The First Pacific Rim Thermal Engineering Conference

March 13-17, 2016
Waikoloa Beach Marriott Resort & Spa
Hawaii's Big Island, USA

Conference Program

The Fisrt Pacific-Rim Thermal Engineering Conference (PRTEC)

The Japan Society of Mechanical Engineers (JSME) had co-developed a successful series of joint conferences on thermal engineering (AJTEC) at four-year intervals. The AJTEC series were held in: Honolulu, Hawaii (1983 and 1987); Reno, Nevada (1991); Maui, Hawaii (1995); San Diego, California (1999); Hawaii Island, Hawaii (2003); Vancouver, Canada (2007); and Honolulu, Hawaii (2011).

JSME has decided that a new conference series, Pacific Rim Thermal Engineering Conference (PRTEC), will be launched collaborating with the Korean Society of Mechanical Engineers (KSME) and the American Society of Thermal and Fluids Engineers (ASTFE). The key themes of PRTEC 2016 are "Fundamental", "Interdisciplinary" and "Diversity" with a vision for the future of Thermal Engineering.

The PRTEC 2016 provides an international forum for the exchange of new ideas and direction related to the future thermal engineering and the presentation of the latest work in this field. We strongly encourage attendance and extended abstract submission not only from the Pacific-rim countries but also from all over the world.

Yasuyuki Takata

Kyushu University, Conference Chair (JSME)

Sung Jin Kim

KAIST, Conference Co-Chair (KSME)

Yong X. Tao

University of North Texas, Conference Co-Chair (ASTFE)

Mamoru Tanahashi

Tokyo Institute of Technology, Secretary-General (JSME)

Bong Jae Lee

KAIST, Secretary-General (KSME)

Organizing Committee

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Sung Jin Kim, KAIST, Korea, Conference Co-Chair (KSME)
Yong X. Tao, University of North Texas, USA, Conference Co-Chair (ASTFE)
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Steve Armfield, University of Sydney, Australia
Yaroslav Chudnovsky, Gas Technology Institute, USA
Ji Hwan Jeong, Pusan National University, Korea
Yong Tae Kang, Korea University, Korea
Sushanta Mitra, York University, Canada
Kazuyoshi Nakabe, Kyoto University, Japan
Gherhardt Ribatski, Universidade de São Paulo, Brasil
Khellil Sefiane, The University of Edinburgh, UK
Peter Stephan, Darmstadt University of Science and Technology, Germany
Yuji Suzuki, The University of Tokyo, Japan
Qiu-Wang Wang, Xi'an Jiaotong University, China
Chien Yuh Yang, National Central University, Taiwan

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Masahiko Shibahara, Osaka University, Japan, Secretary-General
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Kevin R. Anderson, California State Polytechnic University at Pomona, USA
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Young Soo Chang, Kookmin University, Korea
C-K Choi, Michigan Technological University, USA
Yaroslav Chudnovsky, Gas Technology Institute, USA
Jae Dong Chung, Sejong University, Korea
Koji Fukagata, Keio University, Japan
Roy Hogan, Sandia National Lab, USA
Yogesh Jaluria, Rutgers University, USA
Taesung Kim, Sungkyun Kwan University, Korea
Woochul Kim, Yonsei University, Korea
Jae Seon Lee, UNIST, Korea
Jungho Lee, KIMM, Korea
Seong Hyuk Lee, Chung-Ang University, Korea
John Lloyd, Naval Postgraduate School, USA
Taku Ohara, Tohoku University, Japan
Nesrin Ozalp, KU Leuven, Belgium
Kaoru Maruta, Tohoku University, Japan
Akio Miyara, Saga University, Japan
Arun Muley, Boeing Company, USA
Pam Norris, University of Viginia, USA

Tomohiro Nozaki, Tokyo Institute of Technology, Japan
S.A. Sherif, University of Florida, USA
Naoki Shikazono, The University of Tokyo, Japan
Koji Takahashi, Kyushu University, Japan

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Osamu Nakabeppu, Meiji University
Yuji Nakamura, Toyohashi University of Technology
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Takushi Saito, Tokyo Institute of Technology
Jun Sakakibara, Meiji University
Atsushi Sakurai, Niigata University
Junichirou Shiomi, The University of Tokyo
Ryo Shirakashi, The University of Tokyo
Yutaka Tabe, Hokkaido University
Masato Tagawa, Nagoya Institute of Technology
Yoshihiro Taguchi, Keio University
Kazuta Tatsumi, Kyoto Univerisity
Shohji Tsushima, Osaka University
Ichiro Ueno, Tokyo University of Science
Jun Yamada, Shibaura Institute of Technology
Takeshi Yokomori, Keio University

Track Chairs

(a) Fundamentals of Heat and Mass Transfer:

Kazuyoshi Nakabe, Kyoto Univerisity, Japan
Koji Fukagata, Keio University, Japan
Ji Hwan Jeong, Pusan National University, Korea
Sumanta Acharya, University of Memphis, USA

(b) Heat and Mass Transfer in Energy Systems:

Akio Miyara, Saga University, Japan
Kaoru Maruta, Tohoku University, Japan
Minsoo Kim, Seoul National University, Korea
Yaroslav Chudnovsky, Gas Technology Institute, USA

(c) Micro/Nano Scale Phenomena and Thermo-Physical Properties:

Koji Takahashi, Kyushu University, Japan
Yuji Suzuki, The University of Tokyo, Japan
Yong Tae Kang, Korea University, Korea
Arun Muley, Boeing Company, USA

Topic Organizers

Track (a) Fundamentals of Heat and Mass Transfer

(a-1) Convective Heat and MassTransfer

Atsuki Komiya, Tohoku University, Japan
Kazuta Tatsumi, Kyoto Univerisity, Japan
Jungho Lee, Korea Institute of Machinery and Materials, Korea

(a-2) Comutational Heat and Mass Transfer

Kazuhiko Suga, Osaka Prefecture University, Japan
Koji Fukagata, Keio University, Japan
Seong Hyuk Lee, Chung-Ang University, Korea

(a-3) Phase Change Phenomena and Heat Transfer

Niro Nagai, Fukui University, Japan
Ichiro Ueno, Tokyo University of Science, Japan
ByongJo Yun, Pusan National University, Korea

(a-4) Radiative Heat Transfer

Jun Yamada, Shibaura Institute of Technology, Japan
Atsushi Sakurai, Niigata University, Japan
Hyunjin Lee, Korea Institute of Energy Research, Korea

(a-5) Biological Heat and Mass Transfer

Ryo Shirakashi, The University of Tokyo, Japan
Kosaku Kurata, Kyushu University, Japan
Ik-Tae Im, Chonbuk National University, Korea

(a-6) Measurements and Diagnostics

Masato Tagawa, Nagoya Institute of Technology, Japan
Jun Sakakibara, Meiji University, Japan
Shoji Tsushima, Osaka University, Japan
Dong-Wook Oh, Chosun University, Korea

(a-7) Heat Transfer in Manufacturing

Takushi Saito, Tokyo Institute of Technology, Japan

Suk-Won Cha, Seoul National University, Korea

(a-8) Thermo-Physical Properties

Jun Yamada, Shibaura Institute of Technology, Japan

Yoshihiro Taguchi, Keio University, Japan

Taesung Kim, Sungkyunkwan University, Korea

Track (b) Heat and Mass Transfer in Energy Systems

(b-1) Fundamentals in Combustion

Osamu Fujita, Hokkaido University, Japan

Satoshi Kadowaki, Nagaoka University of Technology, Japan

Takeshi Yokomori, Keio University, Japan

Chae Hoon Sohn, Sejong University, Korea

(b-2) Heat and Mass Transfer in Combustion Systems

Kaoru Maruta, Tohoku University, Japan

Yuji Nakamura, Toyohashi University of Technology, Japan

Nam Il Kim, KAIST, Korea

(b-3) Heat and Mass Transfer in IC Engine

Toshiaki Kitagawa, Kyushu University, Japan

Hidenori Kosaka, Tokyo Institute of Technology, Japan

Hiroshi Kawanabe, Kyoto University, Japan

Kyoung Doug Min, Seoul National University, Korea

(b-4) Heat and Mass Transfer in Energy Devices

Naoki Shikazono, The University of Tokyo, Japan

Kasuyoshi Fushinobu, Tokyo Institute of Technology, Japan

Hiroshi Iwai, Kyoto University, Japan

Yutaka Tabe, Hokkaido University, Japan

Tong Seop Kim, Inha University, Korea

(b-5) Heat and Mass Transfer in Air Conditioners & Refrigeration

Akio Miyara, Saga University, Japan

Hiroyuki Kumano, Aoyama Gakuin University, Japan

Yongchan Kim, Korea University, Korea

Track (c) Micro/Nano Scale Phenomena and Thermo-Physical Properties

(c-1) Transport Phenomena in Nano and Molecular Scale Systems

Hirofumu Daiguji, The University of Tokyo, Japan

Masahiko Shibahara, Osaka University, Japan

Youngsuk Nam, Kyung Hee University, Korea

(c-2) Heat and Mass Transfer in MEMS

Yuji Suzuki, The University of Tokyo, Japan

Osamu Nakabeppu, Meiji University, Japan

Tomohiro Nozaki, Tokyo Institute of Technology, Japan

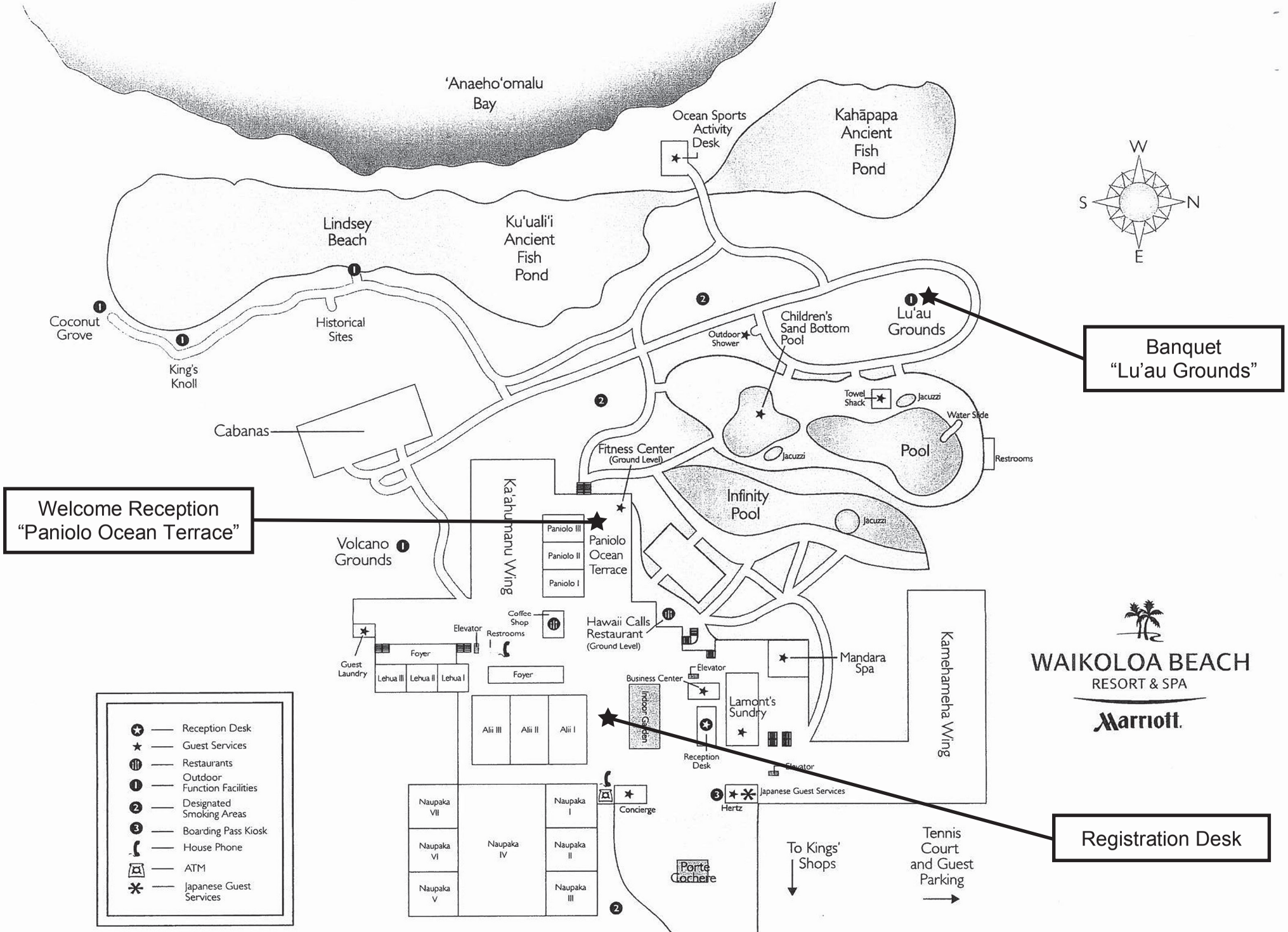
Wonjoon Choi, Korea University, Korea

(c-3) Thermal Properties at the Micro/Nano-scale

Koji Miyazaki, Kyushu Institute of Technology, Japan

Junichiro Shiomi, The University of Tokyo, Japan

Woo Chul Kim, Yonsei University, Korea


'Anaeho'omalu Bay
Ocean Sports Activity Desk
Kahāpapa Ancient Fish Pond
W
S
N
E
Lindsey Beach
Ku'uali'i Ancient Fish Pond
Coconut Grove
Historical Sites
King's Knoll
Cabanas
Outdoor Shower
Children's Sand Bottom Pool
Lu'au Grounds
Banquet "Lu'au Grounds"
Towel Shack
Jacuzzi
Water Slide
Pool
Restrooms
Fitness Center (Ground Level)
Infinity Pool
Welcome Reception "Paniolo Ocean Terrace"
Volcano Grounds
Ka'ahumanu Wing
Paniolo III
Paniolo II
Paniolo I
Paniolo Ocean Terrace
Coffee Shop
Hawaii Calls Restaurant (Ground Level)
Elevator
Restrooms
Guest Laundry
Foyer
Lehua III
Lehua II
Lehua I
Business Center
Mandara Spa
Kamehameha Wing
Lamont's Sundry
Alii III
Alii II
Alii I
Indoor Garden
Reception Desk
Japanese Guest Services
Hertz
Concierge
Naupaka VII
Naupaka VI
Naupaka V
Naupaka IV
Naupaka I
Naupaka II
Naupaka III
Porte Cochere
To Kings' Shops
Tennis Court and Guest Parking
Registration Desk
Reception Desk
Guest Services
Restaurants
Outdoor Function Facilities
Designated Smoking Areas
Boarding Pass Kiosk
House Phone
ATM
Japanese Guest Services
WAIKOLOA BEACH RESORT & SPA
Marriott.

