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The 10th Asian Thermophysical Properties Conference

ATPC 2013

September 29 - October 3, 2013
Ramada Plaza Jeju Hotel, Jeju, Korea

Program Book

Organized by

- The Korean Society of Thermophysical Properties

Supported by

- Korea Tourism Organization

Sponsored by

- NETZSCH
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Program at a Glance

Sep.29 (Sun)	TIME	Tamna Hall (8F)								
	18:00 ~ 20:00	Welcome Reception								
Sep.30 (Mon)	TIME	Room A (Ramada Ballroom 1)	Room B (Ramada Ballroom 2)	Room C (Ramada Ballroom 3)	Room D (Ramada Ballroom 4)	Room E (Mara)	Room F (Biyang)	Lobby		
	09:40 ~ 10:00	Inauguration (Ramada Ballroom 1, 2F)							Exhibition	
		Plenary Session (Ramada Ballroom 1, 2F)								
	10:00 ~ 10:40	Plenary 1	"Thermodynamics and Never-Ending Search for the Truth: Properties, Uncertainties, and Models" <i>Michael Frenkel (NIST, USA)</i>							
	10:00 ~ 12:00	10:40~11:20	Plenary 2	"Thermophysical Properties of Liquid Metals at High Temperatures-Experimental Techniques" <i>Gernot Pottlacher (Technical Univ. of Graz, Austria)</i>						
		11:20~12:00	Plenary 3	"Dynamic Calorimetric Methods: Commercialization and Application to the Study of Solids" <i>Yoon Hee Jeong (POSTECH, Korea)</i>						
	12:00 ~ 13:30	Lunch								
13:30 ~ 15:00	Poster Sesion 1 (Lobby, 2F)									
15:00 ~ 16:30	[MoA1] Interfacial Properties	[MoB1] Simulation and Modeling I	[MoC1] Metallurgical Processing I	[MoD1] Thermal Conductivity	[MoE1] Nuclear Materials	[MoF1] Thermoelectric Properties and Materials I				
16:30 ~ 17:00	Coffee Break									
17:00 ~ 18:30	[MoA2] Thermodynamic Properties I	[MoB2] Simulation and Modeling II	[MoC2] Metallurgical Processing II	[MoD2] Viscosity	[MoE2] Nuclear Materials and Industrial Applications	[MoF2] Thermoelectric Properties and Materials II				
Oct.1 (Tue)	09:00 ~ 10:30	[TuA1] Thermodynamic Properties II		[TuC1] Metallurgical Processing III	[TuD1] Transport Properties	[TuE1] Refrigerants and Thermal System Applications I	[TuF1] Optical and Thermal Radiative Properties I	Exhibition		
	10:30 ~ 11:00	Coffee Break								
	11:00 ~ 12:30	[TuA2] Thermodynamic Properties III	[TuB2] Micro/Nanoscale Thermal Transport I	[TuC2] Metallurgical Processing IV	[TuD2] Mass and Momentum Transport	[TuE2] Energy & Environment	[TuF2] Optical and Thermal Radiative Properties II			
	12:30 ~ 14:00	Lunch								
	14:00 ~ 18:00	Excursion								
Oct.2 (Wed)	09:00 ~ 10:30	[WeA1] Thermodynamic Properties IV	[WeB1] Micro/Nanoscale Thermal Transport II	[WeC1] Other Topics	[WeD1] Refrigerants and Thermal System Applications II	[WeE1] Measuring Techniques and Sensors I	[WeF1] Fluid Properties	Exhibition		
	10:30 ~ 11:00	Coffee Break								
	11:00 ~ 12:30	[WeA2] Thermodynamic Properties V	[WeB2] Micro/Nanoscale Thermal Transport III	[WeC2] Database and Software I	[WeD2] New Materials and Processing I	[WeE2] Measuring Techniques and Sensors II				
	12:30 ~ 14:00	Lunch								
	14:00 ~ 15:30	Poster Session 2 (Lobby, 2F)								
	15:30 ~ 17:00	[WeA*3] Thermodynamic Properties VI	[WeB*3] Micro/Nanoscale Thermal Transport IV	[WeC*3] Database and Software II		[WeE3] Measuring Techniques and Sensors III	[WeF3] New Materials and Processing II			
	17:00 ~ 17:20	Coffee Break								
17:20 ~ 18:50	[WeA*4] Thermodynamic Properties VII	[WeB*4] Micro/Nanoscale Thermal Transport V	[WeC*4] Metallurgical Processing V		[WeE4] Measuring Techniques and Sensors IV	[WeF4] High Temperature and Thermal Protection Properties				
19:00 ~ 21:00	Banquet (Ramada Ballroom 1, 2F)									
Oct.3 (Thu)	09:00 ~ 10:30	[ThA*1] Thermodynamic Properties VIII	[ThB*1] Micro/Nanoscale Thermal Transport VI	[ThC*1] Metallurgical Processing VI		[ThE1] Standardization	[ThF1] Thermal Protection and Thermal Barrier Coatings			
	10:30 ~ 11:00	Awards & Closing Ceremony (Halla, 8F)								
A01	Thermodynamic Properties	A07	Measuring Techniques and Sensors	B02	Properties and Transport Processes ~					
A02	Transport Properties	A08	New Materials and Processing	B03	Micro/Nanoscale Thermal Transport ~					
A03	Optical and Thermal Radiative Properties	A09	Energy and Environment	B04	Fluid Properties					
A04	Thermoelectric Properties and Materials	A10	Standardization	B05	Database and Software					
A05	Interfacial Properties	A11	Other Topics	B06	Metallurgical Processing					
A06	Simulation and Modeling	B01	Nuclear Materials	B07	Thermal Protection and Thermal Barrier ~					
				B08	Industrial Technologies					



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I. Welcome Message

It is my great pleasure to welcome you to the 10th Asian Thermophysical Properties Conference (ATPC 2013) which is being held from September 29 ~ October 3, 2013 in Jeju, Korea.

Thermophysical Properties Conference is one of the foremost international conferences for the engineers and researchers working in the fields of thermophysical properties. The conference has been providing an outstanding international forum to present and discuss progresses in research, development and application of these areas over the years. For ATPC 2013, we are making every effort to prepare the most exciting conference and meet your expectations.

Jeju is one of the most fascinating and safest meeting destinations for its excellent facilities and a wide range of quality accommodations and other services. Its natural beauty combined with a unique cultural and historical heritage makes Jeju more attractive place to visit. I invite all of you to enjoy and experience many cultural and tour attractions as well as the warm hospitality of citizens that await you in this beautiful season.

Being the largest conference of its kind in Asia as well as a premium international event both in scale and quality, we are making the utmost preparations to stage a successful and productive gathering with great participation. The Organizing Committee and Korea welcome you to take advantage of this forthcoming conference and cherish unforgettable memories.

I do thank you for your participation and contributions in advance and look forward to seeing you in Jeju, Korea in 2013.

Yours truly,



Hyungsun Kim

General Chair of ATPC 2013



II. Organization

General Chair

Hyungsun Kim (Inha Univ., Korea)

Secretariat Committee

Chair Su Yong Kwon (KRISS, Korea)

Organizing Committee

Chair Dae Yong Jeong (Inha Univ., Korea)

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Jin Sang Kim (KIST, Korea)
Jungho Ryu (KIMS, Korea)

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Seok Pil Jang (Korea Aerospace Univ., Korea)
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Ho-Soon Yang (Pusan Nat'l Univ., Korea)

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Co-chairs Steven Min (NETZSCH, Korea)
In Chul Shim (ChemiLab Co. Ltd., Korea)

Awards Committee

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Co-chairs Sok Won Kim (Ulsan Univ. , Korea)
Woo Chul Kim (Yonsei Univ. , Korea)

International Scientific Committee

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Yuji Nagasaka (Keio Univ., Japan)

Xing Zhang (Tsinghua Univ., China)

Xinxin Zhang (Univ. of Science and Tech. Beijing, China)

Dawei Tang (Tsinghua Univ. & Chinese Academy of Sciences, China)

Yuning Duan (Nat'l Inst. of Metrology, China)

Hyungsun Kim (Inha Univ., Korea)

Sanghyun Lee (KRISS, Korea)

Ganesh Ch Wary (Cotton College, India)

Dip Saikia (Digboi College, India)

Akira Nagashima (Yokohama Nat'l Univ., Japan)



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Properties Conference

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III. Plenary Speakers



Michael Frenkel (NIST, USA)

Presentation Title: Thermodynamics and Never-Ending Search for the Truth: Properties, Uncertainties, and Models

Biography

Dr. Michael Frenkel is the director of the TRC and co-developer of the innovative software ThermoData Engine (TDE). He is the 2014 recipient of the Rossini Lectureship Award from the International Association of Chemical Thermodynamics (IACT).

Abstract

Most of the reliable and currently-used prediction methods for thermophysical and thermochemical properties (with the exception of *ab initio*) have been developed on the basis of experimental data reported in the open literature. It is, therefore, well understood that discrepancies and errors in the experimental data set used can cause significant problems in the development of robust prediction models for thermodynamic properties (“garbage in — garbage out” computational problem). However, enormous growth in the amount of experimental information reported in the last 20 years in the public domain for thermodynamic properties, while obviously being welcomed as part of the overall scientific discovery process, represents new challenges for property modeling.

Indeed, according to statistics accumulated at the Thermodynamics Research Center (TRC) of the U. S. National Institute of Standards and Technology (NIST), the total number of the experimental data points for thermophysical and thermochemical properties published by five major journals in the field is currently growing by more than a factor of 2 every 10 years. In many instances the traditional peer-review process fails to adequately address these challenges, as it is physically impossible to independently assess the high volume of presented experimental information within the limited time available for a review. There are numerous examples of the truly devastating impact of erroneous experimental data set selection on the development



of prediction models.

Another principal problem commonly associated with reported experimental data is either absence or inconsistent representation of uncertainties that are used in development of advanced prediction models.

The systems and software tools designed for global validation of experimental data in the field of thermodynamics on the basis of Global Information System in Thermodynamics developed at NIST TRC, will be discussed. A variety of experimental data-driven technologies for thermophysical property prediction including those based on QSPR, UNIFAC, and Monte Carlo simulation method will be illustrated. QSPR-based and UNIFAC-based prediction methods developed at NIST TRC will be discussed with the emphasis on the importance of the use of the combined expanded uncertainties of the experimental data selected and performance of the phenomenological data quality tests to obtain high fidelity predictive models.



Gernot Pottlacher (Technical Univ. of Graz, Austria)

Presentation Title: Thermophysical Properties of Liquid Metals at High Temperatures -Experimental Techniques

Biography

Prof. Gernot Pottlacher is a professor at the Institute for Experimental Physics at TUG. His main field of activity are investigations of thermophysical properties of liquid metals and alloys with various techniques such as subsecond pulse heating, DSC (Differential Scanning Calorimetry), and four point probes. His physical hobby is public experimental demonstrations-shows. Up to now he published more than 100 scientific papers and contributed about 180 articles to scientific conferences.

Abstract

High temperature experimentation with solid and especially liquid specimens faces numerous difficulties. Traditional static steady state techniques for the measurement of thermophysical properties are generally limited to temperatures of about 2300 K. This limitation is a result of chemical interaction of the specimens with the containers, the loss of mechanical strength, problems with heat transfer, evaporation and electrical insulation while the sample and its environment are kept for times up to hours at high temperatures.

Containerless investigation methods have been developed to avoid these difficulties and to permit the extension of the measurements to higher temperatures. The methods used by our workgroup are on the one hand an electromagnetic levitation technique and on the other hand ohmic pulse heating, both can be called containerless techniques.

Pulse heating delivers thermophysical properties of electrically conducting materials far into the liquid phase. The measurements allow the calculation of specific heat capacity and the temperature dependencies of electrical resistivity, enthalpy and density of the samples in the solid and liquid phase. Further measurements of normal spectral emissivity at 684.5 nm are performed to increase the accuracy of the pyrometric



temperature measurements. Thermal conductivity and thermal diffusivity as a function of temperature are estimated from resistivity data using the Wiedemann-Franz-law.

Electromagnetic levitation, as the second experimental approach used, delivers data for surface tension (this quantity is not available by means of pulse heating technique) and for density of liquid metals under investigation as a function of temperature.

Properties of matter at high temperatures are useful for high-temperature technologies such as aerospace, nuclear energy and the establishment of temperature reference points, including applications which are subjected to high temperature - high pressure conditions, as well as input data for modeling, which got very popular recently in steel working industry to simulate casting and welding processes and in jewellery industry to reduce reject due to defects.

Work partially funded by the Austrian Science Fund (FWF) Project P 23838-N20.



Yoon Hee Jeong (POSTECH, Korea)

Presentation Title: Dynamic Calorimetric Methods: Commercialization and Application to the Study of Solids

Biography

- Career

- | | |
|---------------------|---|
| 2010. 1 | Chair of the Physics Department and Dean of the Natural Sciences, POSTECH |
| 2009. 3 - 2009. 12 | Director of the Mathematical and Physical Sciences Division of National Research Foundation of Korea |
| 2000. 7 - 2009. 2 | Director of electron Spin Science Center, POSTECH |
| 1988. 6 - | Professor at POSTECH, Korea |
| 1987. 6 | Ph. D. in physics, Univ of Chicago, USA |
| 2003. 8 - 2004. 8 | Visiting professor, Michigan State University, USA |
| 2000. 7 - 2000. 8 | Consultant, National Metrology Institute, National Institute of Advanced Industrial Science and Technology, Japan |
| 1994. 11 - 1994. 12 | Visiting scientist, Tohoku University, Japan |
| 1991. 9 - 1992. 8 | Visiting professor, Harvard University, USA |
| 1986. 10 - 1988. 6 | Research associate, MIT, USA |

- Research Materials: quantum functional materials, electrical steels

Measurement methods: thermal analysis, calorimetry, scattering and absorption using synchrotron radiation, magnetic domain observation

- Most recent Awards

“Measurement Science Award” by KRISS, 2011.

“Netzsch KSTP Award” by Korean Society of Thermophysical Properties, 2011.



Abstract

Various calorimeters utilizing the Peltier and Seebeck effects of metallic junctions are developed [1]. The Peltier tip calorimeter, for example, employs a Peltier tip which is a single thermocouple junction functioning as a heater and sensor simultaneously. The Peltier tip calorimeter can measure thermophysical properties of not only solids but also of fluids.

When a Peltier tip is used to measure gas pressures, it is termed the Peltier vacuum gauge (PVG); the PVG measures gas pressure by utilizing both Joule heating along the wire and the Peltier effect at the junction. The complementary nature of the Peltier effect and Joule heating allows the PVG to possess an excellent sensitivity over a wide range of pressure from 10^{-4} Torr to atmospheric pressure. Miniaturization of vacuum gauges is achieved via MEMS technology and the MEMS calorimetric sensors offer higher sensitivity, faster response, and better stability. It is noted that a natural heat convection pattern from heated resistive wires located in a cell filled with gases could be used as a marker of the reference frame and thus a temperature sensor could detect acceleration. Miniaturization of the gas convection acceleration sensor via MEMS technology was attempted to manufacture commercial products.

Dynamic calorimeters, Peltier one or otherwise, may also be applied to condensed systems to study relaxation phenomena. Consider water. If one measures the dielectric constant as a function of frequency, it takes a large value 80 at low frequencies and a low value 1.7 at optical frequencies. A transition from the high to low value occurs at 10 GHz, and this frequency marks a characteristic time scale of the system. This behavior observed in water is a typical example of electrical relaxation, and measurements of the relaxation provide an important probe to the dynamics of the system. Relaxation phenomena are ubiquitous in matter as observed in many liquids and glasses, and even in crystals. Here we wish to discuss about calorimetric investigations of the relaxation phenomena in solids and also a possibility of magnetic control of electrical relaxations.

IV. Keynote / Invited Papers

Keynote Papers

- MoA1-1** **Wetting Kinetics and Interfacial Transport Phenomena of Complex Fluids**
Yuanyuan Duan (Tsinghua Univ., China)
- MoB1-1** **Large-scale Molecular Dynamics Calculation Studies from Micelles to Viruses**
Susumu Okazaki (Nagoya Univ., Japan)
- MoC1-1** **Development of High-temperature Thermophysical Property Measurement System using Electromagnetic Levitation Technique in dc Magnetic Field**
Hiroyuki Fukuyama (Tohoku Univ., Japan)
- MoD1-1** **Nano-micro Thermophysical Properties Sensing Engineering and its Applications**
Yuji Nagasaka (Keio Univ., Japan)
- MoE1-1** **Uranium Dioxide-thermodynamics and Kinetics as a Nuclear Fuel**
Kwangeheon Park (Kyung Hee Univ., Korea)
- TuA1-1** **Searching Zeros in Superconducting Gap by Low Temperature Thermal Conductivity**
Yuji Matsuda (Kyoto Univ., Japan)
- TuD1-1** **Recent Advances in Calculating Transport Properties of a Dilute Gas**
Robert Hellmann (Universität Rostock, Germany) and Velisa Vesovic (Imperial College London, UK)
- TuE1-1** **New Sorption/Adsorption Materials and Desiccant Air Conditioning Systems**
Akihiko Horibe (Okayama Univ., Japan)



- TuF1-1 Technique and System for Non-Invasive Measurement of Radiative Properties of Human Skin**
Jun Yamada (Shibaura Inst. of Tech., Japan)
- TuB2-1 Thermal Properties and Applications of Carbon Nanomaterials**
Huaqing Xie, Wei Yu, Lifei Chen, and Jifen Wang (Shanghai Second Polytechnic Univ., China)
- TuE2-1 The Characteristics of GDL (Gas Diffusion Layer) and its Influence on the Performance of PEM Fuel Cell**
Min Soo Kim (Seoul Nat'l Univ., Korea)
- WeE1-1 Calorimetry on Time Scales from Microseconds to Days**
Christoph Schick (Univ. of Rostock, Germany)
- WeB2-1 Anisotropic Thermal Transport and Metrological Application of Multiwalled Carbon Nanotube**
Koji Takahashi (Kyushu Univ., Japan)
- WeC2-1 Online Data Resources in Chemical Engineering Education: Impact of the Uncertainty Concept**
Sun Hyung Kim, Jeong Won Kang (Korea Univ.,), Kenneth Kroenlein, Joseph Magee, Vladimir Diky, Chris Muzny, Andrei Kazakov, Robert Chirico, and Michael Frenkel (NIST, USA)
- WeD2-1 Polymer Nanocomposites of Tribotechnical Application**
Okhlopkova Aytalina (North-Eastern Federal Univ., Russia), Petrova Pavlina (Inst. for Problems of Oil and Gas, Russia), Sleptsova Sardana, and Struchkova Tatiana (North-Eastern Federal Univ., Russia)
- WeE2-1 Laser Flash Measurements on Thin Films using State-of-the-art Detector Systems**
Juergen Blumm, Andre Lindemann, and Martin Brunner (Netzsch-Geraetebau GmbH, Germany)
- WeB3-1 Progresses in Study on Thermophysical Properties of Nanostructured Materials**
Xing Zhang (Tsinghua Univ., China)

- WeF4-1** **Perspective on Materials in Extreme Environments: High Temperature Oxidation Behavior of Ultra-High Temperature Ceramics (UHTCs)**
Young-hoon Seong and Do Kyung Kim (KAIST, Korea)

Invited Papers

- MoF1-1** **Thermoelectric Application of Thermally Insulating and Electrically Conducting Ceramics: Oxygen Defect Engineered Thermoelectrics**
Soonil Lee (KICET, Korea), Jonathan A. Bock, Susan Trolier-mckinstry, and Clive A. Randall (The Pennsylvania State Univ., USA)
- MoA2-1** **Probing Anisotropic Superconducting Gap via Field-Angle Directional Specific Heat Measurements**
Tuson Park, J. Hong (Sungkyunkwan Univ., Korea), Y. Kwon (Daegu Gyeongbuk Inst. of Sci. & Tech., Korea), and J. Thompson (Los Alamos Nat'l Laboratory, USA)
- MoC2-1** **Interfacial Properties of Alloys and Oxides in "Capillary Metallurgy"**
Toshihiro Tanaka (Osaka Univ., Japan)
- TuC1-1** **The Importance of Metallurgical Slag Properties in High Temperature Process**
Muxing Guo (KU Leuven, Belgium)
- TuC1-2** **Viscosity and Structure of TiO₂-MnO-SiO₂-Al₂O₃-Based Fluxes for Ultra Low Hydrogen Welding**
Jong Bae Kim and Il Sohn (Yonsei Univ., Korea)
- TuD2-1** **Vibrating-wire Technique: Measuring Viscosity from 10 μ Pa s to 100,000 μ Pa s**
Marc Assael, Sofia Mylona (Aristotle Univ., Greece), and William Wakeham (Imperial College, UK)
- WeC1-1** **A Review on the Thermophysical Properties of Cellulose based Natural Fibers**
Dip Saikia (Digboi College, India)



- WeA2-1 Study of Thermophysical Properties of High Temperature Molten Metals using a Containerless Technique; Electrostatic Levitation**
Geun Woo Lee (KRISS, Korea), Sangho Jeon (UST, Korea), Hanbyeol Yoo, Minsik Kwon, and Dong-hee Kang (KRISS, Korea)
- WeF3-1 Fabrication of Highly Dense Pure SiC Ceramics via the HTPVT Method**
Bobo Liu, Bo Wang, Jian-feng Yang, and Hucheng Gao (Xi'an Jiaotong Univ., China)
- WeE4-1 The Study of the Behaviour of Materials under Fast Heating Rate**
Daniele Paganelli, Chiara Venturelli, Daniele Rebecchi (Expert System Solutions, Italy), and Luisa Barbieri (Università di Modena e Reggio Emilia, Italy)

V. Technical Program

Information on Technical Program

Information for Session Chairs

The session chair of each session is required to arrive at the session room at least 15 minutes before the session starts and to check the attendance of the session speakers listed in the presentation schedule. Please let the speakers upload their presentation files to the prepared laptop and test their files before the session.

Information for Oral Session

All presentations must be in English and regular presentation will be limited to a total of 20 minutes (15 minutes presentation and 5 minutes Q&A), 30 minutes for keynote and invited talks (20 minutes presentation and 10 minutes Q&A). Overruns will not be allowed as they interfere with the other presenters. Session chair may give instructions to finish within the allotted presentation time. Presenters are highly recommended to meet their session chair in the session room in advance and take a seat in the 'Reserved Seat' area for speakers in the first row at least 10 minutes before the session starts.

Each session rooms contain the following:

- Laptop running MS-Office PowerPoint 2010 operated in Windows XP, equipped with compact disk reader (CD & DVD) and USB drive.

If you would like to use your own MAC, it is mandatory to bring personal MAC gender.

- A smart pointer and a mouse
- Beam projector (RGB Port) and Screen



Information for Poster Session

Poster session will be held at 2F Convention Lobby on September 30, 13:30~15:00 and October 2, 14:00~15:30. The board of size 0.9m (width) by 1.5m (height) will be provided for the display of each paper. Each paper's code will be shown on the board and pins and adhesive tapes will be provided in the poster presentation area. All presenters are required to preside at their poster panels during the session for discussion with participants.

