyama, Yuzo Shigesato / Aoyama Gakuin University, Japan*

**No.4 Thermal Diffusivity and Thermal Boundary Resistance of Alq<sub>3</sub>,  $\alpha$ -NPD and Al Electrode Films**

*Kazuki Kato, Norihiro Ito, Takashi Yagi, Naoyuki Taketoshi, Tetsuya Baba, Nobuto Oka, Yuzo Shigesato / Aoyama Gakuin University, Japan*

**No.5 Ceramics/Polymer Composite Spheres Readily Formed into Needed Shapes**

*Yuji Hotta, Kimiyasu Sato / National Institute of Advanced Industrial Science and Technology, Japan*

**No.6 Effect of Encapsulation of Thermoelectric Power Generator**

*Kazuo Nagase, Hiroyuki Takazawa, Hirotaka Nishiate, Atsushi Yamamoto / Energy Technology Research Institute, AIST, Japan*

**No.7 Metal Coating on High Thermal Conductive Graphite**

*Yoshiro Nogami, Katsuhiko Chikuba, Shinya Yoshioka, Kiyoharu Nakagawa and Hirokazu Oda / Thermo Graphitics Co.,Ltd., Japan*

**No.8 Development of New Reference Material for Specific Heat Capacity**

*Haruka Abe, Hideyuki Kato, Tetsuya Baba / National Metrology Institute of Japan, AIST, Japan*

**No.9 Simultaneous Measurement of Temperature Dependent Thermophysical Properties**

*Balázs Czél, Gyula Gróf / Budapest University of Technology and Economics (BME), Hungary*

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**15:40-16:20 Poster Session (1F Foyer)**

**Core time**

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**16:20-18:00 Session 3 (2F Conference Room)**

**Thermophysical Properties of Material for Conservation of Energy 2**

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16:20 Keynote 3

**Specific Heat Capacity of Gallium Nitrides for Light-Emitting Diodes Application**

*Sanghyun Lee, Hye Jeong Ham, Su Yong Kwon, Chang Min Suh / Korea Research Institute of Standards and Science, Korea*

17:00 **Estimation Method for Attenuation Coefficient of Radiation in Thermal Insulation**

*Takahiro Ohmura, Masatake Onodera, Makio Naito / NICHIAS Corporation, Japan*

17:20 **Necessity and Development Situation of High Performance Thermal Insulation Materials in Japan, and Examination of Method of Measuring its Thermal Conductivity**

*Tetsuo Fujimoto, Taichi Tasaka, Shinji Hagihara / Japan Testing Center for Construction Materials, Central Test Laboratory, Japan*

17:40 **Thermal Diffusivity Measurement for Thermal Spray Coating Attached on Substrate Using Laser Flash Method**

*Megumi Akoshima, Takashi Tanaka, Satoshi Endo, Tetsuya Baba, Yoshio Harada, Yoshitaka Kojima, Akira Kawasaki, Fumio Ono / National Metrology Institute of Japan, AIST, Japan*

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**16:20-18:00 Session 4 (1F Conference Room)**

**Database**

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16:20 **Development of an Inorganic Materials Database System AtomWork**

*Yibin Xu, Masayoshi Yamazaki, Pierre Villars / National Institute for Materials Science, Japan*

16:55 **Development of a network database system for thermophysical property data -approach for providing traceable thermophysical property data of thin films-**

*Yuichiro Yamashita, Tetsuya Baba / National Metrology Institute of Japan, AIST, Japan*

**17:30 Materials Data Representation for Data Exchange and Electronic Reporting**

*Toshihiro Ashino / Toyo University, Japan*

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**18:00-20:00 Banquet (AIST 2F Restaurant)**

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# 16<sup>th</sup> December (Thursday)

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## 9:00-10:20 Invited Talks 2 (2F Conference Room)