General Information

Presentation and Audio—Visual Aids

All the presentations except the Plenary and Keynote Lectures are allotted for 20 minutes including discussion. Each session room will have a fullcolor liquid crystal projector (LCP). The LCP will be equipped with a connection cable with D-sub mini 15-pin male connector for RGB-video input from computers. Note that speakers who wish to use the LCP must prepare their own computer, presentation software, and additional connectors if needed.

Welcome Reception

On Sunday evening, March 13, 2016, all attendees are invited to the Welcome Reception. The Welcome Reception will be held at 6:00pm to 9:00pm at the Paniolo Ocean Terrace.

Conference Banquet

The Conference Banquet will be held at 6:00pm to 9:00pm on Wednesday, March 16, 2016. Dinner will be served as a buffet, with seating provided. The Conference Banquet will be held at the Luau Ground. The regular admission fee includes admission to the banquet.

Conference Lunch

On Monday, March 14, Wednesday 16, and Thursday 17, Conference Lunch will be served. Attendees who paid for the lunch at the online registration are invited.

Internet Access

There is a free WI-FI near the hotel reception. The SSID and password will be displayed at the conference registration desk. Guest room WI-FI access is also available with additional charge.

Sunday, March 13, 2016

Time/room	Naupaka I-IV	Naupaka V	Naupaka VI	Naupaka VII	Ali'I I	Ali'I II	Ali'I III	Paniolo I	Paniolo II	Paniolo III	Lehua II-III
12:00—	Registration (Registration Desk)										
18:00—21:00	Welcome Reception (Paniolo Ocean Terrace)										

Monday, March 14, 2016

Time/room	Naupaka I-IV	Naupaka V	Naupaka VI	Naupaka VII	Ali'I I	Ali'I II	Ali'I III	Paniolo I	Paniolo II	Paniolo III	Lehua II-III
8:30—9:00	Opening (Naupaka I-IV)										
9:00—9:40	PRTEC-1PL01 (Naupaka I-IV) Prof. Tae-Ho Song, KAIST, Korea										
9:40—10:20	PRTEC-1PL02 (Naupaka I-IV) Prof. John H. Lienhard V, MIT, USA										
10:20—10:40	Coffee break										
10:40—12:00	Topic ID: (a-1) Turbulent Convection 1	Topic ID: (a-1) Natural Convection 1	Topic ID: (c-1) Transport Phenomena in Molecular Scale Systems 1	Topic ID: (a-6) Measurements and Diagnostics 1	Topic ID: (a-2) Convective Heat and Mass Transfer	Topic ID: (a-3) Heat Pipe & Phase Change 1	Topic ID: (b-1) Liquid and Solid Combustions	Topic ID: (a-7) Heat Transfer in Manufacturing 1	Topic ID: (c-3) Heat Conduction in Nano-Structured Materials	Topic ID: (b-4) Energy Management	Topic ID: (b-4) Heat Exchanger 1
12:00—13:20	Lunch										
13:20—15:00	Topic ID: (a-1) Turbulent Convection 2	Topic ID: (a-1) Natural Convection 2	Topic ID: (c-1) Transport Phenomena in Molecular Scale Systems 2	Topic ID: (a-6) Measurements and Diagnostics 2	Topic ID: (a-2) Numerical Methods for Heat and Mass Transfer	Topic ID: (a-3) Heat Pipe & Phase Change 2	Topic ID: (b-1) Laminar and Turbulent Flames	Topic ID: (a-7) Heat Transfer in Manufacturing 2	Topic ID: (c-3) Measurements of Heat Conduction in Solids	Topic ID: (b-4) Battery	Topic ID: (b-4) Heat Exchanger 2
15:00—15:20	Coffee break										
15:20—15:50	PRTEC-1KL01 Prof. Heinz Herwig, Hamburg Univ. Tech., Germany				PRTEC-1KL02 Prof. Branislav Basara, AVL List GmbH, Austria & Chalmers Univ. Tech., Sweden	PRTEC-1KL03 Prof. Hyung Hee Cho, Yonsei Univ., Korea	PRTEC-1KL04 Prof. Yohei Sato, Keio Univ., Japan				
15:50—15:55	Break										
15:55—16:25	~~PRTEC-1KL05 Prof. Ya-Ling He and Wen-Quan Tao, Xi'an Jiaotong Univ., PR China~~ **Canceled**				PRTEC-1KL06 Prof. Koji Matsubara, Niigata University, Japan	PRTEC-1KL07 Dr. Won-Pil Baek, Korea Atomic Energy Research Institute, Korea	PRTEC-1KL08 Prof. Yogesh Jaluria, Rutgers University, USA				
16:25—16:30	Break										
16:30—17:50	Topic ID: (a-1) Viscoelastic Fluid	Topic ID: (a-1) Nanofluids	Topic ID: (c-1) Transport Phenomena in Molecular Scale Systems 3	Topic ID: (a-6) Measurements and Diagnostics 3	Topic ID: (a-2) Heat and Mass Transfer Involving Particles	Topic ID: (a-3) Boiling and Evaporation 1	Topic ID: (b-1) Formation and Control of Pollutants	Topic ID: (a-7) Heat Transfer in Manufacturing 3	Topic ID: (c-3) Micro/Nano Technology for Heat Transfer in Liquids	Topic ID: (b-4) Evaporation	Topic ID: (b-4) Heat Exchanger 3

Tuesday, March 15, 2016

Time/room	Naupaka I-IV	Naupaka V	Naupaka VI	Naupaka VII	Ali'I I	Ali'I II	Ali'I III	Paniolo I	Paniolo II	Paniolo III	Lehua II-III
8:30—9:10	PRTEC-1PL03 (Naupaka I-IV) Prof. Kaoru Maruta, Tohoku Univ., Japan & Far Eastern Federal Univ., Russia										
9:10—9:50	PRTEC-1PL04 (Naupaka I-IV) Prof. Sushanta Mitra, York Univ., Canada										
9:50—10:10	Coffee break										
10:10—12:10	Topic ID: (a-1) Environment and Nature	Topic ID: (a-1) Impinging Flows	Topic ID: (a-5) Heat and Mass Transfer in Organs and Fish Zygotes	Topic ID: (b-5) Heat and Mass Transfer in Air Conditioners & Refrigeration (1)	Topic ID: (a-2) Heat and Mass Transfer Across Interfaces	Topic ID: (a-3) Boiling and Evaporation 2		Topic ID: (b-2) Multiphase Dynamics in Combustion System	Topic ID: (a-2) Heat and Mass Transfer in Power Systems	Topic ID: (b-4) Engines & Automobiles	Topic ID: (b-4) Heat Exchanger 4
12:10—13:30	Lunch break										
13:30—17:00	Round table on future of thermal engineering										

Wednesday, March 16, 2016

Time/room	Naupaka I-IV	Naupaka V	Naupaka VI	Naupaka VII	Ali'I I	Ali'I II	Ali'I III	Paniolo I	Paniolo II	Paniolo III	Lehua II-III
8:30—9:10	PRTEC-1PL05 (Naupaka I-IV) Prof. Keumnam Cho, Sungkyunkwan Univ., Korea										
9:10—9:50	PRTEC-1PL06 (Naupaka I-IV) Dr. Dane A. Boysen, Gas Tech. Inst., USA										
9:50—10:10	Coffee break										
10:10—11:50	Topic ID: (a-1) Thermodynamics and Thermal Performance	Topic ID: (a-1) Particle Flows	Topic ID: (a-5) Biotransport in Microscale Region	Topic ID: (b-5) Heat and Mass Transfer in Air Conditioners & Refrigeration (2)	Topic ID: (a-2) Heat and Mass Transfer with Structured Materials	Topic ID: (a-4) Radiative Heat Transfer (1)		Topic ID: (b-1) Flame Stabilization and Extinction 1	Topic ID: (c-3) Applications of Micro/Nano Technology	Topic ID: (b-4) Heat Pipe	Topic ID: (b-4) PEFC 1
11:50—13:10	Lunch break										
13:10—13:40	PRTEC-1KL09 Prof. Chin-Hsiang Cheng, Nat. Cheng Kung Univ., Taiwan				PRTEC-1KL10 Prof. Pamela Norris, Univ. Virginia, USA	PRTEC-1KL11 Prof. Yongchan Kim, Korea Univ., Korea					MS Prof. N. Kasagi
13:40—13:45	Break										
13:45—14:15					PRTEC-1KL12 Prof. John R. Thome, Ecole Polytechique Fédérale de Lausanne, Switzerland	PRTEC-1KL13 Prof. Zhixiong Guo, State Univ. New Jersey, USA					PRTEC-1KL14 Prof. Tsuyoshi Totani, Hokkaido Univ., Japan
14:15—14:35	Coffee break										
14:35—16:15		Topic ID: (a-8) Thermophysical Properties (Measurement Technique 1)	Topic ID: (a-3) Condensation 1	Topic ID: (b-5) Heat and Mass Transfer in Air Conditioners & Refrigeration (3)	Topic ID: (a-2) Cooling Techniques 1	Topic ID: (a-4) Radiative Heat Transfer (2)		Topic ID: (b-1) Flame Stabilization and Extinction 2	Topic ID: (c-3) Numerical Simulations for Heat Conduction in Solids	Topic ID: (b-4) Heat Transfer Enhancement	Topic ID: (b-4) PEFC 2
16:15—16:25	Break										
16:25—18:05		Topic ID: (a-8) Thermophysical Properties (Novel Materials)	Topic ID: (a-3) Condensation 2	Topic ID: (b-5) Heat and Mass Transfer in Air Conditioners & Refrigeration (4)	Topic ID: (a-2) Cooling Techniques 2	Topic ID: (a-4) Radiative Heat Transfer (3)		Topic ID: (c-2) Microscale Heat Transfer 1	Topic ID: (c-3) Characterization of Micro/Nano Structured Materials	Topic ID: (b-4) Heat Pump	Topic ID: (b-4) PEFC3 & MCFC
19:00—21:00	Conference Banquet (Luau Grounds)										