Place: Lobby	Poster Session 1	Poster Session 2
Date	Sep. 30 (Mon), 2013	Oct. 02 (Wed), 2013
Put-up Time	08:30~13:30	08:30~14:00
Presentation Time	13:30~15:00	14:00~15:30
Take-down Time	15:00~18:00	15:30~18:00

How to Understand the Session Identification Number

Day		Room		Session Order	
Mo	Monday	A	Ramada Ballroom 1 (2F)	1	1st Session
Tu	Tuesday	B	Ramada Ballroom 2 (2F)	2	2nd Session
We	Wednesday	C	Ramada Ballroom 3 (2F)	3	3rd Session
Th	Thursday	D	Ramada Ballroom 4 (2F)	4	4th Session
		E	Mara (2F)		
		F	Biyang (2F)		
		A*	Halla (8F)		
		B*	Ara (8F)		
		C*	Ora (8F)		

*Example) TuA1: the First Session of Room A (Ramada Ballroom 1) on Tuesday

Technical Session

Technical Program

September 30, 2013 (Monday)

Sep. 30 (Mon) 13:30~15:00

2F Lobby

Poster Session 1

P1-1 Prediction of Vapor Liquid Equilibrium and Azeotropies for Refrigerant Ternary Mixtures

Peng Hu, Long-xiang Chen, and Ze-shao Chen (Univ. of Sci. and Tech. of China, China)

P1-2 Slow Dynamics of Glassy Pharmaceutical Material Studied by Modulated-Temperature DSC

Tomohiko Shibata, Haruki Takayama, Tae Hyun Kim, and Seiji Kojima (Univ. of Tsukuba, Japan)

P1-3 Complex Heat Capacity and Fragility of Glass Transitions in Glucose Aqueous Solutions

Haruki Takayama, Ayane Tominaga, Tomohiko Shibata, and Seiji Kojima (Univ. of Tsukuba, Japan)

P1-4 Crystallization Behavior of ZrO₂-10SiO₂ Precursor Powders

Cheng-li Wang, Weng-sing Hwang (Nat'l Cheng Kung Univ., Taiwan), Huey-jiuan Lin (Nat'l United Univ., Taiwan), and Moo-chin Wang (Kaohsiung Medical Univ., Taiwan)

P1-5 Measurements of Specific Heat Capacity and Density of Agar and Gelatin

Junichi Fujino and Tomohiro Honda (Fukuoka Univ., Japan)

P1-6 Synthesis and Properties of Silico-phosphate Hybrid Materials Induced by Solvent-free Reaction for Low Melting Glass

Kyungseok Han, Donggun Goo, Wongyu Choi, Jonghwan Kim, Il-goo Kim, Youngseok Kim, and Bongki Ryu (Pusan Nat'l Univ., Korea)

P1-7 Adiabatic Exponent for Refrigerants

Xufei Zhou, Xiaoming Zhao (Xi'an Jiaotong Univ., China), and Zhikai Guo (Zhejiang Lantian Environmental Protection Hi-tech Co., China)



P1-8 Thermophysical Properties of Cu/Paraffin and Al/Paraffin Nanocomposite Phase Change Materials

Yanquan Liu, Xiaoming Zhao, and Zhigang Liu (Xi'an Jiaotong Univ., China)

P1-9 Effect of Chemical Composition on the High Temperature Oxidation Behavior of Ti-Ni-Hf Shape Memory Alloys

Kyong Min Kim (Pusan Nat'l Univ., Korea), Jeoung Han Kim, Jong Taek Yeom (KIMS, Korea), and Seog Young Yoon (Pusan Nat'l Univ., Korea)

P1-10 Enhancement of Thermal Conductivity and Thermal Resistivity of Copper Alloy for LED Lead Frame

Hai-joong Lee, Sang-woo Kim, Hyo-soo Lee, and Hyuk-chon Kwon (Korea Inst. of Industrial Tech., Korea)

P1-11 Measurements of the Thermal Diffusivity of CNCs Solution using the Periodic Thermal Wave Method

Jaeran Lee, Manil Kang, Rockwon Kang, and Sok Won Kim (Univ. of Ulsan, Korea)

P1-12 Thermophysical Properties of Imidazolium-based Ionic Liquids and their Liquid-Liquid Phase Behavior with Water

Catarina M. S. S. Neves (Universidade de Aveiro, Portugal), Marisa A. A. Rocha, Luís M. N. B. F. Santos (Faculdade de Ciências da Universidade do Porto, Portugal), Mara G. Freire, and João A. P. Coutinho (Universidade de Aveiro, Portugal)

P1-13 Measurement and Prediction of Thermophysical Properties of Biodiesel Fuels

Samuel Freitas, Mariana B. Oliveira (Univ. of Aveiro, Portugal), Ávaro S. Lima (Universidade Tiradentes, Portugal), and João Coutinho (Univ. of Aveiro, Portugal)

P1-14 Phase Behavior of Carbon Dioxide in Water and in Water + NaCl Systems: Experimental and Modeling

Neusa P. F. Gonçalves, Luís M. C. Pereira, Pedro J. Carvalho, and João A.p. Coutinho (Univ. of Aveiro, Portugal)

P1-15 Phase Behavior of CO₂, CH₄, N₂O and N₂ in 1-buthyl-3-methylimidazolium dicyanamide: Experimental Measurements and soft-SAFT EoS Modelling

Luís M.c. Pereira, Mariana B. Oliveira, Kiki A. Kurnia (Univ. of Aveiro, Portugal), Ana M. A. Dias (FCTUC, Universidade de Coimbra, Portugal), Felix Llovel, Lourdes F. Vega (UAB, Spain), Pedro J. Carvalho, and João A.p. Coutinho (Univ. of Aveiro, Portug)

P1-16 Activity Coefficient Calculation of the High Temperature Fluoride Salts (LiF-NaF-BeF₂) System

Zhang Yang Kang, Mao Gang He, Ying Zhang, and Guang Xuan Lu (Xi'an Jiaotong Univ., China)

P1-17 Thermodynamic Analysis of Cubic Boron Nitride Growth with Li₃N as Catalyst under High Pressure and Temperature

Xiaofei Guo (Shandong Univ., China), Bin Xu, Xiaohong Fan, and Hongmei Yang (Shandong Jianzhu Univ., China)

P1-18 Thermal Properties of Porcine Kidney with Glycerol during Freezing

Yabo Wang (Tianjin Univ., China), Kai Zhu, Na An, Bin Liu, and Xinjun Su (Tianjin Univ. of Commerce, China)

P1-19 Theoretical Study on the Direct Transformation from Graphite to Diamond at Ultra High-pressure and High-temperature

Bin Xu, Bin Tian, Xiaohong Fan, Xiaofei Guo, and Hongmei Yang (Shandong Jianzhu Univ., China)

P1-20 *n*-, iso- Alkyl Isomerization Effect on the Thermophysical Properties of Ionic Liquids

Ana Rodrigues (Universidade do Porto, Portugal), Hugo Almeida, Mara Freire, João Coutinho (Universidade de Aveiro, Portugal), and Luis Santos (Universidade do Porto, Portugal)

P1-21 Thermophysical Properties of 1-Alkyl-3-methylimidazolium Hexafluorophosphate

Marisa Rocha, Filipe Ribeiro, Ana Lobo Ferreira (Universidade do Porto, Portugal), João Coutinho (Universidade de Aveiro, Portugal), and Luis Santos (Universidade do Porto, Portugal)

P1-22 Isomerization Effect on the Volatility of Persistent Organic Pollutants

Filipe Ribeiro, Ana Almeida, Manuel Monte, and Luis Santos (Universidade do Porto, Portugal)

P1-23 Impact of Cation Symmetry on the Properties of Imidazolium-based Ionic Liquids

Marisa Rocha (Universidade do Porto, Portugal), Catarina Neves, Mara Freire, João Coutinho (Universidade de Aveiro, Portugal), and Luis Santos (Universidade do Porto, Portugal)



- P1-24 Fast Scanning Calorimetry for Studying Solidification of Metals, Polymers and Nano-composites on a Millisecond Time Scale**
Evgeny Zhuravlev, Andreas Wurm, and Christoph Schick (Univ. of Rostock, Inst. of Physics, Germany)
- P1-25 Effect of Ni and Hf Additions on the Hot Workability of Ni-rich Ti-Ni-Hf Shape Memory Alloys**
Jong-taek Yeom, Chan Hee Park, Jeoung Han Kim, Jae Keun Hong, Seong-woong Kim, Yeong Min Jeon, and Yong Taek Hyun (KIMS, Korea)
- P1-26 The Study on Enhancement of Heat Diffusivity in Cu-Cr-Sn-Zn Lead Frame Alloy**
Sang-Woo Kim, Hai-joong Lee, Myung-sick Choi, and Hyo-soo Lee (Korea Inst. of Industrial Tech., Korea)
- P1-27 Evaluation of Residual Oil Saturation in Petroleum Reservoir based on Well-log Temperature Data**
Wen-long Cheng, Yong-hua Huang, and Chang-long Wang (Univ. of Sci. and Tech. of China, China)
- P1-28 Effects of Zn Addition on Thermal Conductivity and Mechanical Properties in Mg-Ca Alloy**
Jeong-won Choi, Yong-ho Kim, Jung-han Kim, Hyo-sang Yoo, and Hyeon-taek Son (Korea Inst. of Industrial Tech., Korea)
- P1-29 Analysis of Thermal Conductivity and Mechanical Properties in Mg-Sn-Ca Alloy**
Yong-ho Kim, Jung-han Kim, Hyo-sang Yoo, Jeong-won Choi, and Hyeon-taek Son (Korea Inst. of Industrial Tech., Korea)
- P1-30 Isothermal Vapor-liquid Equilibria for the Binary Systems of Propylene Oxide with Carbon Dioxide and 1,2-dichloroethane**
Hakmin Kim, Byeongheon Kim, and Hwayong Kim (Seoul Nat'l Univ., Korea)
- P1-31 Thermodynamic Study and Defect Analysis of $\text{La}_{n+1}\text{Ni}_n\text{O}_{3n+1+\delta}$ Infiltrated into YSZ for Intermediate-temperature SOFCs**
Seonyoung Yoo, Sihyuk Choi (UNIST, Korea), Jeeyoung Shin (Dong-Eui Univ., Korea), Meilin Liu (Georgia Inst. of Technology, Korea), and Guntae Kim (UNIST, Korea)

P1-32 Vapor-liquid Phase Equilibria Experiment of the Trifluoroiodomethane (R1311) + Propane (R290) System at Various Temperatures from (258.150 to 283.150) K

Xueqiang Dong, Maoqiong Gong, Hao Guo, Zhi Yang, Huiya Li, Jun Shen, and Jianfeng Wu (Chinese Academy of Sci., China)

P1-33 Interfacial Behaviour of Cordierite and Willemite Fillers on the Viscous Flow of Glass Composite

Jiyoung Seo, Sunil Kim, Sneha Samal, and Hyungsun Kim (Inha Univ., Korea)

P1-34 The Thermal Diffusivity of Graphite Sheet by Thermal Wave and Radial Flash Method

Sanghyun Lee, Suyong Kwon, and Joohyun Lee (KRISS, Korea)

P1-35 Heat Capacity Measurements of Pure Fatty Acid Methyl Esters and Biodiesels from 250 to 390 K

Jerome Pauly, and Jean-luc Daridon (Univ. of Pau, France)

P1-36 Thermal Conduction Behaviors of Chemically Cross-linked High-density Polyethylenes

Seunggun Yu (Korea Inst. of Sci. and Tech., Korea), Cheolmin Park (Yonsei Univ., Korea), Soon Man Hong, and Chong Min Koo (Korea Inst. of Sci. and Tech., Korea)

P1-37 Modeling of the Shear Viscosity of Sulfur Hexafluoride: Free-volume Model, Thermodynamic Scaling and Molecular Dynamics Representation

Christian Boned, Guillaume Galliero, Jean-patrick Bazile, and William Magrini (UPPA, France)

P1-38 A New Equation for the Thermal Conductivity Prediction of Liquids

Eleonora Ciarrocchi, Giovanni Di Nicola, Mariano Pierantozzi (Università Politecnica delle Marche, Italy), and Roman Stryjek (Polish Academy of Sci., Poland)

P1-39 Nondestructive Testing System with Heat Transfer Characteristics in Polymer Materials

Seung-hyun Choi, Sung-hyun Kim, and Jea-yeol Kim (Chosun Univ., Korea)

P1-40 Flaw Detectability Analysis of Wind Turbine Generator Parts and Materials Apply Infrared Thermography Diagnostic Tech.

Sung-hyun Kim, Jae-yeol Kim, Seung-hyun Choi, and Na-ra Jung (Chosun Univ., Korea)



- P1-41 Viscosity and Thermal Conductivity of 1-Alkyl-3-methylimidazolium Bis[(trifluoromethyl)sulfonyl]amide at Pressures up to 20 MPa**
Daisuke Tomida, Kun Qiao, and Chiaki Yokoyama (Tohoku Univ., Japan)
- P1-42 Thermal Conductivity of SiC/pitch-based Carbon Fiber Composite**
So Youn Mun, Tae-eon Kim (KICET, Korea), Heejoon Ahn (Hanyang Univ., Korea), Kwang Yeon Cho (KICET, Korea), Dong-jin Lee (Korea Inst. of Footwear & Leather Tech., Korea), and Hyung Mi Lim (KICET, Korea)
- P1-43 Effect of Additives on Thermal Conductivity of Liquid-phase Sintered SiC Ceramics**
Young-wook Kim, and Kwang-young Liim (The Univ. of Seoul, Korea)
- P1-44 Graphite coating on Internal Combustion Engine's Cylinder to Improve the Friction and Wear Resistance by LPCVD**
Khagendra Tripathi, Hyun Hwi Lee, and Soo Whon Lee (Sun Moon Univ., Korea)
- P1-45 Thermal Quenching Properties of $M_2Si_5N_8:Eu^{2+}$ (M = Ca, Sr, Ba) Red Phosphors Synthesized by a Simple Synthetic Route**
Jung-il Lee, Kyoung Won Cho, and Jeong Ho Ryu (Korea Nat'l Univ. of Transportation, Korea)
- P1-46 Vertically Aligned Iron Oxide Micro Rod Fabrication using Photo Thermal Process**
Junyeob Yeo, Sukjoon Hong, Wanit Manorotkul, Jinhwan Lee, Habeom Lee, Young Duk Suh, Jinyhyung Kwon, and Seung Hwan Ko (KAIST, Korea)
- P1-47 Optical Micro-stamping of Metal Nanoparticles Ink for Maskless Fabrication of Electrode Pattern using Digital Micromirror Device**
Kunsik An, Sukjoon Hong, Junyeob Yeo, Seungyong Han, Gunho Kim, Jooyeun Ham, Hyunjin Moon (KAIST, Korea), Hyungman Lee (KETI, Korea), and Seunghwan Ko (KAIST, Korea)
- P1-48 The Effect of Different Additives on Thermal Properties of Hot Pressed Translucent SiAlON Ceramics**
Bhupendra Joshi, Bin Li, Yuwaraj Khatri Kshetri, and Soo Wahn Lee (Sun Moon Univ., Korea)
- P1-49 Crystal Phases, Photoluminescence, and Long After-glow Luminescence of $SrAl_2O_4: Eu^{2+}, Dy^{3+} - xB_2O_3$ ($0 \leq x \leq 0.4$) Phosphors**
Hyunho Shin and Shafqat Ullah (Gangneung-Wonju Nat'l Univ., Korea)

- P1-50 Investigation on the Pyroelectric Properties of a Novel PIN-PMN-PT Crystal**
Linghang Wang (Xi'an Jiaotong Univ., China)
- P1-51 Thermal Behavior of Reaction Bonded Silicon Nitride in Molten Aluminum Application**
Kritkaew Somton, Duangduen Atong (Nat'l Metal and Materials Tech. Center, Thailand), Ryan Mccuiston (King Mongkut's Univ. of Tech. Thonburi, Thailand), and Kannigar Dateraksa (Nat'l Metal and Materials Tech. Center, Thailand)
- P1-52 Preparation of Thermoelectric Nanoparticles with Morphology and Composition Control from Waste Module**
Kun-jae Lee, Yun-ho Jin, and Man-sik Kong (IAE, Korea)
- P1-53 Thermoelectric properties and MIT in VO₂ Thin Films**
Manil Kang, Jooho Jung (Univ. of Ulsan, Korea), Ji-wook Ryu (Kongju Nat'l Univ., Korea), and Sok Won Kim (Univ. of Ulsan, Korea)
- P1-54 Thermoelectric Properties of Nanostructured V₂O₅**
Manil Kang, Minsoo Kim (Univ. of Ulsan, Korea), Ji-wook Ryu (Kongju Nat'l Univ., Korea), and Sok Won Kim (Univ. of Ulsan, Korea)
- P1-55 High Temperature Thermoelectric Properties of Ag Added Ca_{2.7}Sr_{0.3}Co₄O₉**
Cho Jun-young (Seoul Nat'l Univ., Korea), Kwon O-jong (LG Chem, Korea), Yoon Sejin, Koo Hyun, Bae Sung-hwan, and Park Chan (Seoul Nat'l Univ., Korea)
- P1-56 Surface and Components Analysis of Deteriorated an ACSR by Flame**
Dae-dong Lee (Hanyang Univ., Korea), Young-dal Kim, and Jae-myung Shim (Hanbat Nat'l Univ., Korea)
- P1-57 Thermal Conductivity of Si Nanoribbons**
Jungwon Kim, Hwanjoo Park, Dong-jea Seo, Heon-jin Choi, and Woochul Kim (Yonsei Univ., Korea)
- P1-58 Novel Synthetic Process and Highly Improved ZT Values of Alumina Nanoparticle Dispersed Bismuth Telluride Nanocomposite**
Kyung Tae Kim and Gook Hyun Ha (KIMS, Korea)
- P1-59 Thermoelectric Properties of PbTe@C Nanocables Prepared via One-step Hydrothermal Synthesis**
Seok-min Yong and Do Kyung Kim (KAIST, Korea)



- P1-60 Mechanical and Thermoelectric Property Analysis of Segmented Bi₂Te₃/PbTe for Thermoelectric Module**
Sejin Yoon, Jun-young Cho, Gwi Rang Kim, and Chan Park (Seoul Nat'l Univ., Korea)
- P1-61 First-principles Study of Surface Properties for Al₂CO**
Ke Li, Fei Wang, Meiqing Zhan, Shangmin Wu, and Naigen Zhou (Nanchang Univ., China)
- P1-62 Common Cause Failure Analysis of Dye-sensitized Solar Cells using Thermo Gravimetric Analysis (TGA)**
Kyung-ju Lee, Sang-woo Song, Ji-hyung Roh, On-jeon Park, Hwan-sun Kim, and Byung-moo Moon (Korea Univ., Korea)
- P1-63 First-principles Calculation and Valence Electron Structure Analysis of Diamond Crystal Growth from Fe-Ni-C System at High Temperature and High Pressure**
Xiaohong Fan, Yong Xu, Jing Li, and Bin Xu (Shandong Jianzhu Univ., China)
- P1-64 Experimental Evaluation of Detecting Nano-bubbles by Ripplon Laser Light Scattering Method**
Akinori Hasegawa and Yuji Nagasaka (Keio Univ., Japan)
- P1-65 Behavior at Interface of Carriers in Amorphous Oxide Semiconductors**
Teresa Oh (Cheongu Univ., Korea)
- P1-66 Crystal Growth Controlling on the Surface in the Gahnite Glass-ceramic Systems**
Jonghwan Kim, Donggun Gwoo, Wongyu Choi, Kungseok Han, Ilgu Kim, and Bongki Ryu (Pusan Nat'l Univ., Korea)
- P1-67 Effects of Annealing on Mechanical Properties and Microstructure of Al/Cu Clad Fabricated by Hydrostatic Extrusion and Caliber Rolling**
Jongbeom Lee, Yiha Kim, and Haguk Jeong (Korea Inst. of Industrial Tech., Korea)
- P1-68 Study on Heat and Vapor Transfer in a Fiber Material with Absorption and Desorption of Water Vapor**
Takeshi Ogino (Mizuno Corp., Japan) and Hiroshi Tanaka (Fukuoka Inst. of Tech., Japan)

P1-69 All-atom Force Field for the Prediction of Vapor-liquid Equilibrium Properties of R152a

Zhi Yang, Maoqiong Gong, Xueqiang Dong, and Jianfeng Wu (Chinese Academy of Sci., China)

P1-70 Molecular Dynamics Simulation for the Soret Effect of Air near the Critical Point

Seiji Fujiwara, Seiichi Tanaka, and Kanji Kunimine (Akashi Nat'l College of Tech., Japan)

P1-71 2D Prediction of Color Changes from Fish Surface Temperature Distribution during Grilling

Genki Wakisaka, Xingyi Yu, Yvan Llave, Mika Fukuoka, and Noboru Sakai (Tokyo Univ. of Marine Sci. and Tech., Japan)

P1-72 Color Changes of Red Sea Bream during Entire Grilling Process

Xingyi Yu, Yvan Llave, Mika Fukuoka, and Noboru Sakai (Tokyo Univ. of Marine Sci. and Tech., Japan)

P1-73 Thermal Rectification in Bi-layer Nanofilms: Analysis from Phonon Transmission and Landauer Formula

Shenghong Ju and Xingang Liang (Tsinghua Univ., China)

P1-74 Modeling of Ohmic Heating of Solid Food with Non-uniform Electric Properties

Wen Guo, Shixiong Liu, Wenchuan Yang, Mika Fukuoka, and Noboru Sakai (Tokyo Univ. of Marine Sci. and Tech., Japan)

P1-75 Analytical Study on Focused Electron-Beam Welding using Quasi-steady-state Three-dimensional Model with Momentum Balance at the Cavity Base

B. C. Chen (Buddhist Dalin Tzu Chi General Hospital, Taiwan), C. Y. Ho, Y. H. Tsai, and C. Ma (Hwa Hsia Inst. of Tech., Taiwan)

P1-76 Comparison of Line-source Model with Three-dimensional Model for Heat Transfer Characteristics in the Fusion Zone Induced by a Moving Laser

Y. H. Tsai, C. Y. Ho (Hwa Hsia Inst. of Tech., Taiwan), B. C. Chen (Buddhist Dalin Tzu Chi General Hospital, Taiwan), and C. Ma (Hwa Hsia Inst. of Tech., Taiwan)



P1-77 Research on Dynamic Pressure Effect of Constant Flow Hydrostatic Center Frame

Xiaodong Yu (Harbin Univ. of Sci. and Tech., China), Xiuli Meng (Heilongjiang Polytechnic, China), Li Tan, Huanhun Li, Qihui Zhou, Zhiqiang Wang, Hongying Li, Zheng Zhi (Harbin Univ. of Sci. and Tech., China), Xiangfeng Wang, and Xin Yu (Qiqihar Heavy CNC Equipment Corp., China)

P1-78 Numerical Simulations on Thermomechanical Strength of Hybrid Layered Films with Inhomogeneous Interfacial Morphology

Ji-eun Choi, Sangil Hyun, Youngho Park, and Eunhae Koo (KICET, Korea)

P1-79 Prediction of Reduction Degree through the Blast Furnace using a Spreadsheet-based Numerical Model

Eui-hyuk Kwon, Jong-in Park, Jang-won Kim, Kang-min Kim, Jae-hong Kwon, and Jeong-whan Han (Inha Univ., Korea)