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9:00 Plenary 3

### **Nanostructures and the Control of Thermal Conductivity**

*David G. Cahill / University of Illinois at Urbana-Champaign, USA*

9:40 Plenary 4

### **Characteristics of Si Solar Cells with the Addition of Frits and Additives to Al Pastes**

*Hyungsun Kim, Dongsun Kim, Seongjin Hwang, S. Y. Park, J. W. Lee / Inha University, Korea*

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## 10:20-10:40 Break

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## 10:40-12:00 Invited Talk 3 (2F Conference Room)

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10:40 Plenary 5

### **Representation of the Viscosity of Molten Alloy as a Function of the Composition and Temperature**

*Yuzuru Sato / Tohoku University, Japan*

11:20 Plenary 6

### **Thermophysical Properties of Multicomponent Melts measured by Containerless Techniques**

*Juergen Brillo, Ivan Egly / German Aerospace Center, Institute of Materials Physics in Space, Germany*

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## 13:00-15:00 Session 5 (2F Conference Room)

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### **Thermophysical Properties of Thin Films**

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13:00 Keynote 4

### **High-efficiency Thermal Control for Miniature Thin Film Growth Systems**

*Mikk Lippmaa, Ryota Takahashi / University of Tokyo, Japan*

13:40 **Influence of Thermal Conductivity of Diamond to its Power Schottky Diode**  
*Shinichi Shikata, Hitoshi Umezawa / Diamond Research Laboratory, AIST, Japan*

14:00 **Pyroelectric Approach for Photo-assisted Domain Switching in Ferroelectric PbTiO<sub>3</sub>/Nb:SrTiO<sub>3</sub> Thin Films**  
*Ryota Takahashi, Mikk Lippmaa, Yuji Matsumoto, Øystein Dahl, Jostein Grepstad, Thomas Tybell / University of Tokyo, Japan*

14:20 **Nano-engineered Phase Change Data Storage Materials and their Thermal Properties**  
*Robert E. Simpson, Paul Fons, Alex V. Kolobov, Milos Krbal, Xiamon Wang, Takashi Yagi, Junji Tominaga / Nanodevice Innovation Research Center, AIST, Japan*

14:40 **Thermophysical and Electrical Properties of Various Transparent Conductive Oxide Films**  
*Nobuto Oka, Takashi Yagi, Naoyuki Taketoshi, Tetsuya Baba, Yuzo Shigesato / Aoyama Gakuin University, Japan*

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**13:00-15:00 Organized Session 1 (1F Conference Room)**

**Thermophysical Properties of High Temperature Melts 1**

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13:00 Keynote 5

**High-Temperature Thermophysical Property Measurement System using Electromagnetic Levitator in dc Magnetic Field**

*Hiroyuki Fukuyama, Hidekazu Kobatake, Shumpei Ozawa, Taketoshi Hibiya, Akitoshi Mizuno, Masahito Watanabe, Ken-ichi Sugioka, Takao Tsukada, Satoshi Endo, Shin-ichi. Fujimaki and Yoichi Takasaki / Tohoku University, Japan*

13:40 **Density and Structure of Si-based Alloys Liquids**

*Mitsuhiro Tanno, Masahito Watanabe, Hiroya Kawauchi, Akitoshi Mizuno, Masayoshi Adachi, Hidekazu Kobatake and Hiroyuki Fukuyama / Gakushuin University, Japan*

14:00 **Surface Tension of Molten Iron Measured under Reducing Gas Atmosphere**

*Shumpei Ozawa, Suguru Takahashi, Shoji Suzuki, Taketoshi Hibiya, Hiroyuki Fukuyama / Tokyo Metropolitan University, Japan*

14:20 **Noncontact Measurement of Normal Spectral Emissivity, Heat Capacity and Thermal Conductivity of Liquid Ni in a dc Magnetic Field**

*Hidekazu Kobatake, Hossein Khosroabadi, Hiroyuki Fukuyama / Tohoku University, Japan*