Thursday, March 17, 2016

Time/room	Naupaka I-IV	Naupaka V	Naupaka VI	Naupaka VII	Ali'I I	Ali'I II	Ali'I III	Paniolo I	Paniolo II	Paniolo III	Lehua II-III
8:30—9:05	Donald Q. Kern Award lecture (Naupaka I-IV) Prof. Kenneth E. Goodson, Stanford University, USA, Electronics Thermal Management at the Extremes										
9:05—9:45	PRTEC-1PL07 (Naupaka I-IV) Prof. Naoki Shikazono, Univ. Tokyo, Japan										
9:45—9:50	Break										
9:50—10:20	PRTEC-1KL15 Prof. Sumanta Acharya, Univ. Memphis, USA				PRTEC-1KL16 Prof. Man Yeong Ha, Pusan Nat. Univ., Korea	PRTEC-1KL17 Prof. Koji Miyazaki, Kyushu Inst. Tech, Japan					MS Prof. Y. Nagano
10:20—10:40	Coffee break										
10:40—12:20	Topic ID: (a-1) Heat Transfer Enhancement and Cooling 1	Topic ID: (a-8) Thermophysical Properties (Simulation and Measurement)	Topic ID: (a-3) Condensation 3	Topic ID: (b-1) Novel Combustion Technologies	Topic ID: (a-2) Heat and Mass Transfer Enhancement	Topic ID: (a-3) Boiling and Evaporation 3		Topic ID: (c-2) Microscale Heat Transfer 2	Topic ID: (b-3) Combustion and Heat Transfer in Engine	Topic ID: (b-4) Solar & Thermal Systems 1	Topic ID: (b-4) SOFC
12:20—13:40	Lunch break										
13:40—15:20	Topic ID: (a-1) Heat Transfer Enhancement and Cooling 2	Topic ID: (a-8) Thermophysical Properties (Fluids)	Topic ID: (a-3) Phase Change Material	Topic ID: (b-2) Gas Turbine/Turbulent Combustion	Topic ID: (a-2) Turbulent Heat and Mass Transfer	Topic ID: (a-3) Boiling and Evaporation 4		Topic ID: (c-1) Transport Phenomena in Nanometer Scale Systems 1	Topic ID: (b-3) SI-Combustion Process	Topic ID: (b-4) Solar & Thermal Systems 2	Topic ID: (b-4) Cycle
15:20—15:40	Coffee break										
15:40—17:20	Topic ID: (a-1) Forced Convection		Topic ID: (a-3) Solid & Liquid Phase Change	Topic ID: (b-2) New Technologies in Combustion Systems	Topic ID: (a-2) Heat and Mass Transfer in High-Speed and High-Temperature Flows	Topic ID: (a-3) Phase Change Miscellaneous		Topic ID: (c-1) Transport Phenomena in Nanometer Scale Systems 2	Topic ID: (b-3) Heat Transfer in Engine System	Topic ID: (b-4) Thermal Energy Storage	Topic ID: (b-4) CGS
17:20—17:25	Break										
17:25—17:40	Closing Remarks (Naupaka I-IV)										

Monday, March 14, 2016

Plenary Lectures

PRTEC-1PL01

9:00—9:40 (Naupaka I-IV) Chairperson: Hyung Hee Cho (Yonsei Univ., Korea)

Prof. Tae-Ho Song, KAIST, Korea

Vacuum Insulation-Achievements and Anticipations

Vacuum insulation products have been launched in the market since about 15 years ago. They find applications in refrigerators, cryogenic facilities and buildings. Among these, the building energy occupies about 45% of the total global energy consumption, and vacuum insulation is expected to save half of it through simple renovation of existing buildings. The practical application, however, imposes many technical problems to be solved in the future. Contrary to the market, the academic sectors are not moving fast to meet the technical challenges. Fundamental heat and mass transfer mechanisms in vacuum insulation are discussed. In this talk, together with the record and ultimate limitations in the performance. Other issues related with practical application such as service life, material, and manufacturing are also treated. Immediate applications and future achievements of vacuum insulation are introduced, leading to the anticipated impact of vacuum insulation to the global energy and environmental issue.

PRTEC-1PL02

9:40—10:20 (Naupaka I-IV) Chairperson: Prof. James Klausner (Michigan State Univ., USA)

Prof. John H. Lienhard V, Massachusetts Institute of Technology, USA

Making Desalination an Energy Efficient Alternative

The world's renewable fresh water supply may be considered to be the difference between precipitation over land and evaporation; and this supply is essentially fixed while world population rises and the water demands of growing economies rise. As a result, water scarcity is an increasing problem throughout the world, with water shortages impacting both agricultural and urban populations and with substantial environmental damage as a result of water diversions for human use. In addition, agricultural and industrial pollution of waterways further impedes fresh water supplies.

Desalination of seawater, brackish ground water, and even wastewater, has become a major tool in meeting the world's growing water demand, but energy intensity remains high and more efficient systems are needed. The tools of heat and mass transfer, and of thermal system systems engineering are directly applicable. This lecture discusses design analogies between desalination systems and thermal power systems, with a focus on reverse osmosis systems. Entropy generation minimization is shown to be the major aim in energy efficient design. Analogies between heat exchangers and osmotic mass exchangers are developed. The potential use of ultrapermeable membranes to reduce system size or energy consumption is considered. The impact of concentration polarization, analogous to incondensable gases in heat exchangers and dependent upon mass transfer coefficients, is shown to be controlling is system performance. Finally, the role of varying mass flow rates in membrane feed channels is examined using analogy to heat transfer and a superposition technique, showing how mass transfer coefficients can be accurately modeled in these systems.

Keynote Lectures

PRTEC-1KL01
15:20—15:50 (Naupaka I-IV) Chairperson: Kazuyoshi Nakabe (Kyoto Univ., Japan)
Prof. Heinz Herwig, Hamburg University of Technology, Germany
The Second Law Analysis (SLA) in Convective Heat Transfer Processes

PRTEC-1KL02
15:20—15:50 (Ali'l I) Chairperson: Kazuhiko Suga (Osaka Pref. Univ., Japan)
Prof. Branislav Basara, AVL List GmbH, Austria & Chalmers University of Technology, Sweden
Recent Advances in CFD Modelling of IC-Engine

PRTEC-1KL03
15:20—15:50 (Ali'l II) Chairperson: Yong Tae Kang (Korea Univ., Korea)
Prof. Hyung Hee Cho, Yonsei University, Korea
Heat Transfer on Gas Turbine Hot Components and Cooling Technique

PRTEC-1KL04
15:20—15:50 (Ali'l III) Chairperson: Yuji Suzuki (Univ. Tokyo, Japan)
Prof. Yohei Sato, Keio University, Japan
Sophisticated Integration of Laser Measurement Techniques and Their Expansion to Nano/Micro Thermofluid Dynamics

~~PRTEC-1KL05~~ **Canceled**
~~**15:55—16:25** (Naupaka I-IV) Chairperson: Yong X. Tao (Univ. North Texas, USA)~~
~~Prof. Ya-Ling He and Wen-Quan Tao, Xi'an Jiaotong University, PR China~~
~~Multiscale Simulation for Problems in Thermal and Environmental Engineering~~

PRTEC-1KL06
15:55—16:25 (Ali'l I) Chairperson: Yasuo Kawaguchi (Tokyo Univ. Sci., Japan)
Prof. Koji Matsubara, Niigata University, Japan
Organized Structures of Single and Two Phase Turbulent Flows with Scalar Transport and Some Applications to Solar Engineering Problems

PRTEC-1KL07
15:55—16:25 (Ali'l II) Chairperson: Ji Hwan Jeong (Pusan Nat. Univ., Korea)
Dr. Won-Pil Baek, Korea Atomic Energy Research Institute, Korea
Nuclear Thermal-Hydraulic Safety and Severe Accident Research in Korea: Current Issues and Recent Achievements

PRTEC-1KL08
15:55—16:25 (Ali'l III) Chairperson: Sumanta Acharya (Univ. Memphis, USA)
Prof. Yogesh Jaluria, Rutgers University, USA
Challenges in the Accurate Modeling and Simulation of Advanced Thermal Materials Processing

Technical Sessions

Monday, March 14, 2016

Session	10:40	11:00	11:20	11:40	
Room: Naupaka I-IV Topic ID: (a-1) Turbulent Convection 1 Chairperson: Nick Francis (Sandia National Labs)	PRTEC-14351 Numerical Investigation of the Fully-Developed Periodic Flow Field for Optimal Heat Transfer in Spirally Corrugated Tubes, Jakob Hærvig (Aalborg Univ.), Thomas Condra (Aalborg Univ.), Kim Sørensen (Aalborg Univ.)	PRTEC-15175 A New Experimental Correlation for Convective Heat Transfer Coefficient around a Vertical Hexagonal Rod Bundle, Mohammad Hady Makhmalbaf (Western Michigan Univ.)	PRTEC-15103 Intermittent Flow Structure of Turbulent Poiseuille Flows at Low Reynolds Numbers under Stable Stratification, Koji Fukudome (Ritsumeikan Univ.), Shuhei Yamasaki (Ritsumeikan Univ.), Yoshifumi Ogami (Ritsumeikan Univ.)		
Room: Naupaka V Topic ID: (a-1) Natural Convection 1 Chairperson: Masayuki Kaneda (Osaka Pref. Univ.)	PRTEC-15011 POD Analysis on the Natural Convection inside an Oscillating Cube Heated Differentially without Gravity, Katsuya Hirata (Doshisha Univ.), Keisuke Tatsumoto (Doshisha Univ.), Masaki Nobuhara (Doshisha Univ.), Hirochika Tanigawa (Maizuru Tech.)	PRTEC-14630 A Numerical Study of Natural Convective Heat Transfer from a Horizontal Isothermal Surface with Rectangular Surface Roughness Elements, Patrick H Oosthuizen (Queen's Univ.)	PRTEC-14776 Numerical Investigation of Heat Transfer by Natural Convection around a Heated Cylinder in an Enclosure, Jung-Hun Noh (Hanyang Univ.), Se-Jin Yook (Hanyang Univ.)	PRTEC-15231 Natural Convection from a Single Square Tube in a Cascade of Horizontal Tubes, Mohamed Ali, (King Saud Univ.), Abdullaha Nuhait (King Saud Univ.), Redhwan Almuzaiqer (King Saud Univ.)	
Room: Naupaka VI Topic ID: (c-1) Transport Phonomena in Molecular Scale Systems 1 Chairperson: Taku Ohara (Tohoku Univ.)	PRTEC-14568 An Investigation on Liquid Flow Characteristics in Carbon Nanotubes, Ryo Takahama (Osaka Pref. Univ.), Haruka Yasuoka (Osaka Pref. Univ.), Masayuki Kaneda (Osaka Pref. Univ.), Kazuhiko Suga (Osaka Pref. Univ.)	PRTEC-14596 Thermal Transport Phenomena in Nano-Scale Fluid Flows using Molecular Dynamics Simulations, Quyen Dinh (Univ. Ulsan), BoHung Kim (Univ. Ulsan)	PRTEC-14385 Molecular Dynamics Study on Influences of Slit Structures on Thermal Resistance and Energy Transport Mechanism at a Liquid-Solid Interface, Masahiko Shibahara (Osaka Univ.), Ryohei Toda (Osaka Univ.), Yoshitaka Ueki (Osaka Univ.), Taku Ohara (Tohoku Univ.)	PRTEC-14703 MD Simulation of Sandwiched Liquid Evaporation, Takashi Ao (Kyoto Univ.) Mitsuhiro Matsumoto (Kyoto Univ.)	
Room: Naupaka VII Topic ID: (a-6) Measurements and Diagnostics 1 Chairperson: Nao Ninomiya (Utsunomiya Univ.)	PRTEC-14552 Development of Multi-Wavelength Spontaneous Raman Imaging for Ion Concentration and Temperature Distribution in Microfluidic Device, Maiko Tanaka (Keio Univ.), Ken Yamamoto (Keio Univ.), Yohei Sato (Keio Univ.), Koichi Hishida (Keio Univ.)	PRTEC-15021 Simultaneous Measurement of Solutal and Thermal Diffusivities using Dual Wavelength Interferometer, S Varma (IIT Bombay), S Srinivas Rao (IIT Bombay), Atul Srivastava (IIT Bombay).	PRTEC-15139 Temperature and Oxygen Concentration Effects on Phosphorescence of Various Phosphors for Two-Color Phosphor Thermometry, Haruko Nagai (Keio Univ.), Eri Fujii (Keio Univ.), Takeshi Yokomori (Keio Univ.)	PRTEC-15097 Visualization of Free-Convection Temperature Field around a Small Heated Sphere in Water, Naoto Kakuta (Tokyo Metro. Univ.), Ryota Fujioka (Tokyo Metro. Univ.), Katsuya Kondo (Tottori Univ.), Tomohiro Miyake (Tottori Univ.), Hidenobu Arimoto (AIST), Yukio Yamada (Univ. Electro-Communi.)	
Room: Ali'I I Topic ID: (a-2) Convective Heat and Mass Transfer Chairperson: Kazuhiko Suga (Osaka Pref. Univ.)	PRTEC-14486 Numerical Simulation of Flow and Heat Transfer around a Circular Cylinder using Immersed Boundary Method, Hosnieh Kor (Keio Univ.), Koji Fukagata (Keio Univ.)	PRTEC-14698 Natural Convection in a Ventilated Bottom Heated Cubic Enclosure, Stuart Norris (Univ. Auckland), Timothy Anderson (Auckland Univ. Tech.), Juan Carlos Gillen (Auckland Univ. Tech.)	PRTEC-14751 Feasibility Study on the Application of the Higher-Order Numerical Method in Thermal-Hydraulic Analysis Code, Won Woong Lee (KAIST), Jeong Ik Lee (KAIST)		
Room: Ali'I II Topic ID: (a-3) Heat Pipe & Phase Change 1 Chairperson: Takao Nagasaki (Tokyo Inst. Tech.)	PRTEC-14475 Evaporator Performance and Vapor Liquid Interface Shape in a Transparent Heat Pipe Operating with a Pure Fluid and an Ideal Fluid Mixture in Microgravity, Thao Nguyen (Rensselaer Polytech. Inst.); Akshay Kundan (Rensselaer Polytech. Inst.), Peter Jr. Wayner (Rensselaer Polytech. Inst.), Joel Plawsky (Rensselaer Polytech. Inst.)	PRTEC-15226 Microscale Infra-Red Observation of Liquid-Vapor Phase Change Process on the Surface of Porous Media, Kimihide Odagiri (Nagoya Univ.) Masahito Nishikawara (Toyohashi Univ. Tech.), Hosei Nagano (Nagoya Univ.)	PRTEC-15042 Infrared Thermometry for Liquid-Vapor Phase Detection on Structured Boiling Surfaces, Hyungdae Kim (Kyung Hee Univ.), Youngjae Park (Kyung Hee Univ.)	PRTEC-15030 A Study on the Condensation Heat Transfer Performance of Loop Type Flexible Two-Phase Thermosyphon Heat Exchangers for High Speed Rotating Shaft Heat Release, Dong-Hyun Cho (Daejin Univ.)	