P1-80 A Computational Analysis of Potential Organic Hydrogen Carrier: Thermodynamic Evaluation

Byeong Soo Shin and Jeong Won Kang (Korea Univ., Korea)

P1-81 Thermal Conductivity and Mechanical Behavior of Solid and Liquid Aerozine

Safarov Mahmatali (Branch of Nat'l Res. Univ., Tadjikistan) and Zaripova Mohira (Tajik Technical Univ., Tadjikistan)

P1-82 Molecular Diffusion of Ultrafine Nickel Catalysts, Silica-based, Depending on the Temperature

Safarov Mahmatali (Branch of Nat'l Res. Univ., Tadjikistan) and Khushvaktov Alisher (Tajik Technical Univ., Tadjikistan)

P1-83 Isobaric Specific Heat Capacity of Alloys Ferrosilicon Aluminum and "Memory" depending on the Temperatures (100-2000K)

Safarov Mahmatali (Branch of Nat'l Res. Univ., Tadjikistan), Sadikov Khurshed (Tajik Technical Univ., Tadjikistan), Djamankzov Nasib (Inst. of Physics and Problem of Materials, Kirgizstan), and Rizojev Sirojiddin (Branch of Tajik Agrar Univ., Tadjikistan)

P1-84 Experimental Determination of the Thermal Properties for Molten Salt Confined Close to Phase Transition Point

Wei Peng, Jie-min Zhou, Yuan Li, Ying Yang, and Ai-chun Ma (Central South Univ., China)

- P1-85 A New Thermal Conductivity Measurement Technique using Modified Plate Method**
Mei-ru Guo, Jie-min Zhou, Ying Yang, Wei Peng, and Ai-chun Ma (Central South Univ., China)
- P1-86 Increasing the Precision of Thermal Physical Properties Measurement by the Periodic Heating Method**
Daria Divina, Alexander Divin, Sergey Ponomarev, and Maria Petrasheva (Tambov State Technical Univ., Russia)
- P1-87 Novel AC Heating – DC Detecting Method for Active Thermoelectric Scanning Thermal Microscopy**
Tingting Miao, Weigang Ma, and Xing Zhang (Tsinghua Univ., China)
- P1-88 Simultaneous Measurement of Thermal Conductivity, Thermal Contact Resistance and Laser Absorptivity of Individual Carbon Fibers using Raman Spectroscopy**
Jinhui Liu, Haidong Wang, Weigang Ma, and Xing Zhang (Tsinghua Univ., China)
- P1-89 Multi Pulse Response Method and its Application for Transient Hot-wire Technique**
Takashi Katayama and Keisuke Morishima (Osaka Univ., Japan)
- P1-90 Simultaneous Fitting of Phase and Amplitude Signal in TDTR Measurement**
Fangyuan Sun, Jie Zhu, and Dawei Tang (Chinese Academy of Sci., China)
- P1-91 Accurate Instrument to Measure Mutual Diffusion Coefficient and Soret Coefficient based on Soret Forced Rayleigh Scattering**
Shintaro Iwaasa and Yuji Nagasaka (Keio Univ., Japan)
- P1-92 Measurement of Sound Speed of Gases using a Smaller Spherical Resonator**
Kazuyuki Shingu, Tomohiko Yamaguchi, Kuniyasu Kanemaru, and Satoru Momoki (Nagasaki Univ., Japan)
- P1-93 Comparative Analysis with various Instruments for Insulation Materials**
Inkoo Kim, Taehan Kim, and Steven Min (NETZSCH Korea Co. Ltd., Korea)
- P1-94 Enabling Low Noise Null-point Scanning Thermal Microscopy by the Optimization of SThM Probe through a Rigorous Theory of Quantitative Measurement**
Gwangseok Hwang, Kyeongtae Kim, Jaehun Chung, Ohmyoung Kwon (Korea Univ., Korea), Young Ki Choi (Chung-Ang Univ., Korea), and Joon Sik Lee (Seoul Nat'l Univ., Korea)



P1-95 Effective Thermal Conductivity of Cell Suspensions as a Tool to Probe Viability of Biological Cells

Byoungkyoo Park, Namwoo Yi, Jaesung Park (POSTECH, Korea), Yonggoo Kim (The Catholic Univ. of Korea, Korea), Youngsang Seo, and Dongsik Kim (POSTECH, Korea)

P1-96 Thermal Conductivity of Single Biological Cells Measured by Picoliter-scale 3-omega Method

Byoungkyoo Park, Namwoo Yi, Jaesung Park, Youngsang Seo, and Dongsik Kim (POSTECH, Korea)

P1-97 Enhancement of Thermal Conductivity and Colloidal Stability of Alumina Nanofluids by Femtosecond Laser Irradiation

Youngsang Seo and Dongsik Kim (POSTECH, Korea)

P1-98 *In-situ* Measurement of Local Thermal Diffusivity of Various Beefs by Inverse Analysis

Takahiro Okabe, Junnosuke Okajima, Atsuki Komiya (Tohoku Univ., Japan), Ichiro Takahashi (Yamagata Univ., Japan), and Shigenao Maruyama (Tohoku Univ., Japan)

P1-99 A Vibrating-wire Densimeter for Measurements in Liquids

Yoshinori Takaishi (Kanagawa Inst. of Tech., Japan)

P1-100 Thermal Conductivity in Nano-structured Thin Films by 2w and 3w Method

Satoaki Ikeuchi, Kenji Shimada (Ulvac-Riko Inc, Japan), Saburo Tanaka, and Koji Miyazaki (Kyushu Inst. of Tech., Japan)

P1-101 Hydrogen Viscosity Measurements with Curved Vibrating Wire Method

Temujin Uehara, Tatsuya Hisatsugu, Kan'ei Shinzato, Naoya Sakoda, Masamichi Kohno, and Yasuyuki Takata (Kyushu Univ., Japan)

P1-102 Consideration of Temperature Correction for Photothermal Spectrometry

Seungmo Kim, Se Woong Oh, and Jeonghoon Lee (Korea Univ. of Tech. and Education, Korea)

P1-103 Cu-Ag Eutectic Point for a Comparison of High Temperature SPRTs

Kee Sool Gam, Wukchul Joung, Inseok Yang, and Yong Gyoo Kim (KRISS, Korea)

- P1-104 Effect of Alkali Activators on the Mechanical Properties of Geopolymers Containing Waste Spent Catalyst**
Seunggu Kang and Yongsung Kim (Kyonggi Univ., Korea)
- P1-105 In-situ Investigation of Vapor-deposited Thin Films of Toluene and Ethylbenzene by Chip-nanocalorimetry**
Mathias Ahrenberg, Yeong Zen Chua, and Christoph Schick (Univ. of Rostock, Germany)
- P1-106 Influence of Particle Sizes and Content on Wet Foams Stability to Porous Ceramics**
Dong Nam Seo, Ashish Pokhrel, Jung Gyu Park, and Ik Jin Kim (Hanseu Univ., Korea)
- P1-107 Mechanisms of Wet Foam Stabilization to Porous Ceramics**
Jung Gyu Park, Ashish Pokhrel, Dong Nam Seo, and Ik Jin Kim (Hanseu Univ., Korea)
- P1-108 Effect of Zirconia Content on Mechanical and Thermal Properties of Mullite-zirconia Composite**
Khanthima Hemra and Pavadee Aungkavattana (Nat'l Metal and Materials Tech. Center, Thailand)
- P1-109 Entropy Change of Shape Memory Alloy under Adiabatic Impact Loading**
Sung Young (Korea Univ. Tech. Education, Korea) and Tae-hyun Nam (Gyeongsang Nat'l Univ., Korea)
- P1-110 Thermal Properties of Al₂Ca Added Al-Si7Mg Alloy**
Kyeonghwan Choe, Hyunwoo Lee, Sanghwan Lee, Shae K Kim, and Sangmok Lee (Korea Inst. of Industrial Tech., Korea)
- P1-111 Fabrication of Cf/SiC Composite for High Temperature Applications by Reaction Sintering with Pressure Assisted Nano-slurry Infiltration Method**
Baek Hyun Kim, Hyun Jeong Bae, and Do-kyun Kwon (Korea Aerospace Univ., Korea)
- P1-112 Heat Transfer Analysis of Braking Resistor by Material Change**
Dae-dong Lee (Hanyang Univ., Korea), Jae-myung Shim (Hanbat Nat'l Univ., Korea), and Dong-seok Hyun (Hanyang Univ., Korea)
- P1-113 High Resolution Thermal Imaging and Hot Spot Detection of Semiconductor Devices by Thermorefectance Thermography**
Ki Soo Chang, Seon Young Ryu, Woo June Choi, Dong Uk Kim, and Jun Ki Kim (Korea Basic Science Inst., Korea)



- P1-114 Thermal Conductivity and Specific Heat of Insulating Material used in Superconducting Power Applications**
Yeon Suk Choi and Myung Su Kim (Korea Basic Science Inst., Korea)
- P1-115 Measurement of the Critical Properties of Binary Mixtures of Three Alkanes**
Nan Xin, Maogang He, Yang Liu, and Ying Zhang (Xi'an Jiaotong Univ., China)
- P1-116 Investigation of Surface Tension of the 430 Stainless Steel**
Han Gyeol Kim, Joongkil Choe, and Joonho Lee (Korea Univ., Korea)
- P1-117 Wetting Behaviors of Slag on Carbonaceous Materials**
Joon Seok Oh, Minsoo Shin, Dongik Jang, and Joonho Lee (Korea Univ., Korea)
- P1-118 Initial Wetting Phenomena and Spreading Property of Oxide Slags in Contact with MgO Refractory**
Yongsug Chung, Jiwon Park, and Kyuyong Lee (Korea Polytechnic Univ., Korea)
- P1-119 Effects of Temperature and Oxygen Partial Pressure on Surface Tension of the Cu-Ag Eutectic Alloy**
Jihye Han (Korea Univ., Korea), Yunkyum Kim (Korea Univ., Korea), and Joonho Lee (Korea Univ., Korea)
- P1-120 Performance Analysis Software for Heat Pump based on the Effective Thermodynamic Temperature Analysis Method**
Zeshao Chen, Wenhai Xie, and Peng Hu (Univ. of Sci. and Tech. of China, China)

Sep. 30 (Mon) 15:00~16:30

Ramada Ballroom 1 (2F)

[MoA1] Interfacial Properties

Session Chair Toshihiro Tanaka (Osaka Univ., Japan)

MoA1-1 15:00~15:30 **[Keynote] Wetting Kinetics and Interfacial Transport Phenomena of Complex Fluids**

Yuanyuan Duan (Tsinghua Univ., China)

MoA1-2 15:30~15:50 **The Effects of Temperature Curves on the Diamond-Ni-Cr Interfacial Properties in High-frequency Induction Brazing**

Guoqin Huang and Xipeng Xu (Huaqiao Univ., China)

MoA1-3 15:50~16:10 **Simultaneous Determination of the Surface Tension and Viscosity with Surface Laser Light Scattering (SLLS) Method: Toluene and Heptane under Saturated Condition from 293 K to 383 K**

Guanjia Zhao, Shengshan Bi, and Jiangtao Wu (Xi'an Jiaotong Univ., China)

MoA1-4 16:10~16:30 **Volume Heating Laser-induced Capillary Wave Technique to Measure Viscosity and Surface Tension**

Hiroki Takiguchi and Yuji Nagasaka (Keio Univ., Japan)



Sep. 30 (Mon) 15:00~16:30

Ramada Ballroom 2 (2F)

[MoB1] Simulation and Modeling I

Session Chair Jeong Won Kang (Korea Univ., Korea)

MoB1-1 15:00~15:30 **[Keynote] Large-scale Molecular Dynamics Calculation Studies from Micelles to Viruses**

Susumu Okazaki (Nagoya Univ., Japan)

MoB1-2 15:30~15:50 **Homogenous Nonequilibrium Molecular Dynamics Evaluation of Thermal Conductivity in 2D Yukawa Liquids**

Aamir Shahzad and He Mao-gang (Xi'an Jiaotong Univ., China)

MoB1-3 15:50~16:10 **Study of Removal Mechanism of Ozone by Plant via Molecular Dynamics**

Ji Hye Seong, Jin Sol Han, Se Hun Joo, and Sang Kyu Kwak (UNIST, Korea)

MoB1-4 16:10~16:30 **Effect of Intermolecular Spin Multiplicities on the Thermodynamic Properties of Oxygen**

Shin-ichi Tsuda, Katsunori Kamakura (Shinshu Univ., Japan), and Mitsuo Koshi (The Univ. of Tokyo, Japan)

Sep. 30 (Mon) 15:00~16:30

Ramada Ballroom 3 (2F)

[MoC1] Metallurgical Processing I

Session Chair Juergen Brillo (DLR, Germany)

MoC1-1 15:00~15:30 **[Keynote] Development of High-temperature Thermo-physical Property Measurement System using Electromagnetic Levitation Technique in dc Magnetic Field**

Hiroyuki Fukuyama (Tohoku Univ., Japan)

MoC1-2 15:30~15:50 **Thermophysical Property Measurements of High Temperature Materials using Electrostatic Levitators**

Takehiko Ishikawa, Junpei Okada, Malahalli Vijaya Kumar (Japan Aerospace Exploration Agency, Japan), Paul-francois Paradis (INO, Canada), and Yuki Watanabe (A. E. S. Co. Ltd., Japan)

MoC1-3 15:50~16:10 **Surface Tension of Liquid Ag-Cu Alloys under Oxygen Influence**

Juergen Brillo (DLR, Germany), Giorgio Lauletta, Luca Vaianella (Uni Genoa, Italy), Hidekazu Kobatake (DLR, Germany), and Enrica Ricci (CNR-IPENI, Genoa, Italy)

MoC1-4 16:10~16:30 **Surface and Interfacial Tensions of Liquid Steels**

Joonho Lee, Joonseok Oh, and Han Gyeol Kim (Korea Univ., Korea)



Sep. 30 (Mon) 15:00~16:30

Ramada Ballroom 4 (2F)

[MoD1] Thermal Conductivity

Session Chair Sok Won Kim (Ulsan Univ., Korea)

MoD1-1 15:00~15:30 **[Keynote] Nano-micro Thermophysical Properties Sensing Engineering and its Applications**

Yuji Nagasaka (Keio Univ., Japan)

MoD1-2 15:30~15:50 **Thermal Conductivities Measurements of Sb_2Te_3 -GeTe Chalcogenide Alloys at High Temperature**

Rui Lan, Rie Endo (Tokyo Inst. of Tech., Japan), Masashi Kuwahara (Nat'l Inst. of Advanced Industrial Sci. and Tech., Japan), Yoshinao Kobayashi, and Masahiro Susa (Tokyo Inst. of Tech., Japan)

MoD1-3 15:50~16:10 **Low Frequency Thermal Response of Liquids by Thin Heater Wire**

Seung-min Lee (Hanbeam Co. Ltd., Korea)

MoD1-4 16:10~16:30 **Thermal Conductivity of Liquid 2,3,3,3-Tetrafluoroprop-1-ene (R1234yf) and Trans-1,3,3,3-Tetrafluoropropene (R1234ze(E))**

Chenyang Wen, Zhengxin Xue, and Jiangtao Wu (Xi'an Jiaotong Univ., China)

Sep. 30 (Mon) 15:00~15:50

Mara (2F)

[MoE1] Nuclear Materials

Session Chair Kweonho Kang (KAERI, Korea)

MoE1-1 15:00~15:30 **[Keynote] Uranium Dioxide-thermodynamics and Kinetics as a Nuclear Fuel**

Kwangeheon Park (Kyung Hee Univ., Korea)

MoE1-2 15:30~15:50 **Chlorination Reaction Behavior of Zircaloy-4 Cladding Material Studied using a Thermogravimetric Analysis**

Min Ku Jeon, Yong Taek Choi, Chang Hwa Lee, You Lee Lee, Kweon Ho Kang, and Geun Il Park (KAERI, Korea)



Sep. 30 (Mon) 15:00~16:30

Biyang (2F)

[MoF1] Thermoelectric Properties and Materials I

Session Chair Soong Keun Hyun (Inha Univ., Korea)

MoF1-1 15:00~15:30 **[Invited] Thermoelectric Application of Thermally Insulating and Electrically Conducting Ceramics: Oxygen Defect Engineered Thermoelectrics**

Soonil Lee (KICET, Korea), Jonathan A. Bock, Susan Trolier-mckinstry, and Clive A. Randall (The Pennsylvania State Univ., USA)

MoF1-2 15:30~15:50 **Thermoelectric Property Measurements of InAs Single Nanowire Grown by MBE**

Seong Gi Jeon, Jin Yu (KAIST, Korea), Dong Woo Park, Sang Jun Lee, and Jae Yong Song (KRISS, Korea)

MoF1-3 15:50~16:10 **Thermoelectric Property Measurement of an Individual $\text{Bi}_{1.75}\text{Sb}_{0.25}\text{Te}_{2.02}$ Nanowire**

Ping-chung Lee and Yangyuan Chen (Academia Sinica, Taiwan)

MoF1-4 16:10~16:30 **Facile Synthesis and Improved Thermoelectric Properties of CNT-Embedded Bismuth Telluride Nanocomposites**

Kyung Tae Kim and Gook Hyun Ha (KIMS, Korea)

Sep. 30 (Mon) 17:00~18:30

Ramada Ballroom 1 (2F)

[MoA2] Thermodynamic Properties I

Session Chair Hironichi Ohta (Ibaraki Univ., Japan)

MoA2-1 17:00~17:30 **[Invited] Probing Anisotropic Superconducting Gap via Field-Angle Directional Specific Heat Measurements**

Tuson Park, J. Hong (Sungkyunkwan Univ., Korea), Y. Kwon (Daegu Gyeongbuk Inst. of Sci. & Tech., Korea), and J. Thompson (Los Alamos Nat'l Laboratory, USA)

MoA2-2 17:30~17:50 **Density and Virial Coefficients of Gaseous Ethyl Fluoride (R161) from 283 to 383 K at Pressure to 5.5 MPa**

Dan Fang, Qiang Chen, Jiangtao Wu, and Xianyang Meng (Xi'an Jiaotong Univ., China)

MoA2-3 17:50~18:10 **Measurements of (p, r, T) Properties for Isopentane in the Temperature Range from (280 to 440) K at Pressures from (1 to 200) MPa**

Motoshi Mochiduki and Hiroyuki Miyamoto (Toyama Prefectural Univ., Japan)

MoA2-4 18:10~18:30 **Measurements and Correlations of cis-1,3,3,3-Tetrafluoropropene (R1234ze(Z)) Saturation Pressure**

Laura Fedele (Consiglio Nazionale delle Ricerche, Italy), Giovanni Di Nicola (Università Politecnica delle Marche, Italy), Steven Brown (The Catholic Univ. of America, USA), Sergio Bobbo (Consiglio Nazionale delle Ricerche, Italy), and Claudio Zilio (Università degli Studi di Padova, Italy)



ATPC 2013

The 10th Asian Thermophysical
Properties Conference

Sep. 30 (Mon) 17:00~18:20

Ramada Ballroom 2 (2F)

[MoB2] Simulation and Modeling II

Session Chair Susumu Okazaki (Nagoya Univ., Japan)

MoB2-1 17:00~17:20 **A Thermal Model for the Calculation of Energy Partitions in Sawing with Segmented Blades**

Congfu Fang and Xipeng Xu (Huaqiao Univ., China)

MoB2-2 17:20~17:40 **Numerical Investigation on the Flow of Ice Slurry in Pipes**

Shenchun Liu and Ye Li (Tianjin Univ. of Commerce, China)

MoB2-3 17:40~18:00 **Estimation of Fish Cooking Process during Microwave Heating**

Shixiong Liu, Xingyi Yu, Mika Fukuoka, and Noboru Sakai (Tokyo Univ. of Marine Sci. and Tech., Japan)

MoB2-4 18:00~18:20 **Recommended Gas Transport Properties of Argon at Low Density using Ab Initio Potential**

Bo Song, Xiaopo Wang, and Zhigang Liu (Xi'an Jiaotong Univ., China)

Sep. 30 (Mon) 17:00~18:50

Ramada Ballroom 3 (2F)

[MoC2] Metallurgical Processing II

Session Chair Joon Ho Lee (Korea Univ., Korea)

MoC2-1 17:00~17:30 **[Invited] Interfacial Properties of Alloys and Oxides in "Capillary Metallurgy"**

Toshihiro Tanaka (Osaka Univ., Japan)

MoC2-2 17:30~17:50 **Calculation of Surface Tension using Butler Equation and Modified Quasichemical Model for Fe-based Liquid Metal**

Ahn Thu Pahn, Sung-kwang Kim, Sung-hoon Jung, and Youn-bae Kang (POSTECH, Korea)

MoC2-3 17:50~18:10 **Concentration Dependence of Molar Volume and Structure of Binary Si Alloys in the Liquid State**

Akitoshi Mizuno, Kentaro Murai, Hiroya Kawauchi, Mitushiro Tanno (Gakushuin Univ., Japan), Hidekazu Kobatake, Hiroyuki Fukuyama, Takao Tsukada (Tohoku Univ., Japan), and Masahito Watanabe (Gakushuin Univ., Japan)

MoC2-4 18:10~18:30 **Surface Tension of Molten Nickel Measured under Gas Phase Equilibrium of Ar-He-H₂-H₂O Mixtures**

Shumpei Ozawa (Chiba Inst. of Tech., Japan), Suguru Takahashi (Tokyo Metropolitan Univ., Japan), Yuto Takei (Chiba Inst. of Tech., Japan), and Hiroyuki Fukuyama (Tohoku Univ., Japan)

MoC2-5 18:30~18:50 **Interfacial Free Energy and Local Order of Metallic Liquids from Elements to Alloys**

Geun Woo Lee, Dong-hee Kang (KRISS, Korea), Byeongchan Lee (Kyung Hee Univ., Korea), Sangho Jeon (UST, Korea), and Soo Heyong Lee (KRISS, Korea)



Sep. 30 (Mon) 17:00~18:20

Ramada Ballroom 4 (2F)

[MoD2] Viscosity

Session Chair Seung-Min Lee (Hanbeam, Korea)

MoD2-1 17:00~17:20 Thermodynamic Scaling of the Shear Viscosity: Mie Fluids and Real Mixtures

Guillaume Galliero, Stephanie Delage-santacreu, Jean-patrick Bazile (UPPA, France), Josefa Fernandez (Univ. Santiago, Spain), and Christian Boned (UPPA, France)

MoD2-2 17:20~17:40 The Improvement of the Oscillating Disk Viscometer

Shaohua Lu, Wei Wang, Xiaoming Zhao, and Zhigang Liu (Xi'an Jiaotong Univ., China)

MoD2-3 17:40~18:00 Viscosity Measurements of Fluoroethane (R161) from 243 to 363 K at Pressures up to 30 MPa

Xianyang Meng, Xiaoyun Gu, Jiangtao Wu, and Shengshan Bi (Xi'an Jiaotong Univ., China)

MoD2-4 18:00~18:20 Viscosity Measurement of Refrigerants with Low Global Warming Potential

Akio Miyara, Ryota Fukuda, and Takuya Kuriyama (Saga Univ., Japan)

Sep. 30 (Mon) 17:00~18:00

Mara (2F)

[MoE2] Nuclear Materials and Industrial Applications

Session Chair Min Ku Jeon (KAERI, Korea)