**14:40 Relationship between Applied-Static Magnetic Field Strength and Thermal Conductivities of Molten Materials Measured Using an EML Technique**

*Yuya Baba, Ken-ichi Sugioka, Takao Tsukada, Kazutoshi Sugie, Hidekazu Kobatake, Hiroyuki Fukuyama / Tohoku University, Japan*

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**15:00-15:20 Break (1F Foyer)**

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**15:20-17:00 Session 6 (2F Conference Room)**

**New Measurement Methods**

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**15:20 Picosecond Thermorefectance System using Synchronized Er-doped Fiber Lasers for Measuring Thermal Diffusivity of Thin Film**

*Takashi Yagi, Naoyuki Taketoshi, Tetsuya Baba / National Metrology Institute of Japan, AIST, Japan*

**15:40 Thermal Conductivity Evaluation in SiO<sub>2</sub> and SiN<sub>x</sub> Thin Film by 2 $\omega$  and 3 $\omega$  method**

*Satoaki Ikeuchi, Kenji Shimada, Saburo Tanaka, Koji Miyazaki / Ulvac-Riko Inc, Japan*

**16:00 A Novel Technique for Temperature Measurement of Local Heat Generation in Electronic Devices with Thermal Imagers**

*Yoshiro Yamada, Juntaro Ishii / National Metrology Institute of Japan, AIST, Japan*

**16:20 Development of *photoelectron thermometry* based on measurements of the Femi-Dirac Distribution of electrons**

*Ikuo Kinoshita, Juntaro Ishii / Yokohama City University, Japan*

**16:40 Fast Measurements of Specific Heat Capacity, Electrical Resistivity, and Thermal Expansion of NbH<sub>0.82</sub> alloy at High Temperatures**

*Hiromichi Watanabe, Shigenori Okada, Makoto Kano / National Metrology Institute of Japan, AIST, Japan*

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**15:20-17:20 Organized Session 2 (1F Conference Room)**

**Thermophysical Properties of High Temperature Melts 2**

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15:20 Keynote 6

**Thermophysical Property Measurements of High Temperature Melts using an Electrostatic Levitation method**

*Takehiko Ishikawa, Junpei T. Okada, Paul-François Paradis, Yuki Wakanabe / Japan Aerospace Exploration Agency, Japan*

16:00 **Electric Resistivity of Sb-Te and Sb<sub>2</sub>Te<sub>3</sub>-GeTe Systems in Liquid State**

*Rie Endo, Simpei Maeda, Masashi Kuwahara, Yoshinao Kobayashi, Masahiro Susa / Tokyo Institute of Technology, Japan*

16:20 **Effect of Shear Stress on Crystallization Behavior of CaO-SiO<sub>2</sub>-R<sub>2</sub>O (R=Li, Na, or K) melts**

*Noritaka Saito, Kakeru Kusada, Sohei Sukenaga, and Kunihiko Nakashima / Kyushu University, Japan*

16:40 **Surface Tension Measurement of Liquid Iron by Oscillation Droplet Method under Controlled Oxygen and Carbon Activities using Gas-Liquid Equilibrium Method**

*Keisuke Morohoshi, Masahito Uchikoshi, Minoru Isshiki, Hiroyuki Fukuyama / Tohoku University, Japan*

17:00 **Thermophysical Property Measurement for High Purity Liquid Iron Using Noncontact Laser Modulation Calorimetry**

*Kazutoshi Sugie, Hidekazu Kobatake, Hiroyuki Fukuyama, Masahito Uchikoshi, Minoru Isshiki, Yuya Baba, Ken-ichi Sugioka, Takao Tsukada / Tohoku University, Japan*

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**17:20- Closing Talk (2F Conference Room)**

*Tetsuya Baba / National Metrology Institute of Japan, AIST, Japan*  
*General chair of e-Therm2010*

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17<sup>th</sup> December (Friday)

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**10:00-12:00 Laboratory Tour:**

Thermophysical Properties Section in NMIJ, AIST

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