Session	10:40	11:00	11:20	11:40	
Room: Ali'i III Topic ID: (b-1) Liquid and Solid Combustions Chairperson: Osamu Fujita (Hokkaido Univ)	PRTEC-14904 Flame Spread Behavior of n-Decane Droplet Array with Various Initial Droplet Diameter, Yusuke Suganuma (Nihon Univ.), Hiroshi Nomura (Nihon Univ.), Yasushige Ujiie (Nihon Univ.)	PRTEC-15129 Temperature Measurement inside Flammable Solids by Phosphor Thermometry in Oxygen Index Flammability Test, Tomohiro Yamanaka (Keio Univ.), Ikuya Tanaka (Keio Univ.), Takeshi Yokomori (Keio Univ.), Aki Hosogai (JAXA), Yuji Nakamura (Toyohashi Univ. Tech.)	PRTEC-14534 Observation of Ignition Delay of n-Heptane/n-Butanol and n-Heptane/Ethanol Blended Fuels under Low Oxygen Concetration Conditions, Kijoong Kang (Pusan Nat. Univ.), Taeyoung Shim (Pusan Nat. Univ.), Gyung Min Choi (Pusan Nat. Univ.)	PRTEC-14538 Effect of Inclination Angle on Spreading Flame over Polyethylene Insulated Electrical Wire with AC Electric Fields, Seungjae Lim (Pukyong Nat. Univ.), Changyeop Lee (Korea Inst. Industrial Tech.), Sewon Kim (Korea Inst. Industrial Tech.), Minkuk Kim (Korea Inst. Machinery and Materials), Jeong Park (Pukyong Nat. Univ.), Osamu Fujita (Hokkaido Univ.), Sukho Chung (KAUST)	
Room: Paniolo I Topic ID: (a-7) Heat Transfer in Manufacturing 1 Chairperson: Takushi Saito (Tokyo Inst. Tech.)	PRTEC-14924 Integrated Simulation of Turbulent Convection, Radiation and Conduction in a Selenization Process of CIGS Solar Cells, Donghyun You (POSTECH), Taejong Yu, (POSTECH), Deageun Yoon (POSTECH)	PRTEC-15215 Study on Fluid Dynamic Performance of Different Air Permeability Fabrics, Shigekazu Tekuramori (Akita Univ.), Hiroaki Hasegawa (Akita Univ.), Masahide Murakami (Univ. Tsukuba), Shigeru Obayashi (Tohoku Univ.)	PRTEC-14610 A Study on Heat and Mass Transfer in Melting Furnace for the Optimization of Copper Slag Recycling Process, Byungkwon Kim (Korea Inst. Industrial Tech/ Yonsei Univ.), Jongsu Kim (Korea Inst. Industrial Tech.), Dongho Park (Korea Inst. Industrial Tech.), Jeongyeol Kim (Korea Inst. Industrial Tech.), Jungho Hwang (Yonsei Univ.), Byungryeul Bang (Korea Inst. Industrial Tech.)	PRTEC-14471 Numerical Simulations of Behavior of Venturi Scrubbers in Self-Priming Mode, Won Seok Kim (BHI)	
Room: Paniolo II Topic ID: (c-3) Heat Conduction in Nano-structured Materials Chairperson: Takashi Yagi (AIST)	PRTEC-14364 Crystal Structure Dependent Thermal Conductivity in 2D Phononic Crystals, Masahiro Nomura (Univ. Tokyo), Junki Nakagawa (Univ. Tokyo), Jeremie Maire (Univ. Tokyo), Roman Anufriev (Univ. Tokyo)	PRTEC-14577 Thermal Boundary Conductance Engineering at a Series of Metal-Semiconductor Interfaces, LeighAnn Larkin (Univ. Virginia), MacKenzie Redding (Univ. Virginia), Nam Le (Univ. Virginia), Pamela Norris (Univ. Virginia)	PRTEC-14732 Thermal Conductivity Reduction in Polycrystalline Silicon through Grain Boundary Engineering, Chanyoung Kang (Yonsei Univ.), Hoon Kim (Yonsei Univ.), Hwanjoo Park (Yonsei Univ.), Woochul Kim (Yonsei Univ.)	PRTEC-14937 Fresnel Coefficients for Thermal Phonons at Solid Interfaces, Chengyun Hua (Caltech), Xiangwen Chen (Caltech), Navaneeth K. Ravichandran (Caltech), Austin J. Minnich (Caltech), Chengyun Hua (Caltech)	
Room: Paniolo III Topic ID: (b-4) Energy Management Chairperson: Seong Hyuk Lee (Chung-Ang Univ.)	PRTEC-14693 Assessing the Potential of Abandoned Oil Wells for Thermal Energy Storage, Todd Otanicar (Univ. Tulsa).	PRTEC-14873 Assessment of Material and Performance of Trapezodial Heat Sink, Hong-Long Chen (Nat. Chiao Tung Univ.), Chi-Chuan Wang (Nat. Chiao Tung Univ.)	PRTEC-14741 Electrical Rating Analysis for Long Term Performance of Concentrated Photovoltaic (CPV) System, Muhammad Burhan (Nat. Univ. Singapore), Chua Kian Jon Ernest (Nat. Univ. Singapore), Oh Seung Jin (Nat. Univ. Singapore), Muhammad Wakil Shahzad (KAUST), Kim Choon Ng (KAUST)	PRTEC-15043 Optimization of Concentrating Solar Power System Considering Geographical Feature of Land, Kyungeun Lee (KAIST), Ik Jin Lee (KAIST), Bong Jae Lee (KAIST)	
Room: Lehua II-III Topic ID: (b-4) Heat Exchanger 1 Chairperson: Naoki Shikazono (Univ. Tokyo)	PRTEC-14720 Experimental and Numerical Study of Supercritical CO_2 Test Loop Transient Conditions, Seong Jun Bae (KAIST), Bongseong Oh (KAIST), Yoonhan Ahn, Seungjoon Baik (KAIST), Lee Jekyoung (KAIST), Jeong Ik Lee (KAIST)	PRTEC-14657 Heat Transfer Performance of Printed Circuit Heat Exchanger using Supercritical CO_2 as Working Fluid under Different Dimensional Parameters for Channels, Sangwoo Jeon (Yeungnam Univ.). Byon Chan (Yeungnam Univ.)	PRTEC-15078 Printed Circuit Heat Exchanger Design and Performance Analysis near the CO_2 Critical Point for S-CO_2 Power Cycle Applications, Seungjoon Baik (KAIST), Seong Gu Kim (KAIST), Seongmin Son (KAIST), Hyeon Tae Kim (KAIST), Jeong Ik Lee (KAIST)	PRTEC-15173 Design of Compact Heat Exchangers for Supercritical Carbondioxide Cycles, Erfan Rasouli (UC Davis), Samikshya Subedi (Carnegie Mellon Univ.), Vinod Narayanan (UC Davis), Anthony Rollett (Carnegie Mellon Univ.), Jack Beuth (Carnegie Mellon Univ.), Kevin Drost (Oregon State Univ.)	

Technical Sessions

Monday, March 14, 2016

Session	13:20	13:40	14:00	14:20	14:40
Room: Naupaka I-IV Topic ID: (a-1) Turbulent Convection 2 Chairperson: Tomoya Houra (Nagoya Inst.Tech.)	PRTEC-14635 Turbulence Measurement of a Passive Scalar Emitted from a Point Source in the Upstream Region of a Two-Dimensional Hill Model, Tomoya Houra (Nagoya Inst. Tech.), Hideaki Suzuki (Nagoya Inst. Tech.), Masato Tagawa (Nagoya Inst. Tech.)	PRTEC-14446 The Effect of Secondary Flow on Developing Flow in the Transitional Flow Regime, Marilize Everts (Univ. Pretoria), Josua Meyer (Univ. Pretoria)	PRTEC-15123 Study on the Diffusion Mechanism and the Formation Process of the High Concentration Pulse in Material Turbulent Diffusion with the Conditional Sampling Technique, Masaya Endo (Tokyo Univ. Sci.), Qianqian Shao (Tokyo Univ. Sci.), Takahiro Tsukahara (Tokyo Univ. Sci.), Yasuo Kawaguchi (Tokyo Univ. Sci.)	PRTEC-15124 Experimental and Numerical Investigations of Wall Temperature Fluctuations due to Thermal Mixing in an Annulus, Henryk Anglart (KTH Royal Inst. Tech.), Mattia Bergagio (KTH Royal Inst. Tech.), Roman Thiele (KTH Royal Inst. Tech.)	PRTEC-15015 Can a Slower Flow Transport More Heat in Turbulent Thermal Convection?, Ke-Qing Xia (Chinese Univ. Hong Kong), Kai-Leong Chong (Chinese Univ. Hong Kong), Matthias Kaczorowski (Chinese Univ. Hong Kong), Shi-Di Huang (Chinese Univ. Hong Kong)
Room: Naupaka V Topic ID: (a-1) Natural Convection 2 Chairperson: Dong-Wook Oh (Chosun Univ.)	PRTEC-14915 Development of Convection Correlation for Novel Dual Cool Jet Air Mover, Peter de Bock (General Electric Global Research), Karthik Bodla (General Electric Global Research), Bryan Whalen (General Electric Global Research)	PRTEC-15059 A Study of Finite Amplitude Rayleigh-Benard Convection in Nanoliquids, Pradeep Siddheshwar (Bangalore Univ.), Kanchana Chinnaswamy (Bangalore Univ.)	PRTEC-15117 Flow Behavior of Thermochemical Plumes in Viscous Fluids, Ichiro Kumagai (Meisei Univ.), Anne Davaille (CNRS / Univ. Paris-Sud), Kei Kurita (Univ. Tokyo)	PRTEC-14629 A Numerical Study of the Effect of the Distance of a Plane Blind from the Wall on the Convective Heat Transfer from a Recessed Window to the Room, Patrick H Oosthuizen (Queen's Univ.)	PRTEC-14952 Natural Convection Heat and Mass Transfer in the Near Shore Regions of Lakes and Reservoirs, John Patterson (Univ. Sydney), Ghasem Naghib (Univ. Sydney), Chengwang Lei (Univ. Sydney)
Room: Naupaka VI Topic ID: (c-1) Transport Phonomena in Molecular Scale Systems 2 Chairperson: Mitsuhiro Matsumoto (Kyoto Univ.)	PRTEC-15025 Aspect Ratio Effect of Nanorod Condensation by Molecular Dynamics, Donguk Suh (Keio Univ.), Kenji Yasuoka (Keio Univ.)	PRTEC-14912 A Molecular Dynamics Study on Molecular Diffusion in Liquids of Water and IPA in the Vicinity of Solid Surfaces and in Liquid Mixture, Yoichi Naruke (Tohoku Univ.), Jo Suzuki (Tohoku Univ.), Takeo Nakano (Tokyo Electron Ltd.), Gota Kikugawa (Tohoku Univ.), Taku Ohara (Tohoku Univ.)	PRTEC-14579 Effect of Anharmonicity on Thermal Transport at Solid/Solid Interfaces, Rouzbeh Rastgarkafshgarkolaei (Univ. Virginia), Carlos Polanco (Univ. Virginia) Nam Le (Univ. Virginia) Jingjie Zhang (Univ. Virginia), Avik Ghosh (Univ. Virginia), Pamela Norris (Univ. Virginia)	PRTEC-15093 Non-Equilibrium Molecular Dynamics Simulation of Evaporation Process for Diatomic Molecule, Yusuke Nomoto (Keio Univ.), Reina Sano (Keio Univ.), Masaki Hiratsuka (Keio Univ.), Daisuke Takaiwa (Keio Univ.), Yuuki Fujita (NGK Insulators, LTD), Yoshio Kondo (NGK Insulators, LTD), Kenji Yasuoka (Keio Univ.)	
Room: Naupaka VII Topic ID: (a-6) Measurements and Diagnostics 2 Chairperson: Woo Chul Kim (Yonsei Univ.)	PRTEC-14888 3-D Velocity Measurement of Dispersed Objects by Doppler Phase-Shifting Holography, Nao Ninomiya (Utsunomiya Univ.), Teppei Kindaichi (Utsunomiya Univ.), Takatsugu Ouchi (Utsunomiya Univ.), Daisuke Barada (Utsunimiya Univ.)	PRTEC-14928 Ultrasonic Tuft Method for Steam Flowrate Measurement with Focusing Sensor Array, Taiki Aiba (Tokyo Inst. Tech.), Keisuke Tsukada (Tokyo Inst. Tech.), Tatsuya Kawaguchi (Tokyo Inst. Tech.), Hiroshige Kikura (Tokyo Inst. Tech.), Katsuhiko Sugita (Tokyo Electric Power Company), Shuichi Umezawa (Tokyo Electric Power Company)	PRTEC-14605 Experimental Investigation on Flow Boiling Heat Transfer Coefficient of Non-Flammable Mixed Refrigerant, Junghyun Yoo (KAIST), Sohyun Kang (KAIST), Cheonkyu Lee (KAIST), Sangkwon Jeong (KAIST)	PRTEC-15218 An Optical Method for Measurement of Temperature Changes of an Object in Water where Infrared Thermometric Measurements would Fail, Mitsuhiro Uemura (Univ. Tokyo)	
Room: Ali'I I Topic ID: (a-2) Numerical Methods for Heat and Mass Transfer Chairperson: Sung Nam Lee (KAERI)	PRTEC-14909 Improvement of Boundary Reconstruction Scheme for Lattice Boltzmann Fluid Flow Computation, Akane Ohori (Osaka Pref. Univ.), Masayuki Kaneda (Osaka Pref. Univ.), Kazuhiko Suga (Osaka Pref. Univ.)	PRTEC-14634 Improvement of the Zonal Grid Refinement Scheme for the Lattice Boltzmann Method, Yusuke Kuwata (Osaka Pref. Univ.), Kazuhiko Suga (Osaka Pref. Univ.)	PRTEC-15064 GPU Accelerated Numerical Study of PCM Melting Process in an Enclosure with Internal Fins using Lattice Boltzmann Method, Qinlong Ren (Univ. Arizona), Cho Lik Chan (Univ. Arizona)	PRTEC-15113 Application of Higher Order Lattice Boltzmann Method to Rarefied Gas Phenomena, Minoru Watari (LBM Fluid Dynamics Lab.)	
Room: Ali'I II Topic ID: (a-3) Heat Pipe & Phase Change 2 Chairperson: Hyungdae Kim (Kyung Hee Univ.)	PRTEC-14451 Study on the Mechanism of Heat Transport in a Pulsating Heat Pipe by using a Forced Oscillation System, Masayoshi Miura (Tokyo Inst. Tech.), Takao Nagasaki (Tokyo Inst. Tech.), Yutaka Ito (Tokyo Inst. Tech.)	PRTEC-14558 Experimental Study on Heat Transfer Performance of Pulsating Heat Pipe with Refrigerant, Xingyu Wang (Beijing Jiaotng Univ.), Li Jia (Beijing Jiaotong Univ.), Xin Liu (Beijing Soc. Thermal Phys. Energy Eng.)	PRTEC-15119 Numerical Study on Heat Transport Characteristics in Oscillating Heat Pipe under Small Temperature Difference, Hajime Onishi (Kanazawa Univ.), Katsuya Sawairi (Chubu Electric Power), Yukio Tada (Kanazawa Univ.)	PRTEC-14781 Spectral Decomposition of Loop Heat Pipe Temperature Oscillations and Confirmation of Stability Criteria, Jesse Maxwell (US Naval Research Lab.), Timothy Holman (US Naval Research Lab.), Triem Hoang (TTH Research)	PRTEC-15034 Study on a Loop Heat Pipe for a Long-Distance Heat Transport under Anti-Gravity Condition, Kazuya Nakamura (Nagoya Univ.), Kimihide Odagiri (Nagoya Univ.), Housei Nagano (Nagoya Univ.)