MoE2-1 17:00~17:20 Effect of Heat Treatment on the Thermal Diffusion in Zircaloy-2

M. Sivabharathy, A. Senthilkumar (Sethu Inst. of Tech., India), P. Palanichamy (IGCAR, India), Vasant Naidu (Sethu Inst. of Tech., India), and K. Ramachandran (Madurai Kamaraj Univ., India)

MoE2-2 17:20~17:40 The Effect of Nano-sized Oxide Particles on the High Temperature Deformation Behavior of 14Cr-based Ferritic Steel

Kim Jeoung Han, Kim Kyong Min, Park Chan Hee, Kim Seong Woong, and Yeom Jong Taek (KIMS, Korea)

MoE2-3 17:40~18:00 Characterization of Prepreg and Cured Composite Material for Aircraft

Ho-sung Lee (KARI., Korea), Ji-ung Choi (Univ. of Sci. & Tech., Korea), and Key Wook Jang (TBCarbon Co., Korea)



Sep. 30 (Mon) 17:00~18:00

Biyang (2F)

[MoF2] Thermoelectric Properties and Materials II

Session Chair Jin Sang Kim (KIST, Korea)

MoF2-1 17:00~17:20 **Enhanced Thermoelectric Properties of Ag- and Sb-codoped GeTe Compounds**

Bongseo Kim, Inhye Kim, Bok-ki Min, Minwook Oh, Sudong Park, Heewoong Lee (KERI, Korea), and Hoseong Lee (Kyungpook Nat'l Univ., Korea)

MoF2-2 17:20~17:40 **Thermoelectric Materials via Exfoliation-reassembly Route**

Jong-young Kim and Won-seon Seo (KICET, Korea)

MoF2-3 17:40~18:00 **Thermal Properties of Heat-spreadable EMI Polymer Composites including Fe-Cr Ferromagnetic Core and Thermal Conductive Alumina Shell Layer**

Chang Min Lee (KIST, Korea), Hyun Seok Choi, Kyung Sub Lee (R&D Center of Donghyun Electronics Co., Korea), Hyung Ho Park (Yonsei Univ., Korea), and Sang Woo Kim (KIST, Korea)

October 1, 2013 (Tuesday)

Oct. 1 (Tue) 09:00~10:30

Ramada Ballroom 1 (2F)

[TuA1] Thermodynamic Properties II

Session Chair Igor Sedov (Kazan Federal Univ., Russia)

TuA1-1 09:00~09:30 **[Keynote] Searching Zeros in Superconducting Gap by Low Temperature Thermal Conductivity**

Yuji Matsuda (Kyoto Univ., Japan)

TuA1-2 09:30~09:50 **Measurements of the Thermal Conductivity of Helium at High Pressure and High Temperature**

Masayuki Yamada (Kyushu Univ., Japan), Daisaku Kasao, Kan'ei Shinzato (Research Center for Hydrogen Industrial Use and Storage, Japan), Naoya Dakoda, Masamichi Kohno, and Yasuyuki Takata (Kyushu Univ., Japan)

TuA1-3 09:50~10:10 **Study on Simultaneous Photoacoustic Measurement of Thermal Diffusivity and Thermal Effusivity of Solids**

Yoshiki Nagao, Tetsuya Yamada, and Atsumasa Yoshida (Osaka Prefecture Univ., Japan)

TuA1-4 10:10~10:30 **Conductivities of H₂O+Ionic Liquid Systems and their Association with Phase Equilibrium Behavior**

Li Dong, Danxing Zheng, Nan Nie, and Xiaofei Hui (Beijing Univ. of Chemical Tech., China)



Oct. 1 (Tue) 09:00~10:40

Ramada Ballroom 3 (2F)

[TuC1] Metallurgical Processing III

Session Chair Baojun Zhao (The Univ. of Queensland, Australia)

TuC1-1 09:00~09:30 **[Invited] The Importance of Metallurgical Slag Properties in High Temperature Process**

Muxing Guo (KU Leuven, Belgium)

TuC1-2 09:30~10:00 **[Invited] Viscosity and Structure of $\text{TiO}_2\text{-MnO-SiO}_2\text{-Al}_2\text{O}_3$ -Based Fluxes for Ultra Low Hydrogen Welding**

Jong Bae Kim and Il Sohn (Yonsei Univ., Korea)

TuC1-3 10:00~10:20 **Experimental Determination of Slag Viscosity**

Baojun Zhao (The Univ. of Queensland, Australia)

TuC1-4 10:20~10:40 **Viscosity of Low Silica Calcium Aluminosilicate Melts and Structural Analysis using Raman Spectroscopy**

Tae Sung Kim and Joo Hyun Park (Hanyang Univ., Korea)

Oct. 1 (Tue) 09:00~10:30

Ramada Ballroom 4 (2F)

[TuD1] Transport Properties

Session Chair Geun Woo Lee (KRISS, Korea)

TuD1-1 09:00~09:30 **[Keynote] Recent Advances in Calculating Transport Properties of a Dilute Gas**

Robert Hellmann (Universität Rostock, Germany) and Velisa Vesovic (Imperial College London, UK)

TuD1-2 09:30~09:50 **Thermal Diffusivity of Isopropyl Ether from Dynamic Light Scattering (DLS)**

Sheng Wang, Ying Zhang, Maogang He, and Shi Zhang (Xi'an Jiaotong Univ., China)

TuD1-3 09:50~10:10 **Electrical Conductivity in Nanogranular Assembled Microrods of Polyaniline**

Namalapuri Chaudhary and Venimadhav Adyam (IIT Kharagpur, India)

TuD1-4 10:10~10:30 **T-type Raman Spectroscopy Method for Determining Laser Absorptivity, Thermal Conductivity and Air Heat Transfer Coefficient of Micro/Nanofibers**

Qinyi Li and Xing Zhang (Tsinghua Univ., China)



Oct. 1 (Tue) 09:00~10:10

Mara (2F)

[TuE1] Refrigerants and Thermal System Applications I

Session Chair Dong Sik Kim (POSTECH, Korea)

TuE1-1 09:00~09:30 **[Keynote] New Sorption/Adsorption Materials and Desiccant Air Conditioning Systems**

Akihiko Horibe (Okayama Univ., Japan)

TuE1-2 09:30~09:50 **Condensation Heat Transfer of R-410A in 7.0 MM O.D. Microfin Tubes**

Ho-won Byun, Eul-jong Lee, and Nae-hyun Kim (Univ. of Incheon, Korea)

TuE1-3 09:50~10:10 **Study on Ice Slurry Continuation Generator using Low Concentration Sodium Chloride Solution**

Toshiki Sato, Koji Fumoto (Hirosaki Univ., Japan), Tsuyoshi Kawanami (Kobe Univ., Japan), and Takao Inamura (Hirosaki Univ., Japan)

Oct. 1 (Tue) 09:00~10:10

Biyang (2F)

[TuF1] Optical and Thermal Radiative Properties I

Session Chair Yuji Nagasaka (Keio Univ., Japan)

TuF1-1 09:00~09:30 **[Keynote] Technique and System for Non-Invasive Measurement of Radiative Properties of Human Skin**

Jun Yamada (Shibaura Inst. of Tech., Japan)

TuF1-2 09:30~09:50 **Thermal Radiative Properties at Extreme Conditions of Temperature**

Patrick Echegut, Domingos De Sousa Meneses, and Leire del Campo (Université d'Orléans, France)

TuF1-3 09:50~10:10 **Measurement Instrument of Optical Properties of Human Skin for Standardization**

Takahiro Kono (Shibaura Inst. of Tech., Japan), Masaya Koshino (Shiseido Co., Japan), Sadaki Takata (Osaka Shoin Women's Univ., Japan), and Jun Yamada (Shibaura Inst. of Tech., Japan)



Oct. 1 (Tue) 11:00~12:20

Ramada Ballroom 1 (2F)

[TuA2] Thermodynamic Properties III

Session Chair Tuson Park (Sungkyunkwan Univ., Korea)

TuA2-1 11:00~11:20 **Influence of Geometrical Constraint on Behaviors of Gas Hydrate in Clay**

Yun-ho Ahn, Dae-ok Kim, and Huen Lee (KAIST, Korea)

TuA2-2 11:20~11:40 **On the PpT, PrT and Phase Envelope Behavior Characterization of Qatari Type Natural Gas Like Mixtures**

Mert Atilhan (Qatar Univ., Qatar), Santiago Aparicio (Univ. of Burgos, Spain), Mohammad Al-marri (Qatar Univ., Qatar), and Kenneth Hall (Texas A&M Univ., USA)

TuA2-3 11:40~12:00 **An Experimental Approach for the Analysis of Phase Behavior and Structural Transitions in the Binary Mixed Gas Hydrates**

Minchul Kwon, Yeobum Youn, and Huen Lee (KAIST, Korea)

TuA2-4 12:00~12:20 **Investigation of Thermoluminescence Parameters of X-ray Irradiated Natural Biotite using Computerized Glow Curve Deconvolution Technique at Various Heating Rates**

G. Wary and J. M. Kalita (Cotton College, India)

Oct. 1 (Tue) 11:00~12:30

Ramada Ballroom 2 (2F)

[TuB2] Micro/Nanoscale Thermal Transport I

Session Chair Hai-Dong Wang (Tsinghua Univ., China)

TuB2-1 11:00~11:30 **[Keynote] Thermal Properties and Applications of Carbon Nanomaterials**

Huaqing Xie, Wei Yu, Lifei Chen, and Jifen Wang (Shanghai Second Polytechnic Univ., China)

TuB2-2 11:30~11:50 **Temperature Dependence of Stability and Thermal Conductivity for Oil-based Nanofluids**

Haifeng Jiang, Hui Li (Tsinghua Univ., China), Cheng Zan (State Key Laboratory of EOR, China), Fengchao Liu, Qianghui Xu, and Lin Shi (Tsinghua Univ., China)

TuB2-3 11:50~12:10 **Thermal Characteristics of Emulsion Containing Nano Size Phase-change Particles**

Jun-ichi Kumashiro, Kenichi Togashi, Tsuyoshi Kawanami (Kobe Univ., Japan), Koji Fumoto (Hirosaki Univ., Japan), and Shigeki Hirano (Hokkaido Research Organization, Japan)

TuB2-4 12:10~12:30 **Phase Change Characteristics of Al₂O₃-H₂O Nano-fluids Measured By DSC**

Bin Liu, Ruixing Wang, Yun Su, Xiaoyoung Dong, and Kai Zhu (Tianjin Univ. of Commerce, China)



Oct. 1 (Tue) 11:00~12:20

Ramada Ballroom 3 (2F)

[TuC2] Metallurgical Processing IV

Session Chair Il Sohn (Yonsei Univ., Korea)

TuC2-1 11:00~11:20 **Controllability of Radiative Heat Transfer by Valence Change of Iron Ions in Mould Flux**

Yoshinao Kobayashi, Ryota Maehashi, Rie Endo, and Masahiro Susa (Tokyo Inst. of Tech., Japan)

TuC2-2 11:20~11:40 **Crystallization and Rheological Behavior of Calcium Silicate Melts under Shear Stress**

Noritaka Saito (Kyushu Univ., Japan), Sohei Sukenaga (Tohoku Univ., Japan), and Kunihiko Nakashima (Kyushu Univ., Japan)

TuC2-3 11:40~12:00 **Thermal Conductivity of Molten CaO-Na₂O-SiO₂ Silicates**

Hiroyuki Shibata (Tohoku Univ., Japan), Hiromichi Ohta, Takaya Kowatari, Hiroki Hasegawa (Ibaraki Univ., Japan), and Souhei Sukenaga (Tohoku Univ., Japan)

TuC2-4 12:00~12:20 **Thermal Coudctivity of Molten Silicate Containing Iron Oxide**

Youngjo Kang (POSCO, Korea), Kiyoshi Nomura, and Kazuki Morita (Univ. of Tokyo, Japan)

Oct. 1 (Tue) 11:00~12:10

Ramada Ballroom 4 (2F)

[TuD2] Mass and Momentum Transport

Session Chair Yoon Hee Jeong (POSTECH, Korea)

TuD2-1 11:00~11:30 **[Invited] Vibrating-wire Technique: Measuring Viscosity from 10 $\mu\text{Pa s}$ to 100,000 $\mu\text{Pa s}$**

Marc Assael, Sofia Mylona (Aristotle Univ., Greece), and William Wakeham (Imperial College, UK)

TuD2-2 11:30~11:50 **Prediction of Mutual Diffusion in Liquid Melts with Free Volume Theory**

Qiu Zhong, Liping Yang, An Cai, Zijun Xu, and Caiyun Luo (The Shanghai Inst. of Ceramics, China)

TuD2-3 11:50~12:10 **Water Absorption of Natural Silk Fibers under Thermal Condition**

Dip Saikia (Digboi College, India)



Oct. 1 (Tue) 11:00~12:10

Mara (2F)

[TuE2] Energy & Environment

Session Chair Young Soo Chang (Kookmin Univ., Korea)

TuE2-1 11:00~11:30 **[Keynote] The Characteristics of GDL (Gas Diffusion Layer) and its Influence on the Performance of PEM Fuel Cell**

Min Soo Kim (Seoul Nat'l Univ., Korea)

TuE2-2 11:30~11:50 **Competition Phenomena of N₂ and CO₂ during Swapping Process of CH₄ Hydrate**

Yeobum Youn (KAIST, Korea), Jiwoong Seol (Seoul Nat'l Univ., Korea), Dongwook Lim, and Huen Lee (KAIST, Korea)

TuE2-3 11:50~12:10 **Nanoporous Covalent Organic Polymers (COPs) for Post-combustion CO₂ Capture**

Hasmukh Patel and Cafer Yavuz (KAIST, Korea)

Oct. 1 (Tue) 11:00~12:40

Biyang (2F)

[TuF2] Optical and Thermal Radiative Properties II

Session Chair Jun Yamada (Shibaura Inst. of Tech., Japan)

TuF2-1 11:00~11:20 **Lock-in Thermography to Verify the Hot-disk Sensor Performance**

Bashir Suleiman (Univ. of Sharjah, UAE) and Giova-nni Carlomagno (Univ. of Naples Federico II, Italy)

TuF2-2 11:20~11:40 **Tunable Omnidirectional Broadband Optical Absorptions of Vertically Aligned Multi-walled Carbon Nanotube Arrays for Solar Energy Applications**

Dong Liu, Yuan-yuan Duan, and Zhen Yang (Tsinghua Univ., China)

TuF2-3 11:40~12:00 **Traceable Angle Dependent Surface Emittance Measurements of Industrially Relevant Samples in a Wide Wavelength Range and at High Temperatures up to 1600°C**

Matthias Lenhart-rydzek, Thomas Stark (Bavarian Center for Applied Energy Research, Germany), Marko Seifert (Fraunhofer IWS Dresden, Germany), and Jochen Manara (Bavarian Center for Applied Energy Research, Germany)

TuF2-4 12:00~12:20 **Theoretical Method for Designing Ultraviolet Shield Coatings**

Hiroki Gonome, Junnosuke Okajima, Atsuki Komiya, and Shigenao Maruyama (Tohoku Univ., Japan)

TuF2-5 12:20~12:40 **Development of High Surface Temperature Measurement of Reentry Thermal Protection Materials with Surface Acoustic Wave**

Shimpei Fujisaki (Keio Univ., Japan), Sumitaka Tachikawa (ISAS/JAXA, Japan), and Yuji Nagasaka (Keio Univ., Japan)



October 2, 2013 (Wednesday)

Oct. 2 (Wed) 09:00~10:20

Ramada Ballroom 1 (2F)

[WeA1] Thermodynamic Properties IV

Session Chair Les Woodcock (Univ. of Manchester, UK)

WeA1-1 09:00~09:20 **Solubilities of Carbon Dioxide Gas for the Semiclathrate Forming System: Carbon Dioxide + Tetra-n-butylammonium Bromide + Water**

Sanehiro Muromachi (AIST, Japan), Atsushi Shijima, Hiroyuki Miyamoto (Toyama Prefectural Univ., Japan), and Ryo Ohmura (Keio Univ., Japan)

WeA1-2 09:20~09:40 **Solubilities of CO₂ in piperazine+EmimAc+H₂O System and their Densities, Viscosities**

Yun Li, Danxing Zheng, Li Dong, and Bing Xiong (Beijing Univ. of Chemical Tech., China)

WeA1-3 09:40~10:00 **The Study on the Precise Measurement of (Vapor+Liquid) Equilibrium Properties for (CO₂+isopentane) Binary Mixtures**

Nangaku Haruka and Miyamoto Hiroyuki (Toyama Prefectural Univ., Japan)

WeA1-4 10:00~10:20 **An Experimental Investigation of Dual Function Inhibitor for Methane Hydrate**

Seongmin Park, Hyeyoon Ro, Hyery Kang, and Huen Lee (KAIST, Korea)

Oct. 2 (Wed) 09:00~10:40

Ramada Ballroom 2 (2F)

[WeB1] Micro/Nanoscale Thermal Transport II

Session Chair Hyungdae Kim (Kyung Hee Univ., Korea)

WeB1-1 09:00~09:20 Raman Measurement of Heat Transfer Coefficient of Individual Single-wall Carbon Nanotube

Hai-dong Wang, Jin-hui Liu, Zeng-yuan Guo, Xing Zhang, Ru-fan Zhang, Fei Wei, and Tian-yi Li (Tsinghua Univ., China)

WeB1-2 09:20~09:40 A Study on the Influence of Different Manufacturing Conditions on the Thermal Conductivity of Thermoplastic Resin-carbon Composites

Hyeon Jeong Park and Chan Woo Park (Chonbuk Nat'l Univ., Korea)

WeB1-3 09:40~10:00 Synthesis and Thermodynamic Properties of Two-line Ferrihydrite for Use as Fischer-tropsch Catalysts

Brian Woodfield, Claine Snow, Kyle Brunner, and William Hecker (Brigham Young Univ., USA)

WeB1-4 10:00~10:20 Surface Tension, Viscosity and Rheology of Gold-water Nanofluids: A Molecular Dynamics Simulation Study

Gui Lu, Yuan-yuan Duan (Tsinghua Univ., China), and Xiao-dong Wang (North China Electric Power Univ., China)

WeB1-5 10:20~10:40 Effect of Annealing on Optical Parameters of Chemically Deposited Pbse Thin Films

Jeena Das (Bahona College, India), Mothura Nath Borah (D R College, India), and Sumbit Chaliha (Bahona College, India)



ATPC 2013

The 10th Asian Thermophysical
Properties Conference

Oct. 2 (Wed) 09:00~10:10

Ramada Ballroom 3 (2F)

[WeC1] Other Topics

Session Chair Jei-Pil Wang (Pukyong Nat'l Univ., Korea)

WeC1-1 09:00~09:30 **[Invited] A Review on the Thermophysical Properties of Cellulose based Natural Fibers**

Dip Saikia (Digboi College, India)

WeC1-2 09:30~09:50 **Preparation and Evaluation of Highly Thermal Conductive Polymer Composite Filled with Fillers**

Yasuyuki Agari, Hiroshi Hirano, Joji Kadota, and Akinori Okada (Osaka Municipal Technical Research Inst., Japan)

WeC1-3 09:50~10:10 **Primary Crystallization Kinetics in Amorphous $Al_{86}Ni_{10}MM_4$ Alloy**

Mehid Mansouri Hasan Abadi, Naser Varahram, Abdolreza Simchi (Sharif Univ. of Tech., Iran), and Eun Soo Park (Seoul Nat'l Univ., Korea)

Oct. 2 (Wed) 09:00~10:20

Ramada Ballroom 4 (2F)

[WeD1] Refrigerants and Thermal System Applications II

Session Chair In Chul Shim (ChemiLab Co. Ltd., Korea)

WeD1-1 09:00~09:20 Magnetocaloric Ceramics for Low-temperature Magnetic Refrigeration

Jong-woo Kim, Jung-ho Ryu, Byung-dong Hahn, Jong-jin Choi, Woon-ha Yoon, Cheol-woo Ahn, Joon-hwan Choi, and Dong-soo Park (KIMS, Korea)

WeD1-2 09:20~09:40 Influence of Additive NaCl on the Phase-change Heat Transfer and Storage Capacity of Eutectic $\text{NaNO}_3\text{-KNO}_3$ Mixture

Yu Chen, Zhiqiang Sun, and Jiemin Zhou (Central South Univ., China)

WeD1-3 09:40~10:00 Heat Storage and Release Enhancement Effect of Latent Heat Storage Paraffin by Mixing Metal Fiber Materials

Naoto Haruki and Akihiko Horibe (Okayama Univ., Japan)

WeD1-4 10:00~10:20 Gaseous Viscosity of HFC227ea and HFC236fa: Measurement and Correlation

Wei Wang, Shaohua Lu, Kai Kang, Xiaopo Wang, Xiaoming Zhao, and Zhigang Liu (Xi'an Jiaotong Univ., China)



Oct. 2 (Wed) 09:00~10:10

Mara (2F)

[WeE1] Measuring Techniques and Sensors I

Session Chair Steven Min (NETZSCH, Korea)

WeE1-1 09:00~09:30 **[Keynote] Calorimetry on Time Scales from Microseconds to Days**

Christoph Schick (Univ. of Rostock, Germany)

WeE1-2 09:30~09:50 **Gas Sensing Properties of ZnO Nanofibers: Underlying Sensing Mechanism**

Sang Sub Kim, Akash Katoch, Sun-woo Choi, and Gun-joo Sun (Inha Univ., Korea)

WeE1-3 09:50~10:10 **Measurement of Thermophysical Properties of Natural Stones by Transient Method and Methodology for Model Uncertainty Evaluation**

Vlastimil Boháč (Slovak Academy of Sci., Slovakia), Peter Dieška (FEI - STU, Slovakia), and Viliam Vretenár (Slovak Academy of Sci., Slovakia)

Oct. 2 (Wed) 09:00~10:20

Biyang (2F)

[WeF1] Fluid Properties

Session Chair Matthias Lenhart-Rydzek (Bavarian Center for Applied Energy Research, Germany)

WeF1-1 09:00~09:20 **Simultaneous Measurements of Speed-of-sound and Dielectric Constant for Gas Samples**

Yuya Kano (AIST, Japan)

WeF1-2 09:20~09:40 **Isobaric Heat Capacity of Liquid Methanol by Flow Calorimeter from 270 K to 330 K**

Satoshi Kondo, Osamu Kawakubo, Hiroshi Tanaka, and Haruki Sato (Keio Univ., Japan)

WeF1-3 09:40~10:00 **Accurate Determination of Critical Parameters Based on Intensity of Transmitted Light around the Critical Point**

Masaki Nakayama and Haruki Sato (Keio Univ., Japan)

WeF1-4 10:00~10:20 **Modeling Gas Hydrate-containing Phase Equilibria for CO₂-rich Mixtures using an Equation of State**

Ju Ho Lee, Sun Hyung Kim, Jeong Won Kang, and Chul Soo Lee (Korea Univ., Korea)



Oct. 2 (Wed) 11:00~12:10

Ramada Ballroom 1 (2F)

[WeA2] Thermodynamic Properties V

Session Chair Ki Young Choi (Seoul Nat'l Univ., Korea)

WeA2-1 11:00~11:30 **[Invited] Study of Thermophysical Properties of High Temperature Molten Metals using a Containerless Technique; Electrostatic Levitation**