Session	13:20	13:40	14:00	14:20	14:40
Room: Ali'i III Topic ID: (b-1) Laminar and Turbulent Flames Chairperson: Takeshi Yokomori (Keio Univ.)	PRTEC-14487 A Comparison Study of Laminar Burning Velocity Measurement in Unstretched Flames, Dong Chan Kim (Sunchon Nat. Univ.), Keun Seon Sim (Sunchon Nat. Univ.), Kee Man Lee (Sunchon Nat. Univ.), Dae Won Kim (Jeonnam Prov. College)	PRTEC-14600 A Numerical Study on Flame Speed Correlation with Radiative Heat Loss in Spherically Propagating Flames Diluted by $CO/CO_2/H_2O$ at High Pressures, Chae Hoon Sohn (Sejong Univ.), Zheng Chen (Peking Univ.), Yiguang Ju (Princeton Univ.)	PRTEC-14460 A Study on Turbulent Burning Velocity for Lean Hydrogen-Propane-Air Mixtures based on Local Flame Displacement Velocity, Masaya Nakahara (Ehime Univ.), Fumiaki Abe (Ehime Univ.), Kenichi Tokunaga (Ehime Univ.), Atsushi Ishihara (Saitama Inst. Tech.)	PRTEC-15087 Towards Understanding of Consumption Rate Characteristics of Turbulent Premixed Flames by High Repetition Rate PLIF and SPIV, Masayasu Shimura (Tokyo Inst. Techonlogy), Ayane Johchi (Tokyo Inst. Tech.), Mamoru Tanahashi (Tokyo Inst. Tech.)	PRTEC-14817 LES of a Turbulent Jet Premixed Flame using a Scale Self-Recognition Mixed SGS Stress Model and FDSGS Combustion Model, Katsuhiro Hiraoka (Tokyo Inst. Tech.), Masayasu Shimura (Tokyo Inst. Tech.), Yoshitsugu Naka (Tokyo Inst. Tech.), Naoya Fukushima (Univ. Tokyo), Mamoru Tanahashi (Tokyo Inst. Tech.)
Room: Paniolo I Topic ID: (a-7) Heat Transfer in Manufacturing 2 Chairperson: Se-Jin Yook (Hanyang Univ.)	PRTEC-14622 Analysis of the Effects of Operating Conditions on the Temperature Distribution within Rubber Ring Stuffing Box Packings, Amirhossein Mahdavi (Univ. Alberta), Cagri Ayranci (Univ. Alberta), Andre McDonald (Univ. Alberta)	PRTEC-15122 Prediction of Temperature Distribution from the Multi-Heat Source Spots to the Steel Plate during Preheating Process, Hap Nguyen (Univ. Ulsan), Geun Sik Lee (Univ. Ulsan)	PRTEC-15085 Efficiency Improvement of Temperature Control of Injection Molding Molds for Polymer Materials, Takushi Saito (Tokyo Inst. Tech.), Tatsuya Kawaguchi (Tokyo Inst. Tech.), Isao Satoh (Tokyo Inst. Tech.)	~~PRTEC-14503~~ ~~An Experimental Investigation of Heat Flux of Water Quenching of a Graphite Mold, Yi Pan (Halliburton), Jeffrey Thomas (Halliburton), Matthew Farny (Halliburton)~~ **Canceled**	PRTEC-14237 Electrical Control and Enhancement of Film Boiling Heat Transfer during Quenching, Arjang Shahriari (Univ. Texas Austin), Mark Hermes (Univ. Texas Austin), Vaibhav Bahadur (Univ. Texas Austin)
Room: Paniolo II Topic ID: (c-3) Measurements of Heat Conduction in Solids Chairperson: Kyeongtae Kim (Incheon Nat. Univ.)	PRTEC-14730 Raman Measurements of Phonon Scattering and Localization in Sub-Micron $Si_{(1-x)}Ge_x$ Thin Films, Christopher Saltonstall (Univ. Virginia), Jatin Amatya (Univ. Virginia), Jerrold Floro (Univ. Virginia), Thomas Beechem (Sandia National Labs.), Patrick Hopkins (Univ. Virginia), Pamela Norris (Univ. Virginia)	PRTEC-15028 Measurement of Thermal and Contact Resistances of Scanning Thermal Microscopy, Kyeongtae Kim (Incheon Nat. Univ.)	PRTEC-15002 Basal Plane Thermal Conductivity Measurements of Multi-Layer Phosphorene and Black Phosphorus, Brandon Smith (Univ. Texas Austin), Jaehyun Kim (Univ. Texas Austin), Eric Ou (Univ. Texas Austin), Deji Akinwande (Univ. Texas Austin), Li Shi (Univ. Texas Austin)	PRTEC-15088 Temperature Dependence of Thermal Conductivity of $(GeTe)(Sb_2Te_3)$ Superlattice, Takashi Yagi (AIST), Yuta Saito (AIST, JST-CREST), Junji Tominaga (AIST, JST-CREST)	
Room: Paniolo III Topic ID: (b-4) Battery Chairperson: Sumanta Acharya (Univ. Memphis)	PRTEC-15318 Modeling and Simulation of an Interdigitated Vanadium Redox Flow Battery with Interfacial Mass Transfer Resistance, Shohji Tsushima (Osaka Univ.), Takahiro Suzuki (Osaka Univ.)	PRTEC-14453 The Effect of Temperature Distribution on the Electrochemical Efficiency of Vanadium Redox Flow Battery, JongHyeon Lee (Changwon Nat. Univ.), Heesung Park (Changwon Nat. Univ.)	PRTEC-14499 Design and Simulation of Thin Lithium-Ion Battery Thermal Management System Cooling with Fins for EVs, Ning Zhang (Tianjin Univ.), Shixue Wang (Tianjin Univ.), Ming Gao (Tianjin Univ.)	PRTEC-14532 Effect of the Anti-Freeze Content on the Cooling Performance for the Liquid Cooled Battery in Electric Vehicles, Hwabhin Kwon (Changwon Nat. Univ.), Heesung Park (Changwon Nat. Univ.)	PRTEC-14575 Experimental and Numerical Investigation of Heat Pipe based Cooling of Lithium Ion Cells, Krishna Shah (Univ. Texas Arlington), Cody McKee (Univ. Texas Arlington), Divya Chalise (Univ. Texas Arlington), Ankur Jain (Univ. Texas Arlington)
Room: Lehua II-III Topic ID: (b-4) Heat Exchanger 2 Chairperson: Jeong Ik Lee (KAIST)	PRTEC-14399 Numerical Modeling of Fin and Tube Heat Exchanger for Waste Heat Recovery, Shobhana Singh (Aalborg Univ.), Kim Sørensen (Aalborg Univ.), Thomas Condra (Aalborg Univ.)	PRTEC-14695 Numerical Study of Micro-Channeled Louver Fin Aluminum Heat Exchangers at Very Low Reynolds Number, Pradeep Shinde (Florida Int. Univ.), Cheng-Xian Lin (Florida Int. Univ.)	PRTEC-14543 Condensing Flow Distribution and Heat Transfer in a Minichannel Heat Exchanger by the Hardy-Cross Network Algorithm, Ki Sun Park (Kookmin Univ.), Ki Moon Jung (Kookmin Univ.), Moon-Sun Chung (Korea Energy Research Inst.), Hee Joon Lee (Kookmin Univ.)	PRTEC-15156 Heat Transfer from Wire-Mesh Heat Exchangers Fabricated using Wire-Arc Thermal Spraying, Reza Rezaey (Univ. Toronto), Christiane Mubikayi, (Université Pierre et Marie Curie), Javad Mostaghimi (Univ. Toronto), Sanjeev Chandra (Univ. Toronto)	PRTEC-15143 An Experimental Investigation on Effect of Pores per Inch in Compact Heat Exchanges with Aluminum Foam, Bernardo Buonomo (Seconda Universita' degli Studi di Napoli), Luca Cirillo (Seconda Universita' degli Studi di Napoli), Oronzio Manca (Seconda Universita' degli Studi di Napoli), Sergio Nardini, (Seconda Universita' degli Studi di Napoli)

Monday, March 14, 2016

Session	16:30	16:50	17:10	17:30	
Room: Naupaka I-IV Topic ID: (a-1) Viscoelastic Fluid Chairperson: Takahiro Tsukahara (Tokyo Univ. Sci.)	PRTEC-14717 Light-Tuning of Heat Transfer Performance for Low Reynolds Number Flow of Micellar Solution, Ken Kawaharada (Kyoto Univ.), Takafumi Fujii (Kyoto Univ.), Takeshi Enya (Kyoto Univ.), Kazuya Tatsumi (Kyoto Univ.), Kazuyoshi Nakabe (Kyoto Univ.)	PRTEC-14859 Numerical Study on Unsteady Flow and Heat Transfer Characteristics of Viscoelastic Fluids in Serpentine Channels, Kai Nakayama (Kyoto Univ.), Kazuya Tatsumi (Kyoto Univ.), Kazuyoshi Nakabe (Kyoto Univ.)	PRTEC-14998 Heat Transfer Enhancement Caused by the Meandering Motion Appearing in the Backward-Facing Step Flow with Surfactant Additives in High Reynolds Number, Shumpei Hara (Tokyo Univ. Sci.), Ryusuke Ii (Tokyo Univ. Sci.), Takahiro Tsukahara (Tokyo Univ. Sci.), Yasuo Kawaguchi (Tokyo Univ. Sci.)	PRTEC-14430 Inflow Conditions and the Convective Heat Transfer Behavior of Suddenly Expanding Viscoplastic Flows, Khaled Hammad (Central Connecticut State Univ.)	
Room: Naupaka V Topic ID: (a-1) Nanofluids Chairperson: C-K Choi (Michigan Inst. Tech.)	PRTEC-14687 Visualization of an Evaporating Thin Layer during Nanofluid Droplet Evaporation, Dong Hwan Shin (Michigan Tech. Univ.), Seong Hyuk Lee (Chung-Ang Univ.), Jeffrey Allen (Michigan Tech. Univ.), Jungho Lee (KIMM), Chang Kyoung Choi (Michigan Tech. Univ.)	PRTEC-14979 Interferometric Tomography Study of Nanofluids-Based Convective Phenomena in a Differentially Heated Cavity, S. Srinivas Rao (IIT Bombay), Atul Srivastava (IIT Bombay)	PRTEC-15312 Convection of Nanoliquids in a Box, Pradeep Siddheshwar (Bangalore Univ.)		
Room: Naupaka VI Topic ID: (c-1) Transport Phonomena in Molecular Scale Systems 3 Chairperson: Ikuya Kinefuchi (Univ. Tokyo)	PRTEC-15031 Molecular Dynamics Simulation of Heterogeneous Ice Nucleation on Silver Iodide Surface, Daisuke Takaiwa (Keio Univ.), Naoko Imai (Keio Univ.), Donguk Suh (Keio Univ.), Kenji Yasuoka (Keio Univ.)	PRTEC-14458 Bottom-up Construction of Coarse-Grained Interaction Models from Molecular Dynamic Simulations, Ikuya Kinefuchi (Univ. Tokyo), Yuta Yoshimoto (Univ. Tokyo), Shu Takagi (Univ. Tokyo)	PRTEC-14466 Determination of Mass and Thermal Accommodation Coefficients of a Au-Ar System by Molecular Dynamics Simulations, Steven Easter (Univ. Virginia), Pamela Norris (Univ. Virginia)	PRTEC-14609 Ab Initio Study of Surface Structure Effect on Potential Energy of Water Molecule for Wetting Simulation, Takuto Nakanishi (Osaka Univ.), Masahiko Shibahara, (Osaka Univ.), Yoshitaka Ueki (Osaka Univ.), Tatiana Zolotoukhina (Toyama Univ.)	
Room: Naupaka VII Topic ID: (a-6) Measurements and Diagnostics 3 Chairperson: Shohji Tsushima (Osaka Univ.)	PRTEC-14700 Analysis on Anisotropic Thermal Property of a Polymer Composite by using the 3 Omega Method, Dong-Wook Oh (Chosun Univ.)	PRTEC-15033 3ω Slope Comparative Method for Fluid and Powder Thermal Conductivity Measurements, Xinghua Zheng (Chinese Acad. Sci.), Lin Qiu (Chinese Acad. Sci.), Peng Yue (Chinese Acad. Sci.), Gang Wang (Chinese Acad. Sci.), Dawei Tang (Chinese Acad. Sci.)	PRTEC-14705 Highly Accurate Measurement of Fluctuating Temperature Fields in a Wall-Bounded Turbulent Shear Flow using Fine-Wire Temperature Sensors, Tomoya Houra (Nagoya Inst. Tech.), Masato Tagawa (Nagoya Inst. Tech.)	PRTEC-14644 Development of a Test Assembly for Evaluating the Erosion Resistance of Polyurethane Elastomers at Controlled Temperatures, Sayed Hossein Ashrafizadeh (Univ. Alberta), Pierre Mertiny (Univ. Alberta), Andre McDonald (Univ. Alberta)	
Room: Ali'I I Topic ID: (a-2) Heat and Mass Transfer Involving Particles Chairperson: Pamela Norris (Univ. Virginia)	PRTEC-14455 Numerical Investigation of Simultaneously Deposition and Re-Entrainment Fouling Processes in Corrugated Tubes by Coupling CFD and DEM, Jakob Hærvig (Aalborg Univ.), Thomas Condra (Aalborg Univ.), Kim Sørensen (Aalborg Univ.)	PRTEC-14774 Prediction of Mass Transfer of Particles under the Influences of Electrophoresis and Thermophoresis, Won-Geun Kim (Hanyang Univ.), Se-Jin Yook (Hanyang Univ.)	PRTEC-14773 Contamination of Heated Wafers in a Hexahedron Container due to Mass Transfer of Particles, Won-Geun Kim (Hanyang Univ.), Jung-Hun Noh (Hanyang Univ.), Se-Jin Yook (Hanyang Univ.)		

Session	16:30	16:50	17:10	17:30	
Room: Ali'I II Topic ID: (a-3) Boiling and Evaporation 1 Chairperson: Yoonjin Won (UC Irvine)	PRTEC-14598 Visualization of Near-Surface Boiling Structure and CHF Phenomena in Vertical Pool Boiling, In-Cheol Chu (KAERI), Dong-Jin Euh (KAERI), Chul-Hwa Song (KAERI)	PRTEC-15147 Study on Initiation of Localized Wetting During Film Boiling near MHF Point in Spray Cooling, Niro Nagai (Univ. Fukui), Haruka Obe (Univ. Fukui)	PRTEC-14922 Thermocapillary Flows in Water Droplets Induced by Laser Irradiation, Yutaku Kita (Kyushu Univ.), Alexandros Askounis (Kyushu Univ.), Masamichi Kohno (Kyushu Univ., CREST), Yasuyuki Takata (Kyushu Univ., CREST), Khellil Sefiane (Univ. Edinburgh), Jungho Kim (Univ. Maryland)	PRTEC-15504 A New Framework for Heterogeneous Boiling Incipience on Smooth Surfaces, Naiara Petralanda (Univ. Florida), James F. Klausner (Univ. Florida)	
Room: Ali'I III Topic ID: (b-1) Formation and Control of Pollutants Chairperson: Arun Muley (Boeing Company)	PRTEC-14275 Primary Soot Particle Distributions in a Combustion Field Formed by 4 KW Pulverized Coal Jet Burner Measured by TiRe-LII, Nozomu Hashimoto (Hokkaido Univ.), Jun Hayashi (Osaka Univ.), Noriaki Nakatsuka (Osaka Univ.) Kazuki Tainaka (CRIEPI), Satoshi Umemoto (CRIEPI), Hirofumi Tsuji (CRIEPI), Fumiteru Akamatsu (Osaka Univ.), Hiroaki Watanabe (Kyushu Univ.), Hisao Makino (CRIEPI)	PRTEC-14608 The Study of Plasma Assisted Combustion on Various Types of Flames, Kenya Hirosawa (Kobe City College Tech.), Takamitsu Yoshimoto (Kobe City College Tech.), Hiroshi Akamatsu (Kobe City College Tech.)	PRTEC-15086 A Study of NOx Reduction Mechanism on Air Staging Implemented Two-Stage Drop Tube Furnace, Ho Lim (Pusan Nat. Univ.), Jeon-Woo Kim (Pusan Nat. Univ.), Gyu-Bo Kim (Pusan Clean Coal Center), Chung-Hwan Jeon (Pusan Nat. Univ.)	PRTEC-15174 Entrainment of Solid Contaminants from Pool Fires, Alexander Brown (Sandia National Labs.), Ethan Zepper (Sandia National Labs.), David Louie (Sandia National Labs.), Louis Restrepo (Atkins NS)	
Room: Paniolo I Topic ID: (a-7) Heat Transfer in Manufacturing 3 Chairperson: Terry Simon (Univ. Minnesota)	PRTEC-14269 Few Micrometers Wide Nanosecond Pulse Laser Scribing of Transparent Conductive Oxide Layer of Thin Film Photovoltaic Cell by using Bessel Beam, Byunggi Kim (Tokyo Inst. Tech), Ryoichi Iida (Tokyo Inst. Tech.), Hong Duc Doan (Tokyo Inst. Tech.), Kazuyoshi Fushinobu (Tokyo Inst. Tech.)	PRTEC-14561 Numerical Simulations of Thermal Deformation for a Feed Drive System, Jyun-Rong Zhuang (Nat. Taipei Univ. Tech.), An-Shik Yang (Nat. Taipei Univ. Tech.), Chun-Ying Lee (Nat. Taipei Univ. Tech.), Wen-Hsin Hsieh (Nat. Chung Cheng Univ.), Chiang-Ho Cheng (Univ. Dayeh), Chung-Yi Liu (Nat. Taipei Univ. Tech.), Yih-Chyun Hwang (HIWIN Technologies Corp.)	PRTEC-14969 Effect of Inclusions on Dielectric Breakdown of Thin Polymer Film, Kosuke Soga (Tokyo Inst. Tech.), Takushi Saito (Tokyo Inst. Tech.), Tatsuya Kawaguchi (Tokyo Inst. Tech.). Isao Satoh (Tokyo Inst. Tech.)	PRTEC-14359 Model Predictive Control to Minimize Movements in Positions due to Thermal Expansion of Plate, Shigeki Hirasawa (Kobe Univ.), Tsuyoshi Kawanami (Kobe Univ.), Katsuaki Shirai (Kobe Univ.)	
Room: Paniolo II Topic ID: (c-3) Micro/Nano Technology for Heat Transfer in Liquids Chairperson: James Klausner (Michigan State Univ.)	PRTEC-15056 The Role of Brownian Motion and Particle Agglomeration on the Transport Properties of Nanofluids, U. Lei (Nat. Taiwan Univ.), Rong-Bin Huang (Nat. Taiwan Univ.), Bin-Lun Hsieh (Nat. Taiwan Univ.), Hshing-I Yeh (Nat. Taiwan Univ.)	PRTEC-14988 Water Transport into Protein Inside in Active Rhodopsin: a Molecular Dynamics Study, Katsufumi Tomobe (Keio Univ.), Eiji Yamamoto (Keio Univ.), Kholmirzo Kholmurodov (Joint Inst. Nuclear Research), Kenji Yasuoka (Keio Univ.)	PRTEC-15027 Prediction of Three Phase Equilibrium Points of Methane Hydrate by NVT Molecular Dynamics Simulation, Daisuke Yuhara (Keio Univ.), Paul Brumby (Keio Univ.), David Wu (Colorado School Mines), Amadeu Sum (Colorado School Mines), Kenji Yasuoka (Keio Univ.)	PRTEC-14879 Stability of Interfacial Nanobubble Depends on Substrate, Ayumu Iwanaga (Kyushu Univ.), Takashi Nishiyama (Kyushu Univ.), Tatsuya Ikuta (Kyushu Univ.), Koji Takahashi (Kyushu Univ.), Yutaka Yamada (Kyushu Univ.), Yasuyuki Takata (Kyushu Univ.)	
Room: Paniolo III Topic ID: (b-4) Evaporation Chairperson: Sumanta Acharya (Univ. Memphis)	PRTEC-14531 Inner Circulation Effect for CO_2 Absorption into an Aqueous Ammonia Droplet, Munkyoung Choi (Pohang Univ. Sci. Tech.), M.K. Cho (Pohang Univ. Sci. Tech.), J.W. Lee (Pohang Univ. Sci. Tech.)	PRTEC-14855 An Enhancement of Water Evaporation on the Phenolic Resin Substrate with a Micro-Pore Size, Shin-ichi Satake (Tokyo Univ. Sci.), Yuki Matsuda (Tokyo Univ. Sci.), Noriyuki Unno (Tokyo Univ. Sci.), Kazuhisa Yuki (Tokyo Univ. Sci.), Yasuo Kogo (Tokyo Univ. Sci.)	PRTEC-15052 Development of Numerical Simulation Model for Predicting Heat and Mass Transfer in Microgroove and for Designing High Performance Microgroove Evaporator, Hodaka Kawashima (Univ. Tokyo), Ryo Shirakashi (Univ. Tokyo), Mitsuhiro Uemura (Univ. Tokyo)	PRTEC-14863 Effects of Inlet Structure and Localized Heating on the Performance of a Micro-Methanol Evaporator, Miao-Hua Tu (Nat. Tsing Hua Univ.), Ben-Ran Fu (Nat. Tsing Hua Univ.), Chin Pan (Nat. Tsing Hua Univ.)	
Room: Lehua II-III Topic ID: (b-4) Heat Exchanger 3 Chairperson: Arun Muley (Boeing Company)	PRTEC-14582 Flow Boiling and Heat Transfer Characteristics in Heat Exchangers with Metal Foam Filled Channels, Gholamreza Bamorovat Abadi (Pusan Nat. Univ.), Dae Yeon Kim (Pusan Nat. Univ.), Kyung Chun Kim (Pusan Nat. Univ.)	PRTEC-15159 Two-Phase Flow and Heat Transfer in Compact Heat Exchangers with Oblique Wavy Walls, Yukiyasu Noguchi (Univ. Tokyo), Kenichi Morimoto (Univ. Tokyo), Yuji Suzuki (Univ. Tokyo)	PRTEC-14907 The Heat and Mass Transfer Characteristics in a Fluidized Bed Heat Exchanger with Absorption Solution, Sungkook Hong (Korea Inst. Energy Research), Sangil Park (Korea Inst. Energy Research), Changbog Ko (Korea Inst. Energy Research), Kyougnsu Choi (Korea Inst. Energy Research)		

Tuesday, March 15, 2016

Plenary Lectures

PRTEC-1PL03

8:30—9:10 (Naupaka I-IV) Chairperson: Osamu Fujita (Hokkaido Univ., Japan)

Prof. Kaoru Maruta, Tohoku University, Japan & Far Eastern Federal University, Russia

Low-speed Counterflow Flame Experiments under Microgravity for Constructing Comprehensive Combustion Limits Theory

Studies on combustion limit have been conducted from the middle of nineteenth century to prevent undesired accidents in coal mines. The first theoretical description on the mechanism of combustion limit was presented in 1940's among other numerous experimental approaches. Nevertheless, another fifty years was required until novel microgravity experimental approach in 1990's eventually proved the fundamental limit mechanism of deflagration waves is due to the radiative heat loss from high temperature zone including burned gas.