Geun Woo Lee (KRIS, Korea), Sangho Jeon (UST, Korea), Hanbyeol Yoo, Minsik Kwon, and Dong-hee Kang (KRIS, Korea)

WeA2-2 11:30~11:50 **Transparent and Thermally Stable Inorganic Polymer/Nanoparticles Composites**

Heejun Jang (Inha Univ., Korea), Yoonjoo Lee, Younghee Kim (KICET, Korea), and Hyungsun Kim (Inha Univ., Korea)

WeA2-3 11:50~12:10 **Thermal Effect of Porous Silica based Ceramics using SiC Additives**

Young-Hwan Kim (Hanyang Univ., Korea), Jin-Seok Lee, Jeong-Gu Yeo (KIER, Korea), Yeon-Gil Jung (Changwon Nat'l Univ., Korea), Un-Kyu Paik, and Sung-Churl Choi (Hanyang Univ., Korea)

Oct. 2 (Wed) 11:00~12:30

Ramada Ballroom 2 (2F)

[WeB2] Micro/Nanoscale Thermal Transport III

Session Chair Dong Sik Kim (POSTECH, Korea)

WeB2-1 11:00~11:30 **[Keynote] Anisotropic Thermal Transport and Metrological Application of Multiwalled Carbon Nanotube**

Koji Takahashi (Kyushu Univ., Japan)

WeB2-2 11:30~11:50 **Thermal Properties of Films Screen-printed using Ag-CNT Nanocomposite Paste**

Kwang-seok Kim, Bum-geun Park, Kwang-ho Jung, Jae-oh Bang, and Seung-boo Jung (Sungkyunkwan Univ., Korea)

WeB2-3 11:50~12:10 **A Study on the Thermal Conductivity Properties of MWCNT / Thermosetting Resin Composites using Processed MWCNT**

Seok-min Kang and Chan-woo Park (Chonbuk Nat'l Univ., Korea)

WeB2-4 12:10~12:30 **Prediction of Thermal Conductivity of Mesoporous Alumina with Molecular-dynamics Method**

Yanhui Feng, Siwei Yuan, Xin Wang, and Xinxin Zhang (Univ. of Sci. and Tech. Beijing, China)



Oct. 2 (Wed) 11:00~12:30

Ramada Ballroom 3 (2F)

[WeC2] Database and Software I

Session Chair Satoru Momoki (Nagasaki Univ., Japan)

WeC2-1 11:00~11:30 **[Keynote] Online Data Resources in Chemical Engineering Education: Impact of the Uncertainty Concept**

Sun Hyung Kim, Jeong Won Kang (Korea Univ.,), Kenneth Kroenlein, Joseph Magee, Vladimir Diky, Chris Muzny, Andrei Kazakov, Robert Chirico, and Michael Frenkel (NIST, USA)

WeC2-2 11:30~11:50 **Combined Consistency Tests of Phase Equilibrium Data**

Jeong Won Kang (Korea Univ., Korea), Vladimir Diky, and Michael Frenkel (NIST, Korea)

WeC2-3 11:50~12:10 **Semantic Mathematical Representation using OpenMath for Equation Data in Network Database System for Thermophysical Property Data**

Yuichiro Yamashita, Tetsuya Baba (AIST, Japan), and Toshihiro Ashino (Toyo Univ., Japan)

WeC2-4 12:10~12:30 **Thermophysical Properties of Ionic Liquids: Numerical Data and Internet Resources**

Valery Ochkov, Alexander Khusnullin, Evgueni Ustyuzhanin (Nat'l Research Univ., Russia), and Jiangtao Wu (Xi'an Jiaotong Univ., China)

Oct. 2 (Wed) 11:00~12:30

Ramada Ballroom 4 (2F)

[WeD2] New Materials and Processing I

Session Chair Ho-Sung Lee (Univ. of Sci. & Tech., Korea)

WeD2-1 11:00~11:30 **[Keynote] Polymer Nanocomposites of Tribotechnical Application**

Okhlopkova Aytalina (North-Eastern Federal Univ., Russia), Petrova Pavlina (Inst. for Problems of Oil and Gas, Russia), Sleptsova Sardana, and Struchkova Tatiana (North-Eastern Federal Univ., Russia)

WeD2-2 11:30~11:50 **Evaluation of Thermal Conductivity of Vertically Aligned CNTs / Parylene Composite by Photothermal Radiometry**

Takahiro Tawata, Yoshihiro Taguchi, and Yuji Nagasaka (Keio Univ., Japan)

WeD2-3 11:50~12:10 **Thermal Properties of Polyethylene and Copolymers in a Wide Range of Temperatures and Times Studied by Fast Scanning Calorimetry**

Evgeny Zhuravlev (Univ. of Rostock, Germany), Florian Stadler (Chonbuk Nat'l Univ., Korea), Vahid Karimkhani (Amirkabir Univ. of Tech., Iran), and Christoph Schick (Univ. of Rostock, Germany)

WeD2-4 12:10~12:30 **Heat Spreading Property of Ceramic and Metal Composite Film**

Hyunseok Choi, Minsung Kang, Donghyun Lee, and Kyungsub Lee (Donghyun Electronics Co., Ltd., Korea)



Oct. 2 (Wed) 11:00~12:30

Mara (2F)

[WeE2] Measuring Techniques and Sensors II

Session Chair Su Yong Kwon (KRISS, Korea)

WeE2-1 11:00~11:30 **[Keynote] Laser Flash Measurements on Thin Films using State-of-the-art Detector Systems**

Juergen Blumm, Andre Lindemann, and Martin Brunner (Netzsch-Geraetebau GmbH, Germany)

WeE2-2 11:30~11:50 **A Method to Determine Thermal Conductivity of Small Particles**

Aijuan Hu, Mingzhi Yu, Hancui Chen, Xuejing Fan, and Bangyao Xu (Shandong Jianzhu Univ., China)

WeE2-3 11:50~12:10 **Loss Factor of Plastics with Temperature Variation**

Yong Bong Lee, Sung Soo Jung (KRISS, Korea), and Su Hyun Shin (Automotive Parts Inst. Center, Korea)

WeE2-4 12:10~12:30 **Emissivity and Electrical Resistivity Measurements of Carbon Fiber**

Kensuke Higuchi, Hiromichi Watanabe, Naofumi Yamada, and Norio Iwashita (Nat'l Inst. of Advanced Industrial Sci. and Tech., Japan)

Technical Program**October 2, 2013 (Wednesday)****Oct. 2 (Wed) 14:00~15:30****2F Lobby****Poster Session 2**

- P2-1 Deformation and Fracture Behavior of Nanocrystalline Copper Thin Films using Advanced In-situ TEM Study**
Seong-woong Kim and Chang-seok Oh (KIMS)
- P2-2 TiNi Thin Films for Shape Memory Alloy Fabricated by Co-sputtering Deposition**
Seong-woong Kim, Chan Hee Park, Jeoung Han Kim, and Jong-taek Yeom (KIMS)
- P2-3 Development of Beta-gamma TiAl alloys with Enhanced Room Temperature Ductility: A Fundamental Study using In-situ TEM**
Seong-woong Kim, Young-sang Na, Jong-taek Yeom, and Seung Eon Kim (KIMS, Korea)
- P2-4 Influence of Spinel($MgAl_2O_4$) on Thermal Properties of Cordierite-based Glass/ceramic Composite**
Seung-gu Kang and Ji-hwan Won (Kyonggi Univ, Korea)
- P2-5 Thermal Conductivity Enhancement of Dual Functional Sheet that has EMI Absorbing and Thermal Conducting Properties**
Hyunseok Choi, Mookyung Moon, and Kyungsub Lee (Donghyun Electronics Co. Ltd., Korea)
- P2-6 PPE/ENPLA Polymer Composites of Flame Retardancy**
Do Kyun Kim (KIST, Korea), Kwang Ho Song (Korea Univ., Korea), Soon Man Hong, and Chong Min Koo (KIST, Korea)
- P2-7 Preparation of Polymer Layered Silicate Nanocomposites based on PTFE**
Sardana Sleptsova, Aitalina Okhlopko, Julia Kirillina, and Ekaterina Afanasyeva (North-Eastern Federal Univ., Russia)
- P2-8 Metal Organic Chemical Vapor Deposition of Bi_2Te_3 Films using New Precursor Combination**
Sang-Woo Kang, Sang Jun Lee, and Ju-young Yun (KRISS, Korea)



- P2-9** **The Synthesis of Holmium Nitride Particles with the Use of Urea under the Microwave Irradiation**
Jongbin Ahn, Dongsoo Kim, Kookchae Chung, and Jongwoo Kim (KIMS, Korea)
- P2-10** **Measurement of Adhesion Force in Interface of Nano-ceramic Polymer Composite for Low Temperature Seal Application**
Lee Jungkeun (Inha Univ., Korea), Sokolova M. d., Shasdrinov Nikolai.v. (Inst. of oil and gas Issues, Russia), Okhlopkova Aytalina A. (North-eastern Federal Univ., Russia), Jeong Dae-yong (Inha Univ., Korea), and Cho Jin-ho (Myongji Univ., Korea)
- P2-11** **Hybrid Effect of Copper Oxide Nanowires on Thermal-conductivity of Graphene Nanoplatelets**
Hansung Lee, Lan Yu, Ji Sun Park, Kwonwoo Shin, and Churl Seung Lee (KETI, Korea)
- P2-12** **Purification and Particle Size Control of b-SiC Powder using a Thermocycle Process**
Eunjin Jung, Yoon Joo Lee, Soo Ryong Kim, Woo Teck Kwon (KICET, Korea), Doo Jin Choi (Yonsei Univ., Korea), and Younghee Kim (KICET, Korea)
- P2-13** **Effects of CeO₂ Additives and the Composition Change of ZrO₂ on the Mechanical Characteristics of ZTA**
Jongbong Kang, Bolang Kim, Hyunjun Jeong (Kyungnam Univ., Korea), Jihoon Chae, Bumrae Cho (Keimyung Univ., Korea), and Jusung Lee (Cenotec, Korea)
- P2-14** **Effect of Silica Nano-powders Addition on Sol Evolution and Grain Growth of Continuous Spinning Alumina based Fibers**
Hai-hong Zhang, Bo Wang, and Jian-feng Yang (Xi'an Jiaotong Univ., China)
- P2-15** **Thermal Conductivity of Nanoparticles-carbon Nanotube/polymer Composites**
Su Yong Kwon, Sanghyun Lee, and Joohyun Lee (KRISS, Korea)
- P2-16** **Synthesis and Characterization of Lead Oxide Powder by Hydrothermal Processing**
Pilgyu Choi (Changwon Nat'l Univ., Korea), Tae Sup Lim, Hee-Jung Kim (Sebang Global Battery, Korea), and Dong Sik Bae (Changwon Nat'l Univ., Korea)

- P2-17** **Annealing Effects of Au Dispersed PEDOT:PSS in Bulk Heterojunction Organic Solar Cells**
Seungho Kim, Byung Min Park, Gi Ppeum Kim, and Ho Jung Chang (Dankook Univ., Korea)
- P2-18** **Development of High Hydrogen Concentration References Based on Thermogravimetric Data of Titanium Hydride**
Yun-hee Lee, Ki-bok Kim, Yong-il Kim, Jong Seo Park, and Hae Moo Lee (KRISS, Korea)
- P2-19** **Bandgap Tuning with the Lattice Distortion Induced by Two Symmetries in a Quantum Dot**
Eui-hyun Kong, Yong-june Chang, Hyun-jin Park, and Hyun Myung Jang (POSTECH, Korea)
- P2-20** **Electrical Conductivity-weight Change Relationship in Ga Doped Layered Perovskite Cathode using In Situ Analysis Technique for Intermediate Temperature-operating Solid Oxide Fuel Cell**
Yongmin Kim, Jihoon Jeong (KIST, Korea), Kyoung Tae Lim (Kceracell Co. Ltd., Korea), Sung Pil Yoon, Suk Woo Nam (KIST, Korea), and Jung Hyun Kim (Hanbat Nat'l Univ., Korea)
- P2-21** **Property Enhancement of Supercritically Carbonation Specimen by Particle-size Separation of Fly Ash and Cement Powder**
Junyoung Park and Yootaek Kim (Kyonggi Univ., Korea)
- P2-22** **Synthesis of Si-C-LFP Powders by Sol-Gel and Microwave Assist Process**
Chan Park and Dong-sik Bae (Changwon Nat'l Univ., Korea)
- P2-23** **Modelling Biodiesels Thermophysical Properties and Phase Equilibria with the Soft-SAFT EoS**
Samuel Freitas, Mariana B. Oliveira (Univ. of Aveiro, Portugal), Felix Llovell, Lourdes F. Vega (UAB, Spain), and João A. P. Coutinho (Univ. of Aveiro, Portugal)
- P2-24** **Surface Tension of Ionic Liquids: Evaluation of the Anion, Cation and Water Content Effects**
Hugo F. D. Almeida, José A. Lopes-da-silva, Mara G. Freire, and João A. P. Coutinho (Universidade de Aveiro, Portugal)



- P2-25 Solubility of Carbohydrates in Ionic Liquids**
Ana Rita R. Teles, Mara G. Freire, and João A. P. Coutinho (Universidade de Aveiro, Portugal)
- P2-26 Behavior of Cracks Occurred in the Lightweight Aggregate (LWA) Manufactured using Flash Sintering**
Jimin Kang and Seunggu Kang (Kyonggi Univ., Korea)
- P2-27 Effect of Particle Size on the Physical Properties of the Waste Spent Catalyst based Geopolymer**
Seunggu Kang and Hyeontaek Hong (Kyonggi Univ., Korea)
- P2-28 Synthesis and Characterization of PbO Cathode Nanoparticles by Coprecipitation Method**
Yongho Park and Dongsik Bae (Changwon Nat'l Univ., Korea)
- P2-29 Low Melting Point of Glass Frit and Interface Reactions in Si Solar Cells**
Seunggu Choi, Jungki Lee, and Hyungsun Kim (Inha Univ., Korea)
- P2-30 Dye-sensitized Solar Cells using Ga-doped ZnO Film with ZTO Buffer Layer**
Sang-Woo Song, Kyung-ju Lee, Ji-hyung Roh, On-jeon Park, Hwan-sun Kim (Korea Univ., Korea), Min-woo Ji (Yonsei Univ., Korea), and Byung-moo Moon (Korea Univ., Korea)
- P2-31 Thermal Behaviors of Different Cesium Compounds Reacted with Fly Ash Filter**
Jin Myeong Shin, Jang Jin Park, Jae Hwan Yang, Do Yeon Lee, Young Hee Baek, Jae Uk Yu, and Geun IL Park (KAERI, Korea)
- P2-32 A Novel Approach of Recycling Waste Wood, Glass, and Shell to Cellulose-calcium Silicate**
Sin Tae Kim (Univ. of Pennsylvania, USA), Hyung Jun Park (Univ. of Hong Kong, Hong Kong), and Haejin Hwang (Inha Univ., Korea)
- P2-33 Fabrication of Porosity Controlled Silicon Carbide Fiber by Thermal Treatment**
Dong-geun Shin, Kwang-youn Cho, Younghee Kim, Soo-ryong Kim, Woo-teck Kwon (KICET, Korea), Doh-hyung Riu (Seoul Nat'l Univ. of Tech., Korea), and Yoon-joo Lee (KICET, Korea)

- P2-34 Thermal, Electrical and Catalytic Properties of $\text{Nd}_{2-x}\text{Sr}_x\text{NiO}_{4+d}$ Layered Perovskite**
Kyoung-jin Lee (Inha Univ., Korea), Won-seon Seo (KICET, Korea), and Hae Jin Hwang (Inha Univ., Korea)
- P2-35 Visible Light Active $\text{Cu}_2\text{Te}/\text{TiO}_2$ Photocatalyst for Hydrogen Production**
Bee Lyong Yang and Hyun Kim (Kumoh Nat'l Inst. of Tech., Korea)
- P2-36 Single Crystalline and Polycrystalline TiO_2 Nanostructures for Solar Hydrogen Generation**
Ulugbek Shaislamov and Beelyong Yang (Kumoh Nat'l Inst. of Tech., Korea)
- P2-37 Ammonothermal Treatment Effects of Photocatalytic ZnO/TaON Nanocomposites**
Tae-ho Kim, Yong-hyun Jo, Rajesh Adhikari, Sung-hun Cho, and Soo-wohn Lee (Sun Moon Univ., Korea)
- P2-38 Hydrothermal Synthesis of $\alpha\text{-MoO}_3$ Nanorods with Electrochemical Performance as Electrode Material for Lithium Ion Batteries**
Joo-hyung Kim, Young Hwa Jung, Seok-min Yong, and Do Kyung Kim (KAIST, Korea)
- P2-39 TiO_2/NiO on FTO Fabricated to Improve Photocatalytic Properties for Water Splitting**
Jiyeong Kim and Beelyong Yang (Kumoh Nat'l Inst. of Tech., Korea)
- P2-40 ZnO/TiO_2 Photocorrosion Protective Layers Deposited on CuO Nanosheets for Solar Hydrogen Generation**
Lochin Yusupov and Bee Lyong Yang (Kumoh Nat'l Inst. of Tech., Korea)
- P2-41 Effect of Carbon Contents on the Properties of Reaction Sintered SiC Ceramics**
Woo Teck Kwon, Dong-geun Shin, Younghee Kim, Soo-ryong Kim, Jong Il Kim (KICET, Korea), and Sea Cheon Oh (Kongju Nat'l Univ., Korea)
- P2-42 Temperature and Time Dependence of Sintering Behavior in Iodine Waste Forms**
Jae Hwan Yang, Jin Myeong Shin, Jang Jin Park, and Geun Il Park (KAERI, Korea)



- P2-43** **Improvements in the Laser-flash Apparatus for Measuring Thermal Diffusivity of Solid Materials over the Temperature Range from Room Temperature to 1200°C in NIM**
Jianping Sun and Jintao Zhang (Nat'l Inst. of Metrology, China)
- P2-44** **Direct Gas Density Measurement using Magnetic Suspension Balance**
Yong Jae Lee (KRISS, Korea), Chae Youn Oh (Chenonbook Nat'l Univ., Korea), and Woo Gab Lee (KRISS, Korea)
- P2-45** **Study on the Compression Ratio on the Fiber Orientation during Heat & Compression Molding of Short-fiber Reinforced Thermoplastic Composites**
Jin-woo Kim, Hyoung-seok Kim, and Dong-gi Lee (Chosun Univ., Korea)
- P2-46** **Mechanical Properties of High Temperature Reaction-sintered Mullite/zirconia Composites**
Shielah Mavengere, Jihoon Chae, and Bum-rae Cho (Keimyung Univ., Korea)
- P2-47** **Structure and Surface Properties in Cerium Containing Glasses**
Wongyu Choi, Youngseok Kim, Kyungseok Han, Ilgu Kim, and Bongki Ryu (Pusan Nat'l Univ., Korea)
- P2-48** **Structural, Electrical and Thermal Properties of Calcium Aluminosilicate Glass-aluminum Nitride Composites**
Il-gu Kim, Young-seok Kim, Kyung-seok Han, Won-gyu Choi, and Bong-ki Ryu (Pusan Nat'l Univ., Korea)
- P2-49** **First-principles Calculation of the Lattice Parameters of Graphite at High Temperature and High Pressure**
Bin Xu, Xiaohong Fan, Yong Xu, Xiaofei Guo (Shandong Jianzhu Univ., China), and Tongguang Zhai (Univ. of Kentucky, USA)
- P2-50** **Catalytic Activity of Pt/SiO₂ Hybrid Catalysts Coated on Metal Foam by Electro spray Process**
Jaecheol Yoon, Hye Young Koo, Sangsun Yang, and Jung-yeul Yun (KIMS, Korea)
- P2-51** **Temperature Effects on Asphaltene Flocculation in Toluene/n-Heptane/CO₂ Mixtures under High Pressure**
Marcano Francia, Ranaudo Maria Antonietta, Chirinos José, Castillo Jimmy, Daridon Jean-luc, and Carrier Hervé (Université de Pau et des Pays de l'Adour, France)

- P2-52 Interaction between a Multicomponent Lanthanide Alloy and Ferritic-Martensitic Steel**
Jun Hwan Kim, Jin Sik Cheon, June Hyung Kim, Byoung Oon Lee, and Chan Bock Lee (KAERI, Korea)
- P2-53 Study on Thermophysical Behavior of Boron Compound for Fabrication of Burnable Absorber Containing UO_2 Nuclear Fuel Pellet**
Dong Joo Kim, Young Woo Rhee, Keon Sik Kim, Jong Hun Kim, Jang Soo Oh, and Jae Ho Yang (KAERI, Korea)
- P2-54 Investigation of Air Oxidation Behavior of Simulated Fuel Pellet for Accident Analysis in Spent Nuclear Fuel Pool**
Dong Joo Kim, Keon Sik Kim, Jong Hun Kim, Young Woo Rhee, Jang Soo Oh, Jae Ho Yang, and Tae Hyun Chun (KAERI, Korea)
- P2-55 Fly-ash Granule Filter for Trapping Gaseous Cesium**
Jang Jin Park, Jin Myeong Shin, Jae Hwan Yang, Young Hee Baek, and Geun Il Park (KAERI, Korea)
- P2-56 Nondestructive Evaluation of High-temperature Elastic Modulus of Nuclear Graphite using an Impulse Excitation Method**
Eung-seon Kim, Min-hwan Kim, and Yong-wan Kim (KAERI, Korea)
- P2-57 The Chang of O/U Ratio during Sintering of U_3O_8 under Various Atmospheres**
Sang Ho Na, Se Hwan Park, Ho Dong Kim, Hee Sung Shin, Dae Yong Song, Bo Young Han, Hee Seo, and Myung June Yoo (KAERI, Korea)
- P2-58 Surface Oxidation Status of Zirlo Cladding Hulls Oxidized at Low Temperatures**
Yong Taek Choi, Chang Hwa Lee, You Lee Lee, Kweon Ho Kang, Geun Il Park, and Min Ku Jeon (KAERI, Korea)
- P2-59 Creep Behavior of Mn-Al Doped UO_2 Pellets according to Change of BET Surface Area of Recycled U_3O_8 Powder**
Jang Soo Oh, Jae Ho Yang, Dong Joo Kim, Jong Hun Kim, Young Woo Rhee, Keon Sik Kim, and Yang Hyun Koo (KAERI, Korea)
- P2-60 Thermal Pretreatment Condition Effects for Porous UO_2 Pellet Fabrication**
Jae-won Lee, Sang-jun Kang, Kwang-hun Cho, Hee-sung Park, Jung-won Lee, and In-tae Kim (KAERI, Korea)