Apart from the limit of deflagration wave, the existence of "flame ball" was first predicted by Zel'dovich in 1940's and it was proved through series of microgravity experiments by Ronney and collaborators in drop tower experiments in U.S. from 80's, JAMIC (Japanese) drop shaft experiments in 90's, and Space Shuttle experiments in late 90's to 2000's. However, limit mechanism and interactions of those two kinds of flame regimes have never been investigated in the same platform to date.

Our final goal is to construct comprehensive combustion limit theory which covers both the limits of conventional deflagration wave and flame ball. Before proceeding to the space experiments in the International Space Station, preliminary airplane-based microgravity experiments with low-speed counterflow flame technique have been conducted to date. This lecture presents the apparent transitions from counterflow deflagration wave to flame ball-like phenomena near the combustion limit in the counterflow field. A hypothesis on the comprehensive combustion limit theory based both on microgravity experiments and three dimensional computations with diffusive-thermal model will be introduced.

PRTEC-1PL04

9:10—9:50 (Naupaka I-IV) Chairperson: Yasuyuki Takata (Kyushu Univ., Japan)

Prof. Sushanta Mitra, York University, Canada,

New Regimes and Applications on Capillarity and Wetting

The first part of the talk will focus on fluid flow problems where capillary forces and surface tension play a major role. Different regimes for vertical and horizontal capillary flows viz., the inertial, the viscous, and the oscillatory regimes will be discussed and the key non-dimensional numbers that govern such flows will be presented. The second part of the talk will focus on how one can accurately determine the wetting signature of drops on various surfaces, particularly for superoleophobic surfaces, both under-liquid and in air. Finally, using this technique of drop deposition, under-water superoleophobicity of a glass surface and fish scales will be presented and the importance of the role of the surrounding media in wetting behavior will be highlighted.

General Infromation

13:30—17:00 Round Table on Future of Thermal Engineering

Technical Sessions

Tuesday, March 15, 2016

Session	10:10	10:30	10:50	11:10	11:30	11:50
Room: Naupaka I-IV Topic ID: (a-1) Environment and Nature Chairperson: Ichiro Kumagai (Meisei Univ.)	PRTEC-15009 Experimental Evaluation of Heat and Mass Transfer in a Mimicked Methane Hydrate Reservoir, Guillaume Aloys Lacaille (Tohoku Univ., Ecole Centrale de Lyon), Hikaru Yamada (Tohoku Univ.), Hiroki Gonome (Tohoku Univ.), Eita Shoji (Tohoku Univ.), Lin Chen (Tohoku Univ.), Junnosuke Okajima (Tohoku Univ.), Atsuki Komiya (Tohoku Univ.), Shigenao Maruyama (Tohoku Univ., CREST)	PRTEC-14593 Effect of Tinting on the Thermal Performance of a Semi-Transparent Water Wall System, Ting Wu (Univ. Sydney), Chengwang Lei (Univ. Sydney)	PRTEC-14362 Experimental Study on Fire Detector Response for Supertall Buildings under Wind Effect, Edgar C.L. Pang (Hong Kong Polytech. Univ.), W. K. Chow (Hong Kong Polytech. Univ.)	PRTEC-14373 Experimental Study on Double-Skin Façade Fires with a Glass Scale Model, Nadia C. L. Chow (City Univ. Hong Kong), S. S. Han (City Univ. Hong Kong)	PRTEC-14284 An Experimental Study on Characteristics of an Internal Fire Whirl in a Vertical Shaft, W.K. Chow (Hong Kong Polytech. Univ.)	
Room: Naupaka V Topic ID: (a-1) Impinging Flows Chairperson: Jungho Lee (KIMM)	PRTEC-15092 Dynamic Spreading Characteristics of an Impinging Droplet on Hydrophilic Textured Surface, Moon Joo Hyun (Chung-Ang Univ.), Chan Ho Jeong (Chung-Ang Univ.), Sangmin Lee (Chung-Ang Univ.), Jungho Lee (KIMM), Seong Hyuk Lee (Chung-Ang Univ.)	PRTEC-14746 Effect of Subcooling on Water Jet Impingement Boiling Heat Transfer, Sang Gun Lee (Seoul Nat. Univ.), Sangho Sohn (KIMM), Jungho Lee (KIMM)	PRTEC-14745 Boiling Mechanism of Two Adjacent Water Impinging Jets, Sang Gun Lee (Seoul Nat. Univ.), Sangho Sohn, (KIMM), Jungho Lee (KIMM)	PRTEC-14731 Effects of Droplet Train Impingement on Spreading-Splashing Transition and Liquid Film Heat Transfer, Taolue Zhang (Texas A&M Univ.), Jorge Alvarado (Texas A&M Univ.), Jayaveera Muthusamy (Texas A&M Univ.), Anoop Kanjirakat (Texas A&M Univ. Qatar), Reza Sadr (Texas A&M Univ. Qatar)	PRTEC-14980 Aerothermal Experiments of Jet Impingement in Cross-Flow with a Vortex Generator Pair, Chenglong Wang (Lund Univ.), Lei Luo (Harbin Inst. Tech., Lund Univ.), Lei Wang (Lund Univ.), Bengt Sunden (Lund Univ.)	
Room: Naupaka VI Topic ID: (a-5) Heat and Mass Trasnfer in Organs and Fish Zygotes Chairperson: Kosaku Kurata (Kyushu Univ.)	PRTEC-14570 Heat Transfer in Bone Drilling: Modeling and Experimental Validation, JuEun Lee (Univ. Pacific), O. Burak Ozdoganlar (Carnegie Mellon Univ.), Yoed Rabin (Carnegie Mellon Univ.)	PRTEC-14601 Electro Microinjection for Loading Large Molecules into Fish Egg, Ryo Shirakashi (Univ. Tokyo)	PRTEC-15118 On a Possibility of Cryopreservation of Medaka Eggs with Use of Liquid-Meniscus, Hiroki Sano (Kyushu Inst. Tech.), Hirofumi Tanigawa (Kyushu Inst. Tech.), Takaharu Tsuruta (Kyushu Inst. Tech.)			
Room: Naupaka VII Topic ID: (b-5) Heat and Mass Transfer in Air Conditioners & Refrigeration (1) Chairperson: Naoto Haruki (Okayama Univ.)	PRTEC-14227 Effect of Variation of IPF on Flow Characteristic of Ice Slurry, Tatsunori Asaoka (Shinshu Univ.), Atsushi Tajima (Tokyo Inst. Tech.), Hiroyuki Kumano (Aoyama Gakuin Univ.)	PRTEC-14679 Solidification Characteristics of Ice Slurry in Horizontal Tube, Hiroyuki Kumano (Aoyama Gakuin Univ.), Atsuko Mizui (Aoyama Gakuin Univ.), Naoya Higashi (Hitachi Appliances, Inc.)	PRTEC-14831 Investigation on Influence of Number of Hydroxyl Groups on Ice Adhesion Force to Cooling Solid Surface Varying Temperature, Daisuke Tsubaki (Chuo Univ.), Koji Matsumoto (Chuo Univ.), Yuta Furudate (Chuo Univ.), Masashi Murase (Chuo Univ.)	PRTEC-15047 A Novel Defrosting Control Technique to Avoid the Mal-Defrosting, Min-Hwan Kim (Hanyang Univ.), Jaehwan Lee (Hanyang Univ.), Dong Rip Kim (Hanyang Univ.), Kwan-Soo Lee (Hanyang Univ.)	PRTEC-14742 Water and Carbon Footprint in Sustainable Cooling, Oh Seung Jin (Nat. Univ. Singapore), Muhammad Wakil Shahzad (KAUST), Kyaw Thu (Nat. Univ. Singapore), Thuan Bui Tuc (Nat. Univ. Singapore), Chua KJ Ernest (Nat. Univ. Singapore), Kim Choon Ng (KAUST)	~~PRTEC-15505 Water Vapor Adsorption Characteristics of Fin-Tube Heat Exchanger with Adsorbent Coating, Kyungjin Bae (Korea Inst. Industrial Tech.), Dong-Seok Cha (Korea Inst. Industrial Tech.), Ohkyung Kwon (Korea Inst. Industrial Tech.)~~ Canceled
Room: Ali'I I Topic ID: (a-2) Heat and Mass Transfer Across Interfaces Chairperson: Koji Fukagata (Keio Univ.)	PRTEC-14990 Experimental Validation of a Fully Analytical Method for Determining Thermal Contact Conductances in Double-Layered Materials using the Reciprocity Functional and the Integral Transform Approach, Ricardo Padilha (Fed. Univ. Rio de Janeiro, Brazilian Navy), Marcelo Colaco (Fed. Univ. Rio de Janeiro), Luiz Abreu (Rio de Janeiro State Univ.), Helcio Orlande (Fed. Univ. Rio de Janeiro)	PRTEC-14958 Three-Dimensional Unsteady Numerical Analysis of a PEMFC Considering Effects of Liquid Water Transport in a Gas Channel with Micro Grooves, Koji Takaya (Yokohama Nat. Univ.), Takuto Araki (Yokohama Nat. Univ.)	PRTEC-15100 Effects of Rising Bubble on Heat Transfer from a Vertical Wall, Pramod Bhuvankar (Purdue Univ.), Sadegh Dabiri (Purdue Univ.)	PRTEC-15062 Investigation of Bubble Size Models for the Application of CMFD code, Jinyeong Bak (Pusan Nat. Univ.), Byong-jo Yun (Pusan Nat. Univ.)		