- P2-61** **Weldability of HT9 Fuel Elements for SFR Fuel Fabrication**
Soosung Kim, Hyungtae Kim, Hoon Song, Yoonmyeng Woo, and Kihwan Kim (KAERI, Korea)
- P2-62** **Fabrication of Volatile Metallic Fuel for Sodium-cooled Fast Reactor**
Jong Hwan Kim, Hoon Song, Young Mo Ko, Ki Hwan Kim, and Chan Bock Lee (KAERI, Korea)
- P2-63** **A Study on Plasma-sprayed Coatings of Melting Crucible for Metallic Fuel Slugs**
Jong Hwan Kim, Hoon Song, Yoon Myung Woo, Ki Hwan Kim, and Chan Bock Lee (KAERI, Korea)
- P2-64** **Fabrication of High-content U-Zr-RE Fuel Slugs for SFR**
Hoon Song, Jong-hwan Kim, Young-mo Ko, Yoon-myung Woo, Ki-hwan Kim, and Chan-bok Lee (KAERI, Korea)
- P2-65** **A New Estimation Method for Predicting Thermal Conductivity of Liquid Refrigerants and Alkanes**
Chuanqi Yao, Xiaoming Zhao, and Zhigang Liu (Xi'an Jiaotong Univ., China)
- P2-66** **Magnetocaloric Effect of HoN Nanoparticles Prepared by Plasma Arc Discharge Process**
Dongsoo Kim, Kookchae Chung, and Chuljin Choi (KIMS, Korea)
- P2-67** **Application of 2T Model based on Dual-Phase-Lag to Calculation of Temperature Field in Nanoscale Metal Film Subject to Ultrashort-pulse Heat Source**
C. Y. Ho (Hwa Hsia Inst. of Tech., Taiwan), B. C. Chen (Buddhist Dalin Tzu Chi General Hospital, Taiwan), C. Ma, and Y. H. Tsai (Hwa Hsia Inst. of Tech., Taiwan)
- P2-68** **Thermal Conductivity of Copper Circuit Layer and Anodic Aluminum Oxide(AAO) Morphology through the Anodization**
Hyeong-won Shin, Hyo-soo Lee (KITECH, Korea), and Seung-boo Jung (Sungkyunkwan Univ., Korea)
- P2-69** **Evaluation of Thermal Conductivity of Porous TiO₂-SiO₂ Composites and its Application**
Jong-ho Kim, Byungchul Choi, Woo-nam Juhng (Chonnam Nat'l Univ., Korea), Sanghyun Lee, Su Yong Kwon (KRISS, Korea), Se Min Park (Chonnam Nat'l Univ., Korea), Jong Beom Kim (Photo & Environmental Tech. Co., Korea), and Ho Kyong Shon (Univ. of Tech., Australia)

- P2-70** **Metal-insulator Transition in Individual Free-standing Single Crystal Bi_2S_3 Nanowire**
Weigang Ma, Tingting Miao, Xing Zhang (Tsinghua Univ., China), Koji Takahashi, and Tatsuya Ikuta (Kyushu Univ., Japan)
- P2-71** **Non-Fourier Heat Conduction Model used for Temperature Analysis in Nanoscale Thin Film**
C. Y. Ho (Hwa Hsia Inst. of Tech., Taiwan), B. C. Chen (Buddhist Dalin Tzu Chi General Hospital, Taiwan), C. Ma, and Y. H. Tsai (Hwa Hsia Inst. of Tech., Taiwan)
- P2-72** **Effects of Exfoliation of Hexagonal Boron Nitride on Thermal Conductivity in Epoxy Composites**
Jeseung Yoo, Kun-woo Park, and Young-soo Seo (Sejong Univ., Korea)
- P2-73** **Effects of Laser Treatment on Transport Properties of Aqueous Carbon Nanotube Suspensions**
Jonggan Hong, Gyuyong Son, and Dongsik Kim (POSTECH, Korea)
- P2-74** **Thermal Diffusivity of WO_{3-x} Films Deposited by dc Reactive Magnetron Sputtering**
Kai Ootani (Aoyama Gakuin Univ., Japan), Yuichiro Yamashita, Takashi Yagi (AIST, Japan), Junjun Jia (Aoyama Gakuin Univ., Japan), Naoyuki Taketoshi, Tetsuya Baba (AIST, Japan), and Yuzo Shigesato (Aoyama Gakuin Univ., Japan)
- P2-75** **The Influence of Carbon Nanotubes on the Thermal Properties of Cu Matrix Nanocomposites Processed by Molecular Level Mixing**
Kyung Tae Kim (KIMS, Korea)
- P2-76** **The Effect of Disentanglement of CNT Nanofluid on the Specific Heat**
Joohyun Lee, Su Yong Kwon, and Sang Hyun Lee (KRISS, Korea)
- P2-77** **Fabrication of Thermal Conducting Composite by Electrospun Chopped-SiC Fiber**
Tae-eon Kim (KICET, Korea), Yong-gun Shul (Yonsei Univ., Korea), and Kwang Yeon Cho (KICET, Korea)
- P2-78** **Increase of Thermal Conductivity of SiC Fiber/resin Composites by the Addition of Graphene Nanoplatelets**
Tae-eon Kim (KICET, Korea), Yong-gun Shul (Yonsei Univ., Korea), and Kwang Yeon Cho (KICET, Korea)



- P2-79** **Analysis of Convective Heat Transfer in Micro Heat Exchanger for Stacked Multi-chip Module**
Jeonghoon Lee, Hyunkyuu Lee, and Seungmo Kim (Korea Univ., Korea)
- P2-80** **Design and Fabrication of Microcalorimeter with Enhanced Isothermal Area**
Woong-jhae Lee, Hyung Joon Kim (Seoul Nat'l Univ., Korea), Jae Wook Kim (Los Alamos Nat'l Laboratory, USA), and Kee Hoon Kim (Seoul Nat'l Univ., Korea)
- P2-81** **Ferroelectric Property of Hydrothermally Grown PbTiO₃ Film on Aerosol Deposited Seed Layer**
Jungkeun Lee, Soohwan Lee, Min-geun Choi (Inha Univ., Korea), Young-min Kong (Univ. of Ulsan, Korea), Junggho Ryu (KIMS, Korea), and Dae-yong Jeong (Inha Univ., Korea)
- P2-82** **Modification of Butadiene-nitrile Rubbers with Natural Zeolites**
Natalia Petrova and Viktoria Portnyagina (North-Eastern Federal Univ., Russia)
- P2-83** **Measurement and Correlation for Density of Aqueous IPAP and IPADP Solutions**
Hun Yong Shin (Seoul Nat'l Univ. of Sci. and Tech., Korea) and Jeong Won Kang (Korea Univ., Korea)
- P2-84** **Uncertainty Evaluation of Viscosity Measurement Standards by Capillary Viscometer Method**
Yong Bong Lee, Hae Man Choi, Byung Ro Yoon, Yong Moon Choi, and Woong Kang (KRISS, Korea)
- P2-85** **Phase Behavior of Elastomer Binders used for Producing Polymer-bonded Explosives in High-pressure Fluids**
Sang-kyu Nam, Byung-chul Lee (Hannam Univ., Korea), Ho Yeon Lee, Won Bok Jeong (Hanwha Corp. R&D Center, Korea), Jung Seob Shim, Keun Deuk Lee, and Hyoun Soo Kim (Agency for Defense Development, Korea)
- P2-86** **Temperature Dependence of the Diffusion Coefficient of Nano Particle using Fluorescence Correlation Spectroscopy**
Chanbae Jung, Jaeran Lee, and Sok Won Kim (Univ. of Ulsan, Korea)

- P2-87** **Phase Behavior of Non-polymeric Binders for Energetic Materials in Supercritical Carbon Dioxide**
Sang-mi Han, Byung-chul Lee (Hannam Univ., Korea), Ho Yeon Lee, Won Bok Jeong (Hanwha Corp. R&D Center, Korea), Jung Seob Shim, Keun Deuk Lee, and Hyoun Soo Kim (Agency for Defense Development, Korea)
- P2-88** **Solubility of Carbon Dioxide in Aqueous Methyl-diethanolamine and Sulfolane Solutions**
Hun Yong Shin (Seoul Nat'l Univ. of Sci. and Tech., Korea), Byoung-moo Min, Jong-seop Lee (KIER, Korea), and Jin Hee Jeon (Doosan Heavy Industries & Construction Co. Ltd., Korea)
- P2-89** **Isothermal Vapor-liquid Equilibria Measurement for the System of Dimethyl Ether(DME)+Dimethyl Carbonate(DMC)**
Hyun Cho and Jong-Sung Lim (Sogang Univ., Korea)
- P2-90** **CO₂ Solubility in Ionic Liquids based on the CN Group Anion at High Pressure**
Ji Eun Kim and Jong Sung Lim (Sogang Univ., Korea)
- P2-91** **Titanizing on the Surface of Iron Metal Foam**
Su-in Lee (KIMS, Korea), Byoung-kee Kim (Univ. of Ulsan, Korea), Jung-yeul Yun (KIMS, Korea), Jei-pil Wang (Pukyong Nat'l Univ., Korea), and Dong-won Lee (KIMS, Korea)
- P2-92** **Analysis of Cogging Crack Origin in Large Superaustenitic Stainless Steel Ingot by Differential Scanning Calorimetry**
Seong-moon Seo, Hi-won Jeong, Young-sang Na (KIMS, Korea), Bong-su Kim (Gyeongnam Technopark, Korea), Young-soo Yoo, Doo-hyun Kim, and Jong-taek Yeom (KIMS, Korea)
- P2-93** **Recrystallization of Commercially Pure Titanium during Hot Deformation**
He Lijia (Liaoning Univ. of Tech., China), Manshadi A. Dehghan, and J. Dippenaar Rian (Univ. of Wollongong, Australia)
- P2-94** **A New Approach for Growth of Ribbon-type Polycrystalline Silicon Wafer from Silicon Melts using Gas Pressure**
Jin-seok Lee, Bo-yun Jang, Joon-soo Kim, and Young-soo Ahn (KIER, Korea)



- P2-95** **Effect of a Ball to Powder Weight Ratio on Microstructure of Mechanically Alloyed Al-Fe Alloy Powders**
Taek-kyun Jung, Myung-sik Chol, Dong-woo Joh, and Hyo-soo Lee (KITECH, Korea)
- P2-96** **Effect of Temperature on Grain Growth Kinetics of High Strength Ti-2Al-9.2Mo-2Fe Alloy**
Dong-geun Lee (KIMS, Korea), Chenglin Li (General Research Inst. for Nonferrous Metals, China), Yongtai Lee (KIMS, Korea), Xujun Mi, and Wenjun Ye (General Research Inst. for Nonferrous Metals, China)
- P2-97** **Hot Working Design for Ingot Breakdown of Ti-6Al-4Fe Alloy**
Jong-taek Yeom, Jae Keun Hong, Chan Hee Park, Jeoung Han Kim, Seong-woong Kim, Joo-hee Kang, and Yong Taek Hyun (KIMS, Korea)
- P2-98** **Room-temperature Synthesis of SnO₂ from Copper Alloy Dross**
Jung-il Lee and Jeong Ho Ryu (Korea Nat'l Univ. of Transportation, Korea)
- P2-99** **Noncontact Measurements of Normal Spectral Emissivity, Heat Capacity and Thermal Conductivity of Liquid Nickel**
Hideo Higashi, Junichi Takano (Tohoku Univ., Japan), Hidekazu Kobatake (German Aerospace Center, Germany), and Hiroyuki Fukuyama (Tohoku Univ., Japan)
- P2-100** **Effect of Sulfur on the Mechanical Properties of a Directionally Solidified Nickel base Superalloy**
H. W. Jeong, S. M. Seo, Y. K. Ahn, Y. S. Yoo (KIMS, Korea), and J. H. Lee (Changwon Nat'l Univ., Korea)
- P2-101** **Fabrication and Characterization of U-10wt.%Zr and U-10wt.%Zr-REFuel Slugs Prepared by Gravity Casting Method**
Ki-hwan Kim, Yoon-myeng Woo, Hyung-tae Kim, Hoon Song, and Chanbock Lee (KAERI, Korea)
- P2-102** **Thermal Analysis of Precipitation in Al-Li Alloys**
Hyun Ho Jung, Ji-ung Choi (Univ. of Sci. & Tech., Korea), Jong-hoon Yoon, Joon-tae Yoo (KARI., Korea), and Ho-sung Lee (Univ. of Sci. & Tech., Korea)
- P2-103** **A Kinetic Study on Crystallization in CaO-SiO₂-Al₂O₃-Na₂O-CaF₂-(Li₂O-B₂O₃) Mold Fluxes**
Myung-duk Seo, Cheng-bin Shi, Jung-wook Cho, and Seon-hyo Kim (POSTECH, Korea)

- P2-104 Thermal Radiation Heat Transfer through Molten Mold Flux Film during Initial Solidification of Steel in Continuous Casting Mold**
Daewoo Yoon, Jung-wook Cho, and Seon-hyo Kim (POSTECH, Korea)
- P2-105 Crystallization Characteristics of CaO–Al₂O₃ based Mold Flux for High-Aluminum TRIP Steels Continuous Casting**
Cheng-bin Shi, Myung-duk Seo, Jung-wook Cho, and Seon-hyo Kim (POSTECH, Korea)
- P2-106 Comparison of Thermal Behavior of SiC Coating Deposited on Graphite Substrate by Chemical Vapor Reaction(CVR) and Chemical Vapor Deposition(CVD)**
Yootaek Kim, Changsub Jang (Kyonggi Univ., Korea), and Eung-seon Kim (KAERI, Korea)
- P2-107 Oxidation Resistance Behavior of Highly Dense and Continuous β -SiC/buffer/carbon Fibers under Different Conditions by LP-CVD**
Hyun Jeong Bae, Baek Hyun Kim, and Do-Kyun Kwon (Korea Aerospace Univ., Korea)
- P2-108 Preparation of Inorganic Nanoparticles Coated on Plate Micaas Infrared Reflective Red Pigment**
Hyun Jin Lee, Ha Young Jung, Dae-sung Kim, Hyung Mi Lim, Seung-ho Lee (Inst. of Ceramic Engineering and Tech., Korea), Byung-ki Choi, and Kang-joong Kang (CQV Co, Korea)
- P2-109 Characterization of High-temperature Ceramic Plasma-spray Coating Layers on Graphite and Niobium Substrates**
Ki-hwan Kim, Young-mo Ko, Hyung-tae Kim, Jong-hwan Kim, and Chan-bock Lee (KAERI, Korea)
- P2-110 Plasma Coating Layer of Ceramic Materials for Re-usable U-Zr Alloys Fuel Crucibles**
Hoon Song, Jong-hwan Kim, Young-mo Ko, Yoon-myung Woo, Ki-hwan Kim, and Chan-bock Lee (KAERI, Korea)
- P2-111 Thermal Cycling of Plasma-sprayed Coating Layer for Fuel Crucibles**
Hoon Song, Jong-hwan Kim, Young-mo Ko, Yoon-myung Woo, Ki-hwan Kim, and Chan-bock Lee (KAERI, Korea)



- P2-112** **Preparation and Characterization of NIR Absorbed Antimony Doped Tin Oxide Polymer Film**
Kook-hyun Yu, Byungchul Kim, Won-je Cho, Suengil Park, Won Gil Lee, Yongseong Seo (Dongguk Univ., Korea), Inchul Shim (Chemilab Co. Ltd., Korea), and Jeongyup Kim (Niche Chemical Tech., Korea)
- P2-113** **Effect of Heat Treatment on Properties of Alkali/Alkaline-earth Borosilicate Glass Composite Sealants**
Bong-soo Kim, Dong-hoon Jang, Sung Park, and Jae Chun Lee (Myongji Univ., Korea)
- P2-114** **Filler-related Reliability Degradation in Semiconductor Devices Encapsulated by Epoxy Molding Compound during Thermal Variation**
Seong-min Lee (Incheon Nat'l Univ., Korea)
- P2-115** **Quantitative Measuring Methods of Temperature dependent Surface Tack and Scratch Phenomena on Polymeric Materials**
Inchul Shim (Chemilab Co. Ltd., Korea)
- P2-116** **Diffusion Bonding Performance Evaluation by using Laser Flash Method**
Seok Ho Yoon, Dong-wook Oh, Kong Hoon Lee, and Jun Seok Choi (KIMM, Korea)
- P2-117** **A Study on Viscoelastic Creep of an Aerospace Composite Material**
Ji-ung Choi, Hyun Ho Jung, and Ho-sung Lee (Univ. of Sci. & Tech., Korea)
- P2-118** **Mechanical Properties of Uniformly-bloated Artificial Lightweight Aggregates Fabricated by Controlling Sintering Conditions and Compositions**
Seunggu Kang and Miso Park (Kyonggi Univ., Korea)
- P2-119** **Polyethylene/Boron-containing Composites for Radiation Shielding**
Hong Soon Man, Koo Chong Min (KIST, Korea), Kim Woo Nyon (Korea Univ., Korea), Shin Ji Wook, Baek Bum Ki, Yu Seunggu, Chung Jun Yong, and Hong Jun Pyo (KIST, Korea)
- P2-120** **Thermal Conductivity of Polymers Composites with Oriented BN**
Hong Jun Ahn, Young Jun Eoh (Kyonggi Univ., Korea), Sung Dae Park (KETI, Korea), and Eung Soo Kim (Kyonggi Univ., Korea)

- P2-121** **Thermal Stability of Ball-milled Nuclear Graphite Powder**
Eung-seon Kim, Min-hwan Kim (KAERI, Korea), Yi-hyeon Park, and Seung-yeon Cho (Nat'l Fusion Research Inst., Korea)
- P2-122** **Fabrication and Characterization of a Pb-Sn Nanowire Array Gas Sensor with Different Alloy Proportion**
Chin-guo Kuo (Nat'l Taiwan Normal Univ., Taiwan), Ho Chang, Guo-yan Liu, and Jian-hao Wang (Nat'l Taipei Univ. of Tech., Taiwan)
- P2-123** **Development of a Novel Experimental Apparatus for Measuring the Piston Seal Performance in Pneumatic Cylinder**
Ho Chang, Chou-wei Lan, and Jia-bin Guo (Nat'l Taipei Univ. of Tech., Taiwan)
- P2-124** **Biomechanical and Biological Evaluation of Ti-39Nb-6Zr Alloy**
Ka-ram Lim, Dong-geun Lee, and Yong-tai Lee (KIMS, Korea)



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Halla (8F)

[WeA*3] Thermodynamic Properties VI

Session Chair Mert Atilhan (Qatar Univ., Qatar)

WeA*3-1 15:30~15:50 **Gibbs Density Surface of Water: Revised Critical Parameters**

Les Woodcock (Univ. of Manchester, UK)

WeA*3-2 15:50~16:10 **Density and Self-diffusion Coefficients for Benzene and Cyclohexane Mixture by Molecular Dynamics Simulation**

Hidenori Higashi, Kazuhiro Tamura, Takafumi Seto, and Yoshio Otani (Kanazawa Univ., Japan)

WeA*3-3 16:10~16:30 **Data Reduction in TDTR Method for Multi-layer Nanostructure Thermophysical Properties Determination**

Fangyuan Sun, Jie Zhu, and Dawei Tang (Inst. of Engineering Thermophysics, China)

WeA*3-4 16:30~16:50 **Thermal Behavior of Iron Ion (Fe^{3+})-doped Titanium Dioxide Powders Prepared by a Sol-gel Process**

Huey-juan Lin, Tien-syn Yang (Nat'l United Univ., Taiwan), and Moo-chin Wang (Kaohsiung Medical Univ., Taiwan)

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Ara (8F)

[WeB*3] Micro/Nanoscale Thermal Transport IV

Session Chair Ohmyoung Kwon (Korea Univ., Korea)

WeB*3-1 15:30~16:00 **[Keynote] Progresses in Study on Thermophysical Properties of Nanostructured Materials**

Xing Zhang (Tsinghua Univ., China)

WeB*3-2 16:00~16:20 **Development of Photothermal Reflectance Method for Evaluating Micro-scale Thermal Contact Resistance in a Bump Joint of Flip-chip Assembly Structure**

Minoru Kato (Keio Univ, Japan), Yoshihiro Taguchi (Japan Aerospace Exploration Agency, Japan), and Yuji Nagasaka (Keio Univ, Japan)

WeB*3-3 16:20~16:40 **Molecular Dynamics Simulation on Interfacial Thermal Resistance of Si/Ge Interface with Diffusion and Vacancy**

Yibin Xu (NIMS, Japan), Tomohiro Kabashima, Satoshi Minamoto (ITOCHU Techno-Solutions Corp., Japan), and Tianzhuo Zhan (NIMS, Japan)

WeB*3-4 16:40~17:00 **Visualization Study on Open-loop Pulsating Heat Pipe using Self-rewetting Fluids**

Takuya Ishida, Koji Fumoto (Hirosaki Univ., Japan), Masahiro Kawaji (CCNY, USA), Tsuyoshi Kawanami (Kobe Univ., Japan), and Takao Inamura (Hirosaki Univ., Japan)



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Ora (8F)

[WeC*3] Database and Software II

Session Chair Joseph Magee (NIST, USA)

WeC*3-1 15:30~15:50 **New WWW based PROPATH: a Program Package for Thermophysical Properties on Internet Web Page**

*Satoru Momoki, Tomohiko Yamaguchi (Nagasaki Univ., Japan),
Ryo Akasaka, and Yasuyuki Takata (Kyushu Univ., Japan)*

WeC*3-2 15:50~16:10 **The Virtual ChemLab Project: using a Set of Realistic and Sophisticated Virtual Laboratories to Enhance the Teaching of Chemistry and Chemical Thermodynamics in Particular**

Brian Woodfield (Brigham Young Univ., USA)

WeC*3-3 16:10~16:30 **Development of New Chemical Compound Classification Algorithm using SMILES Pattern Match**

Sung Shin Kang and Joeng Won Kang (Korea Univ., Korea)

Oct. 2 (Wed) 15:30~17:10

Mara (2F)

[WeE3] Measuring Techniques and Sensors III

Session Chair Ki Young Choi (Seoul Nat'l Univ., Korea)

WeE3-1 15:30~15:50 **Simultaneous Measurement of Thermal Diffusivity and Thermal Conductivity by means of Inverse Solution for One-dimensional Heat Conduction(Anisotropic Thermal Properties of CFRP for FCEV)**

Masataka Kosaka and Masanori Monde (Inst. of Ocean Energy, Saga Univ., Japan)

WeE3-2 15:50~16:10 **Thermal Expansion Coefficient Measurements among Hkl Grains in a High-entropy Alloy AlCoCrFeNi using Neutron Diffraction**

Wanchuck Woo, Mihyun Kang (KAERI, Korea), Zhi Tang, and Peter Liaw (The Univ. of Tennessee, USA)

WeE3-3 16:10~16:30 **Round Robin Test of Paraffin Phase Change Material**

Stephan Vidi, Harald Mehling, Frank Hemberger (Bavarian Center for Applied Energy Research, Germany), and Thomas Haussmann (Fraunhofer ISE, Germany)

WeE3-4 16:30~16:50 **Autocorrelated Time Series in Assessing Stability of Isothermal Environments**

Inseok Yang, Kee Sool Gam, Yong-gyoo Kim, and Wukchul Joung (KRISS, Korea)

WeE3-5 16:50~17:10 **Al-Ti Doped YSZ against Molten Glass Corrosion**

Sicong Guo and Pan Wei (Tsinghua Univ., China)



Oct. 2 (Wed) 15:30~16:40

Biyang (2F)

[WeF3] New Materials and Processing II

Session Chair Dae Yong Jeong (Inha Univ., Korea)

WeF3-1 15:30~16:00 **[Invited] Fabrication of Highly Dense Pure SiC Ceramics via the HTPVT Method**

Bobo Liu, Bo Wang, Jian-feng Yang, and Hucheng Gao (Xi'an Jiaotong Univ., China)

WeF3-2 16:00~16:20 **Gel-resin Coupled Fabrication of a New Matrix for Ultra-fine Abrasive Disks**

Yiqing Yu, Juan Liu, Jianyun Shen, and Xipeng Xu (Huaqiao Univ., China)

WeF3-3 16:20~16:40 **Effects of Amphiphilic Agent on Thermal Conductivity of BN / PVB Composites**

Hong Jun Ahn, Sang Ho Cha (Kyonggi Univ., Korea), Woo Sung Lee (KETI, Korea), and Eung Soo Kim (Kyonggi Univ., Korea)

Oct. 2 (Wed) 17:20~18:40

Halla (8F)

[WeA*4] Thermodynamic Properties VII

Session Chair Tarlok Singh Banipal (Guru Nanak Dev Univ., Amritsar, India)

WeA*4-1 17:20~17:40 **PVT Property Measurements of Hydrogen at High Pressures up to 100 MPa by a Magnetic Suspension Densimeter**

Naoya Sakoda, Tatsuya Hisatsugu (Kyushu Univ., Japan), Yohei Kayukawa (AIST, Japan), Kan'ei Shinzato, Masamichi Kohno, and Yasuyuki Takata (Kyushu Univ., Japan)

WeA*4-2 17:40~18:00 **Measurements of PVTx Properties of the Binary Refrigerant R134a+R600a**

Takeru Kimura, Kiyoshi Saito (Waseda Univ., Japan), and Yohei Kayukawa (Nat'l Inst. of Advanced Industrial Sci. and Tech., Japan)

WeA*4-3 18:00~18:20 **Experimental Investigation on Complete Pool Boiling Curve of Methane under 0.3MPa Pressure**

Chong Zhao, Maoqiong Gong, Li Ding, and Jianfeng Wu (Technical Inst. of Physics and Chemistry, China)

WeA*4-4 18:20~18:40 **Measurement of Isobaric Specific Heat Capacity of Pure Water at High Temperature and High Pressure**

Maogang He, Xiangyang Liu, Chao Su, and Kai He (Xi'an Jiaotong Univ., China)



Oct. 2 (Wed) 17:20~19:00

Ara (8F)

[WeB*4] Micro/Nanoscale Thermal Transport V

Session Chair Sanghyun Lee (KRISS, Korea)

WeB*4-1 17:20~17:40 Thermal Conductivity of ITO and a-IGZO Thin Films at Elevated Temperature

Takashi Yagi (Nat'l Inst. of Advanced Industrial Sci. and Tech., Japan), Toru Yoshikawa (Aoyama Gakuin Univ., Japan), Yuichiro Yamashita, Naoyuki Taketoshi, Tetsuya Baba (Nat'l Inst. of Advanced Industrial Sci. and Tech., Japan), Junjun Jia, and Yuzo Shig

WeB*4-2 17:40~18:00 Thermal Conductivity of Sputtered Silicon Thin Films

Tianzhuo Zhan, Yibin Xu, Masahiro Goto, Ryoza Kato, and Yutaka Kagawa (NIMS, Japan)

WeB*4-3 18:00~18:20 Thermal and Electrical Conductivities of Porous Si Thin Films

Harutoshi Hagino (Kyushu Inst. of Tech., Japan), Saburo Tanaka (Nihon Univ., Japan), and Koji Miyazaki (Kyushu Inst. of Tech., Japan)

WeB*4-4 18:20~18:40 Thermophysical Properties of Various TCO Films: ITO, IZO, AZO, and NTO films

Junjun Jia, Nobuto Oka (Aoyama Gakuin Univ., Japan), Takashi Yagi, Yuichiro Yamashita, Naoyuki Taketoshi, Tetsuya Baba (AIST, Japan), and Yuzo Shigesato (Aoyama Gakuin Univ., Japan)

WeB*4-5 18:40~19:00 Thermal Transport in High-strength Polymethacrylimide Foam Insulations

Lin Qiu, Xinghua Zheng, Jie Zhu, Dawei Tang (Inst. of Engineering Thermophysics, China), Shiyong Yang, Aijun Hu, Leilei Wang, and Shushu Li (Inst. of Chemistry, China)

Oct. 2 (Wed) 17:20~18:40

Ora (8F)

[WeC*4] Metallurgical Processing V

Session Chair Rie Endo (Tokyo Inst. of Tech., Japan)

WeC*4-1 17:20~17:40 **Determination of Thermophysical Properties for High Manganese Liquid Steels – Advantage of Different Measurement Methods**

Tobias Dubberstein, Hans-peter Heller (TU Bergakademie Freiberg, Germany), and Jürgen Brillo (German Aerospace Center, Germany)

WeC*4-2 17:40~18:00 **The Effect of Boron's Behavior on the Structure of Boron Containing Slag**

Sunghee Lee and Dong Joon Min (Yonsei Univ., Korea)

WeC*4-3 18:00~18:20 **Correlation of Electrical Conductivity and Viscosity in CaO-MgO-SiO₂ Systems: On the Role of Silicate Structure and Interionic Associations**

Yong-uk Han, Wan Wook Huh, and Dong Joon Min (Yonsei Univ., Korea)

WeC*4-4 18:20~18:40 **Accumulative Friction Stir Powder Processing Toward High-Particle-Content Metal Matrix Composites**

Yoshihisa Kimoto, Toru Nagaoka, Hiroyuki Watanabe, Masao Fukusumi (Osaka Municipal Technical Research Inst., Japan), Yoshiaki Morisada, and Hidetoshi Fujii (Osaka Univ., Japan)



Oct. 2 (Wed) 17:20~18:50

Mara (2F)

[WeE4] Measuring Techniques and Sensors IV

Session Chair Inseok Yang (KRISS, Korea)

WeE4-1 17:20~17:50 **[Invited] The Study of the Behaviour of Materials under Fast Heating Rate**

Daniele Paganelli, Chiara Venturelli, Daniele Rebecchi (Expert System Solutions, Italy), and Luisa Barbieri (Università di Modena e Reggio Emilia, Italy)

WeE4-2 17:50~18:10 **Measurement Problems of the Temperature-moisture Regime Monitoring of Rock Dwellings in Brhlovce Village (Slovakia)**

Vlastimil Boháč, Danica Fidiríková, Viliam Vretenár (Slovak Academy of Sciences, Slovakia), Tatiana Durmeková, Ivana Šimková, Lenka Petrydesová, and Ján Vlčko (Comenius Univ. in Bratislava, Slovakia)

WeE4-3 18:10~18:30 **Measurement of Three-dimensional Anisotropic Thermal Diffusivities for Carbon Fiver Reinforce Plastics using a Lock-in Thermography**

Hosei Nagano and Masaya Kuribara (Nagoya Univ., Japan)

WeE4-4 18:30~18:50 **Thermal Characterization of Polymer Composites for Evaluation of Filler Distribution**

Dong-wook Oh, Jang Min Park, Chan Ho Song, Ook Joong Kim, and Kong Hoon Lee (KIMM, Korea)

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Biyang (2F)

[WeF4] High Temperature and Thermal Protection Properties

Session Chair Seongwon Kim (KICET, Korea)

WeF4-1 17:20~17:50 **[Keynote] Perspective on Materials in Extreme Environments: High Temperature Oxidation Behavior of Ultra-High Temperature Ceramics (UHTCs)**

Young-hoon Seong and Do Kyung Kim (KAIST, Korea)

WeF4-2 17:50~18:10 **Porosity Evaluation of Plasma Sprayed Thermal Barrier Coatings by Terahertz Spectroscopy**

Makoto Watanabe, Seiji Kuroda, Hisashi Yamawaki, and Mitsuharu Shiwa (NIMS, Japan)

WeF4-3 18:10~18:30 **Thermal Properties of Multilayered Re-oxide Added 4YSZ Films Prepared by Electron-beam Physical Vapor Deposition**

Young-hwan Yang (Korea Univ., Korea), Seong-won Kim, Sung-min Lee, Hyung-tae Kim (KICET, Korea), Byung-koog Jang (NIMS, Japan), Dae-soon Lim (Korea Univ., Korea), and Yoon-suk Oh (KICET, Korea)



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Halla (8F)

[ThA*1] Thermodynamic Properties VIII

Session Chair Joon Ho Lee (Korea Univ., Korea)

ThA*1-1 09:00~09:20 Measurements and Predictions of Hydrate-containing Phase Equilibria for Mixtures of CO₂+SO₂+Water

Sun Hyung Kim, Chul Soo Lee, and Jeong Won Kang (Korea Univ., Korea)

ThA*1-2 09:20~09:40 Volumetric and Transport Properties of Some Acidic and Basic Amino Acids in Aqueous Salt Solutions at Different Temperatures

Tarlok Singh Banipal, Kultar Singh, and Parampaul Kaur Banipal (Guru Nanak Dev Univ., India)

ThA*1-3 09:40~10:00 Plasticization/filler Effect of the Environmental-friendly Plasticizer on the Dynamic Mechanical Properties and Morphology of Styrene Ionomers

Kwang-hwan Ko (Chosun Univ., Korea), Young-wun Kim (KRICT, Korea), and Joon-seop Kim (Chosun Univ., Korea)

ThA*1-4 10:00~10:20 Thermodynamic Properties of Solutions of N-octane in Binary Aqueous-organic Solvents at 298.15 K

Igor Sedov, Ilphat Galiullin, and Boris Solomonov (Kazan Federal Univ., Russia)

Oct. 3 (Thu) 09:00~10:40

Ara (8F)

[ThB*1] Micro/Nanoscale Thermal Transport VI

Session Chair Koji Miyazaki (Kyushu Inst. of Tech., Japan)

ThB*1-1 09:00~09:20 Analysis of Near-field Photothermal Heating for Nanoscale Patterning of SAM

Shouhei Fukuyama, Yoshihiro Taguchi, and Yuji Nagasaka (Keio Univ., Japan)

ThB*1-2 09:20~09:40 Observation on Thermal Conductivity Change of VO₂ Thin Film at Metal-semiconductor Transition

Hinako Kizuka (Aoyama Gakuin Univ., Japan), Takashi Yagi (Nat'l Metrology Inst. of Japan, Japan), Junjun Jia (Aoyama Gakuin Univ., Japan), Yuichiro Yamashita, Naoyuki Taketoshi, Tetsuya Baba (Nat'l Metrology Inst. of Japan, Japan), and Yuzo Shigesato (Aoyama Gakuin Univ., Japan)

ThB*1-3 09:40~10:00 Determination of Thermal Diffusivity of Supported Nanostructure Metal Thin Films Measured by the Laser Flash Method

Liping Yang, An Cai (Chinese Academy of Sciences, China), Ye Tao (Qingdao Technological Univ., China), Qiu Zhong, Caiyun Luo, Zijun Xu, and Tonggeng Xi (Chinese Academy of Sciences, China)

ThB*1-4 10:00~10:20 Modification of Butadiene-nitrile Rubbers with Natural Zeolites

Natalia Petrova and Viktoria Portnyagina (North-Eastern Federal Univ., Russia)

ThB*1-5 10:20~10:40 Thermoelectric Property of Bi-Te and Bi-Sb-Te Thin Films by Co-sputtering Method

Seungmin Hyun, Seon-jae Jeon (KIMM, Korea), and Hoo-jeong Lee (Sungkyunkwan Univ., Korea)



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Ora (8F)

[ThC*1] Metallurgical Processing VI

Session Chair Yoshinao Kobayashi (Tokyo Inst. of Tech., Japan)

ThC*1-1 09:00~09:20 Recovery of Metal Values from Spent Nickel-cadmium Battery

Shun-myung Shin (KIGAM, Korea), Dong-won Lee, Jung-yeul Yun (KIMS, Korea), and Jei-pil Wang (Pukyong Nat'l Univ., Korea)

ThC*1-2 09:20~09:40 Prediction and Control Strategy of Impurities in Pidgeon Process

Ui-hyeon Baek, Byeong-deok Lee, Ki-woo Lee, Ji-young Yoon (Inha Univ., Korea), Gil-soo Han (RIST, Korea), and Jeong-whan Han (Inha Univ., Korea)

ThC*1-3 09:40~10:00 Removal of Arsenic from Concentrate and Tailing from Gold Mining

Dong Won Lee (KIMS, Korea), Woo Jin Lee, Young Ho Kim, Jong Nam Kim, and Jei Pil Wang (Pukyong Nat'l Univ., Korea)

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Mara (2F)

[ThE1] Standardization

Session Chair Yong-Gyoo Kim (KRISS, Korea)

ThE1-1 09:00~09:20 **The Infrared Optical Properties of Materials Measurements Program at the Nat'l Inst. of Standards and Tech.**

Leonard Hanssen, Simon Kaplan (Nat'l Inst. of Standards and Tech., USA), Vladimir Khromchenko (Space Dynamics Lab., USA), and Sergey Mekhontsev (Nat'l Inst. of Standards and Tech., USA)

ThE1-2 09:20~09:40 **Thermal Diffusivity of Carbon Materials as Candidate Reference Materials**

Megumi Akoshima, Haruka Abe, and Tetsuya Baba (AIST, Japan)

ThE1-3 09:40~10:00 **Numerical Analysis of Transient Temperature Response of Soap Film**

Seiichi Tanaka, Akihiro Tatesaku (Akashi Nat'l College of Tech., Japan), Yuki Dantsuka (Nagoya Univ., Japan), Seiji Fujiwara, and Kanji Kunimine (Akashi Nat'l College of Tech., Japan)

ThE1-4 10:00~10:20 **High Temperature Mechanical Properties of YSZ Thermal Barrier Coating Material**

Kai Wang and Wei Pan (Tsinghua Univ., China)



Oct. 3 (Thu) 09:00~10:20

Biyang (2F)

[ThF1] Thermal Protection and Thermal Barrier Coatings

Session Chair Yoonsuk Oh (KICET, Korea)

ThF1-1 09:00~09:20 **Comparison of Thermal Shock Resistance of TBCs Formed by Plasma Spray and EB-PVD Methods**

Eungsun Byon, Young-hun Jeong (KIMS, Korea), Kil Jin Jung (KEPCO, Korea), and Yoon-suk Oh (KICET, Korea)

ThF1-2 09:20~09:40 **Thermal Conductivity and Microstructure of ZrO_2 - Y_2O_3 Coatings Fabricated by EB-PVD**

Byung-koog Jang (NIMS, Japan), Seongwon Kim, Yoon-suk Oh, Hyung-tae Kim (KICET, Korea), Jiengang Sun (Argonne Nat'l Lab., USA), Norio Yamaguchi, and Hideaki Matsubara (Japan Fine Ceramics Center, Japan)

ThF1-3 09:40~10:00 **Mechanical Characterizations on the Thermal Barrier Coatings Containing Micro/Nano Gap**

Kee Sung Lee (Kookmin Univ., Korea)

ThF1-4 10:00~10:20 **Structures and Thermo-physical Properties of Hot-pressed $(La_{1-x}Gd_x)_2Zr_2O_7$ Oxides for Thermal Barrier Coatings (TBCs)**

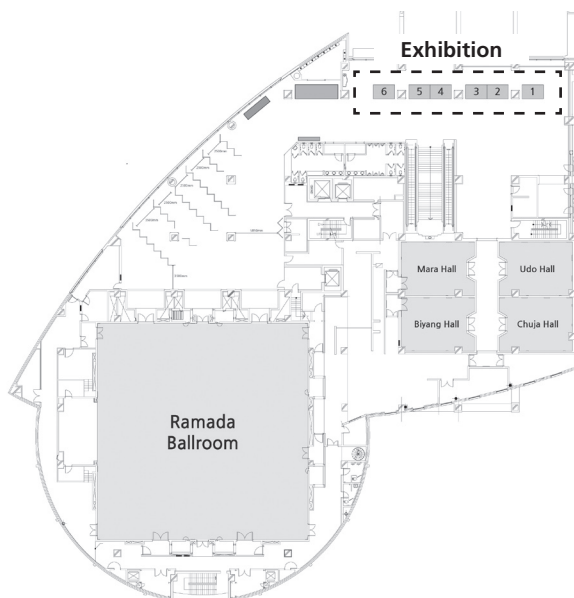
Seongwon Kim, Chang-sup Kwon, Sung-min Lee, Yoon-suk Oh, Hyung-tae Kim (KICET, Korea), Hyungsun Kim (Inha Univ., Korea), and Byung-koog Jang (NIMS, Japan)

VI. Exhibition Information

Overview

Venue	Convention Lobby, 2F, Ramada Plaza Jeju Hotel
Set-up	Sep. 29 (Sun) / 15:00 ~ 18:00
Exhibition Hours	Sep. 30 (Mon) ~ Oct. 2 (Wed) / 09:00 ~ 18:00
Dismantling	Oct. 2 (Wed) / After 18:00

Exhibition Map



List of Exhibitors

Booth No.	Company Name	Booth No.	Company Name
No. 1	LINSEIS - Thermophysical Properties	No. 2	SCINCO CO., LTD.
No. 3	Korea I. T. S. Co., Ltd.	No. 4	ChemiLab Co. Ltd.
No. 5	TA Instruments Korea	No. 6	NETZSCH



Exhibition

Booth 1	Linseis GmbH	President	Claus Linseis
Contact Person			
Name	Lee Na-lk	County	Korea
Address	1913, 1355-3 Seocho-Dong, Seocho-Gu, Seoul		
Tel	+82-2-3487-8822	Fax	+82-2-3487-8825
E-mail	ni@ni-international.com	Web-site	www.ni-international.com

Contents of Exhibit TGA, DTA, DSC, DILATOMETER, and Thermal Conductivity, etc.

Introduction

Linseis Germany has supplied the excellent products for Thermal Analysis and Thermal Physical Properties.

Booth 2	SCINCO CO.,LTD.	President	Hun Choi
Contact Person			
Name	Heon Min Lee	County	Korea
Address	Scinco Building 109-2, Samseong-dong, Gangnam-gu, Seoul, 135-090		
Tel	82-2-2143-8331	Fax	82-2-2143-8357
E-mail	scinco@scinco.com	Web-site	www.scinco.com

Contents of Exhibit Thermal Analyzer, Elemental Analyzer, Gas Chromatography, UV-Vis Spectrophotometer

Introduction

Our company, SCINCO is the best analytical instruments professional company by providing with Thermal Analyzer, Elemental Analyzer, Gas Chromatography, UV-Vis Spectrophotometer, LC-MS, FT-IR system.

Under company management philosophies such as the world's best products,superio customer support, exellent human resources and continuous development of new technology, We, SCINCO, keep listening to the customer's opinion and promise we always meet you a better way to be a world-class analysis instrument company.

Booth 3	Korea I. T. S. Co., Ltd.	President Jung-Ki Bhang
Contact Person		
Name	Young-Ho Kim (Director)	County Korea
Address	4F, Seoil Bldg., 222, Jamsil-dong, Songpa-gu, Seoul, 138-863, Korea	
Tel	82-2-421-4022	Fax 82-2-421-9022
E-mail	kits@koreaits.com	Web-site http://www.koreaits.com
Contents of Exhibit	Heating Microscope, Optical Dilatometer	
Introduction		

"KITS-The farsighted leader of Scientific Technology of 21 Century".

KITS will do our best to provide solutions to our users based on careful observation of their needs based on a deep understanding of their fields and industries.

KITS will continue our work to provide the highest quality of instrumentation, application and service support.

Booth 4	ChemiLab Co. Ltd.	President Shim, Inchul
Contact Person		
Name	Shim, Inchul	County Korea
Address	(2nd FL., Kwonsun dong) 87, Jangdari Ro, Kwonsungu, Gyunggi do, Korea	
Tel	82-31-238-5501	Fax 82-31-238-5513
E-mail	chemilabtop@chemilab.com	Web-site www.chemilab.com
Contents of Exhibit	SurTA(Surface Texture Analyzer), DSC Aluminum Pan & Cover	
Introduction		

SurTA is unique micro & sub-micro surface texture analyzer. The stress/strain properties are tested in the range of 0.01 ~ 3000 gf of force and several nanometer ~ 200 mm length on organic surface with low elastic materials. The Types of test and applications are as followings, Texture profile, Tension, Compression. Creep & relaxation, Scratch, Dynamic and Adhesion/Peel/Tack of PSA, Indentation, Creep/recovery, Scratch & Friction, Viscoelasticity. All of tests are able to be performed under Temperature control in the range of RT ~ 300°C.



Booth 5 TA Instruments – Waters LLC President Terry Kelly

Contact Person

Name Song, Sung Yong **County** Korea

Address 1337-31, Seocho dong, Seocho-Ku, Seoul, Korea

Tel 010-5381-1491, 02-3415-1505 **Fax** 02-3415-1515

E-mail sysong@tainstruments.com **Web-site** www.tainstru-ments.com

Contents of Exhibit Dummy Model (DLF-1300), Poster, Brochure, Banner

Introduction

TA Instruments provides the most extensive selection of instruments for dilatometry and the measurement of thermal conductivity, thermal diffusivity and specific heat capacity. Our products feature innovative technology for the highest accuracy measurements and autosamplers and dual-sample configurations to maximize throughput. These important technologies are backed by the best global support network in the industry, making TA Instruments the clear choice for all your thermophysical property measurement needs.

Booth 6 NETZSCH-Gerätebau GmbH President Dr. Jürgen Blumm Dr. Thomas Denner

Contact Person

Name Mrs. Melanie Möschl **County** Germany

Address Wittelsbacherstr. 42,95100 Selb

Tel +49 9287 881-302 **Fax** +49 9287 881-505

E-mail melanie.moeschl@netsch.com **Web-site** www.netsch-thermal-analysis.com

Contents of Exhibit DIL 402 C, STA 449 F3 Jupiter®, LFA 467 HyperFlash

Introduction

When it comes to Thermal Analysis, Adiabatic Reaction Calorimetry and the determination of Thermophysical Properties, NETZSCH has it covered.

Our 50 years of applications experience, broad state-of-the-art product line and comprehensive service offerings ensure that our solutions will not only meet your every requirement but also exceed your every expectation.

VII. Conference Information

Conference Topic

A01 Thermodynamic Properties

A02 Transport Properties

A03 Optical and Thermal Radiative Properties

A04 Thermoelectric Properties and Materials

A05 Interfacial Properties

A06 Simulation and Modeling

A07 Measuring Techniques and Sensors

A08 New Materials and Processing

A09 Energy and Environment

A10 Standardization

A11 Other Topics

B01 Nuclear Materials

B02 Properties and Transport Processes of Refrigerants

B03 Micro/Nanoscale Thermal Transport and Properties of Nanostructured Materials

B04 Fluid Properties

B05 Database and Software

B06 Metallurgical Processing

B07 Thermal Protection and Thermal Barrier Coatings

B08 Industrial Technologies

Official Language

English is the official language of the conference and will be used for all printed materials, presentations, and discussions.

Preview Room

After checking their presentation material in the Preview Room (next to exhibition area, 2F), oral presentation speakers are required to upload the presentation file to the



laptop computer in the session room using a USB memory stick at least 15 minutes prior to the session. The Preview Room will be open during the following hours:

Sep. 30 (Mon.)	08:30 - 18:00
Oct. 1 (Tue.)	08:00 - 12:00
Oct. 2 (Wed.)	08:00 - 18:00
Oct. 3 (Thu.)	08:00 - 10:00

Registration

ATPC 2013 registration desk will be available during Sep. 29 ~ Oct. 3 in the convention lobby (2F), Ramada Plaza Jeju Hotel at the following hours;

Sunday, September 29, 2013	13:00 ~ 18:00
Monday, September 30, 2013	08:30 ~ 18:00
Tuesday, October 1, 2013	08:00 ~ 14:00
Wednesday, October 2, 2013	08:00 ~ 18:00
Thursday, October 3, 2013	08:00 ~ 10:30

• Registration Fee

Category	Late Registration
	From Aug. 2 (Fri.), 2013
Full Registration	\$800.00
Student Registration	\$400.00
Additional Banquet	\$70.00

- **Full Registration Fee** includes Admission to All Sessions, Refreshments, Welcome Reception, Banquet, Excursion and Technical Digest.
- **Student Registration Fee** includes Admission to All Sessions, Refreshments, Welcome Reception, Excursion and Technical Digest

• Receipt for Registration

A receipt for registration will be issued at the registration desk during the conference.

• Name Badge

For security purpose, participants must wear their name badges during the conference. If your badge needs any correction, please visit the registration desk for a replacement. There will be a staff to check your badge at every gate of scientific rooms and poster area.

Social Events

• Welcome Reception

18:00~20:00, Sunday, September 29, 2013 / Tamna Hall, 8F

All registered participants and accompanying persons, do not miss this opportunity to make friends and forge new relationships with other participants from all over the world.

• Inauguration / Plenary Session

09:40 -12:00, Monday, September. 30, 2013 / Ramada Ballroom 1, 2F

All participants are invited to attend Inauguration / Plenary Session.

• Excursion

14:00-18:00, Tuesday, October 1, 2013

Tour	Itinerary
Excursion 1	Seongsan Ilchulbong (Sunrise Peak) – Seongeup Folk Village
Excursion 2	Cheonjeyeon Waterfalls – Yakcheonsa Temple – Jusangjeolli
Excursion 3	Olle Trekking (Mt. Songak – Mt. Sanbang – Yongmeori Coast)

• Conference Banquet

19:00 -21:00, Wednesday, October 2, 2013 / Ramada Ballroom 1, 2F

This grand finale of the conference will present a memorable night in Jeju with delightful food and wonderful friends. Do not miss the special chance to meet participants from all around the world over a delicious dinner. The Banquet ticket is included in regular registration type only. Any remaining tickets can be purchased on-site during the conference on September 29, 30.

• Awards & Closing Ceremony

10:30-11:00, Thursday, October 3, 2013 / Halla, 8F

Certificate will be awarded to all awardees on presence at the closing ceremony.



Accommodation

The organizing committee has arranged rooms at discount rates for all the participants and accompanying persons. If you have any problems or questions about your accommodation, please visit the secretariat during the conference.

Hotel	Room Type	Room rate (KRW)	
		Weekend	Weekdays
Ramada Plaza Jeju Hotel	Mountain View	Twin Double	175,000 145,000
	Ocean View	Twin Double	205,000 175,000
Ocean Suites Jeju Hotel	Standard	Twin	145,000 125,000
Palace Hotel	Mountain View	Twin	90,000
	Ocean view		100,000

- The above room rate is based on Korean won and included VAT & SVC.
- Standard check-in time of 2.00 p.m. and check-out time of 12.00 p.m. apply to all hotels.
- All payment can be made in Korean won or US dollar when you check out

• Cancellation Policy

Ramada Plaza Jeju Hotel

- * 2 days before check-in date: No penalty
- * 1 day before check-in date: 20% of room rate charges
- * Before 18:00 of check-in date: 50% of room rate charges
- * After 18:00 of check-in date or No-show: 80% of room rate charges

Ocean Suites Jeju Hotel

- * 1 day before check-in date
 - before 18:00: 50% of room rate charges
 - after 18:00: 100% of room rate charges

Jeju Palace Hotel

- * 2 days before check-in date: No penalty
- * 1 day before check-in date: 20% of room rate charges
- * Cancellation on check-in date or No-show: 80% of room rate charges

Venue



Jeju-do is the biggest island in Korea, situated southwest of the Korean peninsula and in the north of the Southern Sea. It embraces 62 isles and has a total area of 1,825 sq. km. It is situated at 126 degrees and 08 minutes ~ 126 degrees and 58 minutes longitude east and 36 degrees 06 minutes ~ 33 degrees 00 minutes latitude north. Jeju-Island is 452 km from Seoul and 301km from Busan. The island is located 989 km from Osaka, 1580 km from Tokyo, 499 km from Shanghai, China, and 1,030km-distance from Hong Kong.



The Jeju Island is famous for 3 things: roaring winds, magnificent rocks, and woman divers for fishing. As one of the host cities of the 2002 Korea/Japan FIFA World Cup, Jeju's Seogwipo City has a fame of the most enchanting environment in Korea. Jeju is a focal point of international affairs and offers many kinds of recreation together with breathtaking vistas, a temperate climate and a unique traditional culture. Located in the center of this volcanically formed island is Mt. Halla (a dormant volcano), which is filled with over 1,800 species of wild plants, wild deers, and an ecosystem, that will surely amaze all visitors.



Jeju also offers unbelievably breathtaking views from coast to coast, ranging from waterfalls at Haean Jidae to naturally sculpted cliffs at Jusang Jeolli. Tourists can enjoy each season in Jeju with a particular splash of color; brilliant yellow-colored flowers in spring that spread across the landscape, the golden beaches and sea vistas in summer, the Eulalia's light brown wispy reeds flowing in autumn winds, and the lovely snow flowers of Mt. Halla in winter are all must-sees of Jeju.



ATPC 2013

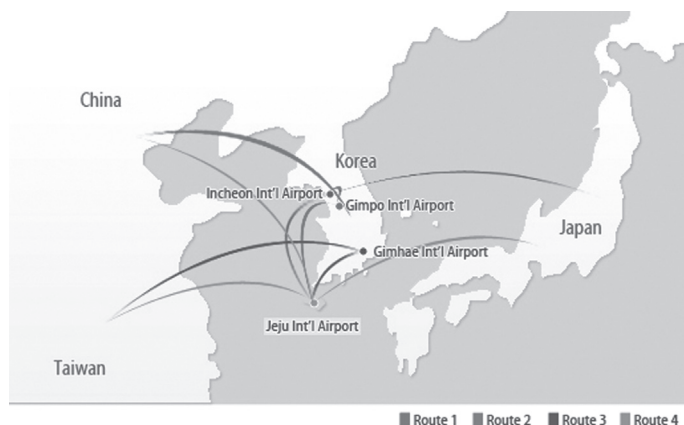
The 10th Asian Thermophysical
Properties Conference

You can enjoy hiking, bike riding, paragliding, scuba diving, windsurfing, hunting, horseback riding, swimming in the ocean, and sightseeing boat trips in Jeju. Jeju has a wide variety of local fruits and foods, such as delicious Jeju tangerines, saltwater fish (Okdom) stews, grilled saltwater fishes with seasoning, rice porridges with abalone, pheasant dishes and hair-tail fish soups. Jeju is more than simply a tourist destination; it is an island full of wonder. Jeju keeps changing itself into an International Free City, and becomes an island of harmony under the wave of technology while maintaining its ecological treasures.



Further detailed information is available at the website of <http://english.jeju.go.kr/>

Transportation



Overseas to Jeju Int'l Airport

Route 1	Overseas → Incheon Int'l Airport → Gimpo Int'l Airport → Jeju Int'l Airport
Route 2	Overseas → Incheon Int'l Airport → Jeju Int'l Airport
Route 3	Overseas → Gimhae Int'l Airport → Jeju Int'l Airport
Route 4	Overseas → Jeju Int'l Airport

Route 1 Overseas → Incheon Int'l Airport → Gimpo Int'l Airport → Jeju Int'l Airport

Please take Korea City Air Limousine bus from Incheon Int'l Airport to Gimpo Domestic Airport at the bus stand 10A or 11A on the 1st floor outside Incheon Int'l Airport Terminal. As for domestic line from Gimpo Domestic Airport to Jeju Int'l airport, daily 93 planes are in service on average. There are flights every 5~30 min. during the scheduled time.

Route 2 Overseas → Incheon Int'l Airport → Jeju Int'l Airport

Recheck to transfer on the 1st floor. Passengers receive their boarding passes, and board the domestic flight on the 3rd floor (Departure Level) in Incheon Int'l Airport for Jeju Int'l Airport.



Route 3 Overseas → Gimhae Int'l Airport → Jeju Int'l Airport

You can access to the Gimhae Airport by the international flight from Japan (Fukuoka, Osaka, Nagoya and Tokyo), China (Shanghai, Beijing), Russia, Philippines, Thailand, Hong Kong, Taiwan and Vietnam. The flight from Gimhae Int'l Airport, which is the second largest international airport in Korea to Jeju Int'l Airport run between 08:00 to 20:00 at roughly 15 min. intervals. There are approximately 40 domestic flights a day for this route. Please refer to the flight timetable here.

Route 4 Overseas → Jeju Int'l Airport

As for international air line, there are 11 lines including Narita Airport, Japan and daily 4 flights are in service on average.

Japan (Tokyo(Narita), Osaka, Hiroshima, Fukuoka, Nagoya)

China (Beijing, Shanghai(Pudong), Dalian, Hangzhou, Changchun, Zengzhou)

Taiwan (Taipei, Kaosung)

Jeju Int'l Airport to Venue



By Taxi

Participants can take a Shot distance taxi to the venue. To take a taxi, please use the taxi stop in front of the passenger terminal of Jeju Int'l Airport.

Category	Duration	Fare (KRW)
Regular Taxi	10 min	KRW 3500

General Information

• About Korea

Tucked away in northeast Asia, Korea is a nation that boasts a fast growing economy and a lifestyle that brings together the old and the new. Once known simply as a quiet nation in the East, the peninsula now hardly sleeps as it pulsates with life and commerce. Numerous branch offices of international corporations and businesses can be found throughout the country as well as most western franchises. Despite all such enthusiasm for modernization and globalization, Koreans still greatly value their 5,000 years for history. Numerous global events take place here every year.

• Location

Korea lays in the northeastern part of the Asian continent. It is located between 33 degrees and 43 degrees in Northern Latitude, and 125 degrees and 132 degrees in Eastern Longitude. China, Russia, and Japan are adjacent to Korea. Local time is nine hours ahead of GMT.

• Capital

The capital of South Korea is Seoul. Seoul has been the capital city of Korea since 1392. This city is the heart of the Republic of Korea, home to 10 million of the nation's 48 million people. Seoul is located in the central region of the Korean peninsula. The wide and beautiful Han River flows through Seoul and serves as a lifeline for the heavily concentrated population. There are rich and satisfying varieties of things to see and do for residents and visitors alike.

• Weather

Jeju has a subtropical oceanic climate with four distinct seasons. In Korea, summer starts at Jeju. Middle of July, but a sweater or a cardigan will be useful to be put on or taken off simply when you feel slightly cold at night.

• Language

Koreans use Korean. However, many of them can communicate in English. Hangeul, Korean written language characters set, was invented in 1443, during the reign of King Sejong. 'The unminjeongeum,' a historical document which provides instructions to educate people using Hangeul, is registered with UNESCO. UNESCO awards a 'King Sejong Literacy Prize, 'every year in memory of the inventor of Hangeul.



English	Korean (Hangeul)	Korean Pronunciation
How are you?	안녕하세요?	Annyeong-haseyo?
Thank you.	감사합니다.	Gamsa-hamnida.
Yes.	예.	Ye.
No.	아니오.	Aniyo.
I am sorry	미안합니다.	Mian-hamnida.
I enjoyed the meal.	잘 먹었습니다.	Jal meogeot-sseumnida.
Please give me some more of this.	이것 더 주세요.	Igeot deo juseyo.
The check, please.	계산서 주세요.	Gyesanseo juseyo.
Do you take credit cards?	카드로 계산할 수 있습니까?	Kadeuro gye-san halsu isseum-nikka?
How much is it?	얼마입니까?	Eolma-imnikka?
It is _____won.	_____원입니다.	_____won imnida.
5,000	오천	O-cheon
10,000	만	Man
15,000	만오천	Man-o-cheon
20,000	이만	I-man
30,000	삼만	Sam-man
Where is the rest room?	화장실 어디입니까?	Hwajangsil oedi-imnikka?
Goodbye.	안녕히 계세요	Annyeonghi gyeseyo.

• Currency

The unit of Korean currency is the Won (₩). Coin denominations are ₩10, ₩50, ₩100 and ₩500. Banknotes are ₩1,000, ₩5,000, ₩10,000, and ₩50,000 As of August 26, 2013, the exchange rate is approximately US\$1 to KRW ₩1113.

- Currency Exchange Foreign banknotes and traveler's check can be exchanged at foreign exchange banks and other authorized money-changers.
- Credit Cards Diners Club, Visa, American Express and MasterCard are widely accepted in major hotels, shops and restaurants. Check with your credit card company for details of merchant acceptability and other services which may be available.

- Traveler's Check Accepted, but may be difficult to change in smaller towns. To avoid additional exchange rate charges, travelers are advised to take Traveler's check in US Dollars.
- Banking Hours Monday to Friday 09:30 ~ 16:30.

• Electricity

In Korea, an outlet for 220 volt is available. Overseas delegates bringing laptop computers and other electrical appliances are advised to check whether a transformer is required.

• Tipping

Tipping is not customary in Korea. Service charges are included in your bill on the price of rooms, meals, and other services at hotels and restaurants. Sometimes, expensive restaurants and luxury hotels may add a service charge of 10%.

• Insurance and Emergency

The organizing committee will not be responsible for medical expenses, accidents, and losses or other unexpected occurrences. Participants are advised to arrange their own insurance that they regard necessary. Emergency call numbers are 112 for police and 119 for fire / rescue and hospital services.

• Telephone Calls

Cell-phone Rental Services are available at Incheon International Airport. This service must be ordered in advance. Online-Reservation is possible on www.Tour2Korea.com.

• Public Phone

There are three types of public telephones in Korea: coin-operated telephones, card phones, and credit card phones. A local call costs 70 won (US\$0.06) for three minutes. Intercity calls cost considerably more. Coin phones return coins that are not charged, but do not return change for partially used 100 won coins. Card telephones can be used to make international calls as well as local and intercity calls. Telephone cards come in 2,000, 3,000, 5,000, and 10,000 denominations and are on sale in shops close to telephone boxes and in banks. There are also credit card phones, which accept use with major credit cards.



- ※ How to make a International Call in Korea
001 - <Country Code> - <Area Code> - <Telephone No.>
- ※ How to make a call to Korea
<International calling service number> + 82 - <Area Code> - <Telephone No.>

• Korea Travel Phone 1330

When you need English assistance or travel information, just dial 1330, and a bilingual operator will offer you detailed information on tourist sites, transportation, restaurants, etc. If you want information about areas outside of Seoul, enter the area code of that region before pressing 1330.

(In Jeju: 064-1330)

VIII. Author Index

The 10th Asian Thermophysical Properties Conference



ATPC 2013

September 29 - October 3, 2013
Ramada Plaza Jeju Hotel, Jeju, Korea



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ATPC 2013

The 10th Asian Thermophysical Properties Conference

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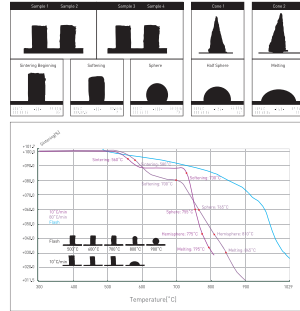


고온현미경의 새로운 혁신

HEATING MICROSCOPE MISURA 3 HSM

SOFTENING, MELTING & FUSION BEHAVIOUR
CONTACT ANGLE, SURFACE TENSION, THEORETICAL
VISCOSITY, INTERNATIONAL STANDARDS FOR FUSIBILITY

- Fast or instantaneous heating
- Simultaneous analyses up to 4 samples
- No limits in Expansion and Contraction



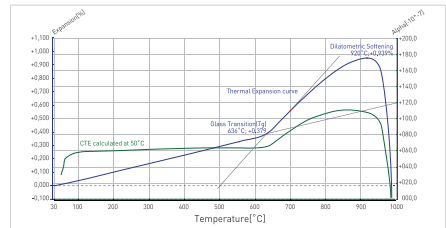
HSM:effect of the heating rate

광학 팽창계의 새로운 혁신

OPTICAL DILATOMETER MISURA 3 ODLT

COEFFICIENT OF THERMAL EXPANSION (CTE)
GLASS TRANSITION (T_g), DILATOMETRIC SOFTENING (T_s)
SINTERING, SHRINKAGE

- Beyond the softening point
- No calibration, auto correction system
- Fast heating rates



ODLT : glaze thermal expansion and CTE



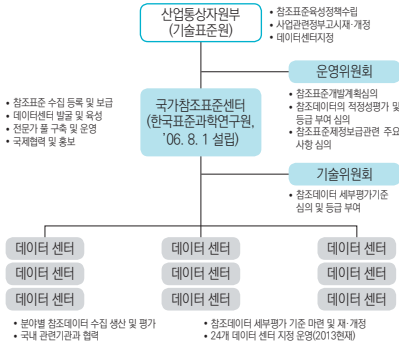
국가참조표준 제정 및 보급 사업

● 참조표준 정의

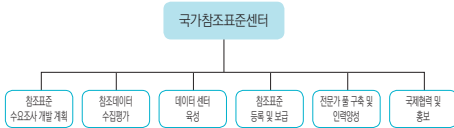
과학기술과 산업활동 등에서 생산되는 모든 측정데이터 및 정보를 과학적으로 분석·평가하여 정확도와 신뢰도를 공인함으로써 국가 사회의 모든 분야에서 널리 지속적으로 사용되도록 마련된 자료 (물리 화학적 상수, 공인된 물질 값, 공인된 과학기술 데이터 및 통계 등) 국가표준기본법제16조

*참조표준 (standard reference data)은 성문표준 (document standard), 측정표준 (measurement standard)과 함께 국가표준 (national standards)임.

● 추진체제도



● 국가참조표준센터 기능



● 주요 참조표준 개발 현황 (2013 현재)

분야	참조표준 DB
금속재료 분야	<ul style="list-style-type: none"> 내열구조강인장특성 원자력재료 인장강도 세라믹인장특성 자동차용 강판 고속충성 철강미세조직 고강도는합성부도 핵연료재료
물리화학	<ul style="list-style-type: none"> 유기화학물성평형 옥탄올 / 물분배계수 흡음률 식각공정평형 플라즈마 특성 전단신장 유변물성 중력가속도
보건의료	<ul style="list-style-type: none"> 한국인인체치수 SNP 유전형가리 변이체상동성기반유전적가리 한국인마리, 차광용 인지 한국인간외기도 유전형가리 경동맥내막 중막두께 (40, 50, 60, 70대 남녀)
에너지/기타	<ul style="list-style-type: none"> 핵연료재료물성 천문역법 지역별 태양 / 풍력

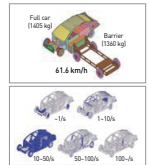
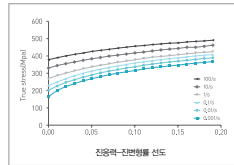
[사례] 자동차 강판용 고속인장물성 개발과 활용

● 참조표준 개발 필요성

- *정밀 충돌 해석을 통한 차체 경량화 설계 및 충돌안전성 확보 필요
- *차량 충돌 시 안전성 확보를 위해 차체의 변형률 속도 분포 등 해석 기술 필요

● 참조표준 개발 내용

- *자동차용 강판 고속인장물성 참조표준 개발 (총 70종)
- *차량충돌 시 변형률 속도 분포 및 데이터 예



● 참조표준 경제적 파급 효과

- *차적 설계에 따른 제조원가 절감효과
- *자동차 경량화에 따른 연료 절감 및 온실가스 배출 저감

● 참조표준 개발 계획

- *정밀 충돌 해석용 동적 인장 물성데이터 지속 개발 보급

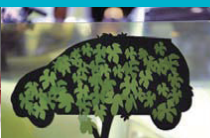
● 참조표준 보급 및 확산

- *산업 및 기업에서 자체 안전 설계 평가 및 고속변형에측용 등으로 활용

활용기관	활용분야 및 효과
A 사	낙하 충돌 해석, 스티어링의 변형거동 해석
S 전자	고분자 재료 부품의 고속변형 경향성 예측
A 연구원	원자력 용기 및 사용후 핵연료 용기 충돌 안정성 예측
B 연구원	철도차량 충돌 해석 정밀도 15 ~ 20 % 향상
C 연구원	동적인장물성 측정시험법 확립 활용

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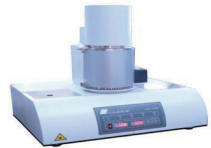
- Gravimetric Sorption Analyzer
- TGA-DTA-DSC
- DTA
- DSC
- TMA
- Dilatometer
- Thermal Conductivity(LFA)
- Seebeck Coefficient &
Electric Resistance(LSR)



DSC



Dilatometer



LFA



LSR

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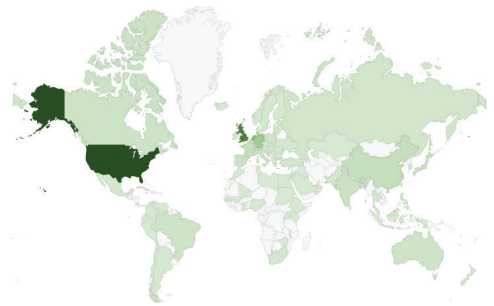
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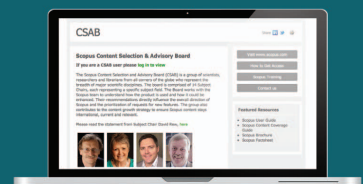


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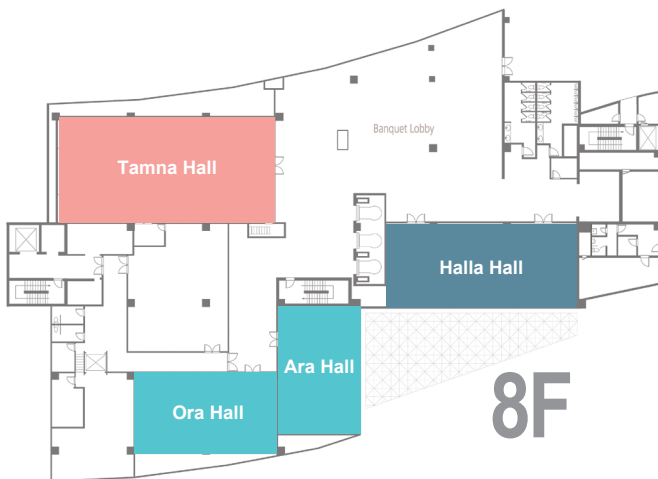




- Welcome Reception
- Inauguration & Plenary
- Banquet Oral Session
- Oral Session
- Registration Desk
- VIP Room
- Secretariat
- Awards & Closing Ceremony Oral Session

Room	
A	Ramada Ballroom 1 (2F)
B	Ramada Ballroom 2 (2F)
C	Ramada Ballroom 3 (2F)
D	Ramada Ballroom 4 (2F)
E	Mara (2F)
F	Biyang (2F)
A*	Ora (8F)
B*	Ara (8F)
C*	Halla (8F)

Ex) TuA1: the First Session of Room A (Ramada Ballroom 1) on Tuesday



8F



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