Session	10:10	10:30	10:50	11:10	11:30	11:50
Room: Ali'I II Topic ID: (a-3) Boiling and Evaporation 2 Chairperson: Niro Nagai (Univ. Fukui)	PRTEC-14737 Pragmatic Numerical Modeling of Thermal Performance of Microevaporator, Nicolas Antonsen, (Ecole Polytech. Fédérale de Lausanne), John R. Thome (Ecole Polytech. Fédérale de Lausanne)	PRTEC-14973 Experimental Investigation of Flow Nucleate Boiling Heat Transfer in a Vertical Minichannel, Heiko Kromer (ABB Corporate Research), Tor Laneryd (ABB Corporate Research), Henryk Anglart, (Royal Inst. Tech.), Lway Al-Maeeni (ABB Corporate Research), Rebei Bel Fdhila (Lardalen Univ., ABB Corporate Research)	PRTEC-14581 Flow Boiling Characteristics of R134a and R245fa Mixtures in a Vertical Circular Tube, Gholamreza Bamorovat Abadi (Pusan Nat. Univ.), Eunkoo Yun (Pusan Nat. Univ.), Kyung Chun Kim (Pusan Nat. Univ.)	PRTEC-14766 Transient Critical Heat Flux for Subcooled Water Flowing Upward in Vertical Small Tube with Exponentially Increasing Heat Inputs, Makoto Shibahara (Kobe Univ.), Katsuya Fukuda (Kobe Univ.), Qiusheng Liu (Kobe Univ.), Koichi Hata (Kobe Univ.), Yuji Nakamura (Marine Tech. College), Takeo Muroga, (Nat. Inst. Fusion Sci.), Masayuki Tokitani (Nat. Inst. Fusion Sci.), Hiroyuki Noto (Nat. Inst. Fusion Sci.)	PRTEC-14900 Temporal Temperature Distribution Measurement of a Heat Transfer Surface of a Flow Boiling Heat Sink with a Micro-Gap using Temperature Sensitive Paint, Akihiro Shibuya (Shibaura Inst. Tech.), Ryo Ueki (Shibaura Inst. Tech.), Yuya Suzuki (Shibaura Inst. Tech.), Manabu Tange (Shibaura Inst. Tech.)	PRTEC-15020 Force Convective Boiling Heat Transfer of R32 and R290 inside Horizontal Minichannels, Chien Nguyen Ba (Chonnam Nat. Univ.), Vu Pham Quang (Chonnam Nat. Univ.), Kwang-Il Choi (Chonnam Nat. Univ.), Jong-Taek Oh (Chonnam Nat. Univ.)
Room: Ali'I III						
Room: Paniolo I Topic ID: (b-2) Multiphase Dynamics in Combustion System Chairperson: Hongjip Kim (Chungnam Nat. Univ.)	PRTEC-14378 Alumina Molten Flow Interaction with a Gas Flow, Ryo Amano (Univ. Wisconsin-Milwaukee), Yi-Hsin Yen (Univ. Wisconsin-Milwaukee)	PRTEC-14517 Assessment of Non-Condensable Gas Effect for LBLOCA in the Nuclear Power Plant, Seung Hun Yoo (Korea Inst. Nuclear Safety), Kwang-Won Seul (Korea Inst. Nuclear Safety)	PRTEC-14860 Atomization and Emulsification Characteristics of Soybean Oil Discharged from Fuel-Water Internally Rapid Mixing Injector, Yuzuru Nada (Tokushima Univ.), Daisuke Asao (Tokushima Univ.), Shinichiro Yoshimura (Tokushima Univ.), Yoshiyuki Kidoguchi (Tokushima Univ.)	PRTEC-15035 Numerical Modeling on Time-Depended Burning Behavior of Melting/Dripping Thermoplastic Materials, Yuji Nakamura (Toyohashi Univ. Tech.), Akter Hossain (Toyohashi Univ. Tech.), Yangkyun Kim (Univ. Ulster)	PRTEC-14976 Flow Analysis of Combined Impingement and Film Cooled Gas Turbine Nozzle Guide Vane, Pol Reddy Kukutla (IIT Madras), B.V.S.S.S Prasad (IIT Madras)	
Room: Paniolo II Topic ID: (a-2) Heat and Mass Transfer in Power Systems Chairperson: Bong Jae Lee (KAIST)	PRTEC-14472 Thermal-Hydraulic Analysis for Prismatic Very High Temperature Reactor, Li Wang (Kobe Univ.), Qiusheng Liu (Kobe Univ.), Makoto Shibahara (Kobe Univ.), Katsuya Fukuda (Kobe Univ.)	PRTEC-14753 Thermal-Hydraulic Code Verification in the Very High Temperature Reactor, Sung Nam Lee (KAERI), Nam-il Tak (KAERI), Min-Hwan Kim (KAERI)	PRTEC-14584 Evaluation of Steam Condensation in THAI HM-2 Experiment using CFX, Seongnyeon Lee (Korea Inst. Nuclear Safety), Jung-Jae Lee (Korea Inst. Nuclear Safety), Sung Joong Kim (Hanyang Univ.), Cheong Ryul Choi (ELSOLTEC Inc.), Yong-Jin Cho (Korea Inst. Nuclear Safety)	PRTEC-15502 Numerical Simulation of Thermal and Flow Fields in 1-kW Beta-Type Stirling Engine, Yen-Fei Chen (Nat. Cheng Kung Univ.), Chin-Hsiang Cheng (Nat. Cheng Kung Univ.)		
Room: Paniolo III Topic ID: (b-4) Engines & Automobiles Chairperson: Min Soo Kim (Seoul Nat. Univ.)	PRTEC-14718 Development of Small Light-Oil Burner for Post-Treatment System of Diesel Engine, Iku Saito (Nihon Univ.), Hiroshi Nomura (Nihon Univ.), Ichiro Tsumagari (Hino Motors, Ltd.)	PRTEC-14935 Thermodynamic Modeling of Rankine Cycle – Two Phase Cooling (Rc-2ϕ) Integrated System for Hybrid Vehicles, F. Zhou (Toyota Research Inst. North America), S. N. Joshi (Toyota Research Inst. North America), R. Rhote-Vaney (Siemens Product Lifecycle Management Software Inc.), E. M. Dede (Toyota Research Inst. North America)	PRTEC-14457 The Assessment of the Efficiency of Turbocompound System using the Rig Tester, Jinyoung Jang (Korea Inst. Energy Research), Jeong-Eui Yun (Kangwon Univ.), Youngmin Woo (Korea Inst. Energy Research)	PRTEC-14567 Kinetic and Thermal Transport Modelling of Biomass Gasification in a Vertical-Tube Reactor, Clarisse Lorreyte (Univ. Reims), Jaona Randrianalisoa (Univ. Reims), Herve Pron (Univ. Reims), Sophia Haussener (Ecole Polytech. Fédérale de Lausanne), Wojciech Lipiński (Australian Nat. Univ.)		
Room: Lehua II-III Topic ID: (b-4) Heat Exchanger 4 Chairperson: Kenichi Morimoto (Univ. Tokyo)	PRTEC-14502 A Study on Heat Transfer and Pressure Drop Characteristics of Cryogenic Heat Exchanger for Cooling Liquid Nitrogen using CFD Analysis, Jeon Dong Soon (Korea Inst. Industrial Tech.), Mun Ji Hyun (Korea Inst. Industrial Tech.), Kim Young Lyoul (Korea Inst. Industrial Tech.), Kim Seon Chang (Korea Inst. Industrial Tech.)	PRTEC-14511 Development of ORC System Which Recovers Wasted Heat of Metallurgy Plants using Low GWP Working Fluid, Eiichi Sakaue (Toshiba Corp.), Katsuya Yamashita (Toshiba Corp.), Osamu Furuya (Toshiba Corp.), Katsuyuki Tanaka (Nihon Univ.)	PRTEC-15304 Modeling of Molten Glass Flow and Heat Transfer in a Counter-Flow Heat Exchanger, Ruth Reed (UC Berkeley), Benjamin Elkin (Halotechnics, Inc.), Justin Raade (Halotechnics, Inc.), Van Carey (UC Berkeley)	PRTEC-15152 Heat Conduction in Laser Sintered Cellular Structures, Reza Rezaey (Univ. Tronto), Felix Loosmann (Tech. Univ. Darmstadt), Cameron Tropea (Tech. Univ. Darmstadt), Sanjeev Chandra (Univ. Toronto)		

Wednesday, March 16, 2016

Plenary Lectures

PRTEC-1PL05

8:30—9:10 (Naupaka I-IV) Chairperson: Yongchan Kim (Korea Univ., Korea)

Prof. Keumnam Cho, Sungkyunkwan University, Korea,

Frosting on the Heat Exchanger of the Heat Pump

Frosting on the heat exchanger surface of the heat pump was unfavorable phenomena causing deterioration of heating capacity and increase of the fan power due to the increased pressure drop of the heat pump system, while the system was operating as heating mode under 0℃. Prediction and verification of transient frost characteristics and its effect on heating capacity and pressure drop of the heat exchanger were required to suggest the improved way in order to lengthen operating time of the heat pump system by the frost delay. The frosting issue required understanding of multi-phase flow as well as heat and mass transfer.

Frost characteristics including frost thickness, frost surface temperature, frost density, and frost mass on the heat exchanger of the heat pump were numerically predicted by applying frost modelling, and then experimentally verified under various operating conditions of dynamic and geometric parameters. They were applied for evaluating local and total heat transfer rates, blockage ratio, and pressure drop of the heat exchanger under the different frosting condition.

Local frost characteristics on the heat exchanger surface were always non-uniform until the heat exchanger was almost blocked. Pressure drop of the heat exchanger were predicted by using the maximum frost thickness and curve between pressure drop and volume flow rate. Frosting on the heat exchanger surface of the heat pump using refrigerant was grown faster than that using ethylene glycol. It made heating capacity of the heat pump using refrigerant be decreased faster than that using ethylene glycol under frosting condition.

PRTEC-1PL06

9:10—9:50 (Naupaka I-IV) Chairperson: Arun Muley (Boeing Company, USA)

Dr. Dane A. Boysen, Gas Technology Institute, USA,

Crisis to Creation -The Road to Technological Innovation-

Americans hate to wait in line. In 1973, OPEC declared an oil embargo against the United States causing the price of oil to quadruple and creating the longest gas station lines in American history. This crisis solidified the American public's commitment to energy independence and spawned the formation of the Department of Energy, the Gas Research Institute, and a comprehensive tax policy. Over the next 30 years, the U.S. invested a little over a billion dollars in unconventional gas production technology, such as directional drilling and massive hydraulic fracturing. As a result of these investments, the U.S. has become the largest gas and second largest oil producing country in the world, added $1.2 trillion to the gross domestic product (GDP), and created more than 9.3 million jobs. The stunning success of U.S. investments in unconventional oil and gas production research and development provides a more generic roadmap for what it takes for technology innovation. Often overlooked or undervalued is the element of "crisis"—a key ingredient for technology innovation that creates a sense of urgency, a well-defined mission, and secures the public's financial commitment to research and development. While most scientists agree the crisis of our day is global climate change, the slow 0.14-0.20°C/decade creep in global temperatures has been insufficient to create the collective hysteria necessary for the public to demand action. As scientists and engineers, how do we continue to work on the most important problems facing society in the absence of public consensus and what are the most promising research directions related to thermal and fluids engineering to address the crisis of our day? A few examples of game-changing concepts and major technological advances in thermal engineering will be presented.

Memorial Session for Professor Nobuhide Kasagi

13:10—13:40 (Lehua II-III) Chairperson: Yuji Suzuki (Univ. Tokyo)

Keynote Lectures

PRTEC-1KL09

13:10—13:40 (Naupaka I-IV) Chairperson: Zhixiong (James) Guo (Rutgers Univ., USA)

Prof. Chin-Hsiang Cheng, National Cheng Kung University, Taiwan

Stability Analysis of Free-Piston Thermal-Lag Stirling Engines

PRTEC-1KL10

13:10—13:40 (Ali'I I) Chairperson: Terry Simon (Univ. Minnesota, USA)

Prof. Pamela Norris, University of Virginia, USA

Engineering Thermal Transport at Interfaces: Coupled Experimental and Computational Approaches

PRTEC-1KL11

13:10—13:40 (Ali'I II) Chairperson: Min Soo Kim (Seoul Nat. Univ., Korea)

Prof. Yongchan Kim, Korea University, Korea,

Performance Improvement of Air-Source Heat Pumps using Refrigerant Injection Techniques

PRTEC-1KL12

13:45—14:15 (**Ali'I I**) Chairperson: Jungho Kim (Univ. Maryland, USA)

Prof. John R. Thome, Ecole Polytechique Fédérale de Lausanne, Switzerland

"Hyper" Micro-Thermal Fluidics: An Overview of Microchannel Two-Phase Flow and Cooling of Microelectronics

PRTEC-1KL13

13:45—14:15 (**Ali'I II**) Chairperson: Yong X. Tao (Univ. North Texas, USA)

Prof. Zhixiong Guo, The State University of New Jersey, USA

Some Recent Developments in Radiative Transfer Computation

PRTEC-1KL14

13:45—14:15 (Lehua II-III) Chairperson: Katsunori Hanamura (Tokyo Inst. Tech., Japan)

Prof. Tsuyoshi Totani, Hokkaido University, Japan

Application of Wavelength Control Technology of Radiation to Drying Furnace

- **Corrections in the printed program booklet are marked in red.**

Technical Sessions

Wednesday, March 16, 2016

Session	10:10	10:30	10:50	11:10	11:30
Room: Naupaka I-IV Topic ID: (a-1) Thermodynamics and Thermal Performance Chairperson: Chan Byon (Yeungnam Univ.)	PRTEC-14953 Studies on the Thermodynamic Characteristics of a Sequential Carnot Cycle, Hansaem Park (Seoul Nat. Univ.), Sun Jin Kim (Seoul Nat. Univ.), EunJung Choi (Seoul Nat. Univ.), Min Soo Kim (Seoul Nat. Univ.)	PRTEC-14686 The Pressure Drop of Radial Plate Fin Heat Sinks under L-Shape Flow, Gilho Lee (KAIST), Sung Jin Kim (KAIST)	PRTEC-14498 Study on Radial Heat Sink with a Perforated Ring Subject to Natural Convection, Sora Jeon (Yeungnam Univ.), Bin Li (Yeungnam Univ.), Chan Byon (Yeungnam Univ.)	PRTEC-14961 Frost Retardation on Hydrophobic Surfaces under Air Source Heat Pump Operating Conditions, Hisuk Kim (Hanyang Univ.), Junghan Kim (Hanyang Univ.), Dong Rip Kim (Hanyang Univ.), Kwan-Soo Lee (Hanyang Univ.)	PRTEC-14838 Education in Heat Transfer - Correct Use of Thermodynamics, Ozer Arnas (US Military Academy West Point)
Room: Naupaka V Topic ID: (a-1) Particle Flows Chairperson: Kazuya Tatsumi (Kyoto Univ.)	PRTEC-14716 Study on Removal Performance of Suspended Particulate Matter by Humidity Swing Air Cleaning Method, Toshiyuki Haga (Meiji Univ.), Osamu Nakabeppu (Meiji Univ)	PRTEC-15205 Preliminary Study of Start-up Sweeping Convection Effects in Straight Channels, Amir Kiaee (Southern Methodist Univ.), Jose Lage (Southern Methodist Univ.)	PRTEC-14664 Numerical Analysis of Convective Transfer of Nanopowder Generated around a Turbulent-Like Thermal Plasma Jet, Masaya Shigeta, (Osaka Univ.), Manabu Tanaka (Osaka Univ.)		
Room: Naupaka VI Topic ID: (a-5) Biotransport in Microscale Region Chairperson: Roy Hogan (Sandia National Labs.)	PRTEC-14591 Behavior of Microbubbles with High Electrical Potential and its Application to Vitality, Shun Sakai (Akita Univ.), Hiroaki Hasegawa (Akita Univ.), Yutaka Masuda (Akita Univ.), Toshihiro Sugiyama (Akita Univ.)	PRTEC-15082 Mixing of Complex Fluids in Microchannels, Gaojin Li (Purdue Univ.), Arezoo Ardekani (Purdue Univ.)	PRTEC-14757 Numerical and Experimental Study on Nonthermal Tissue Ablation using Irreversible Electroporation, Kosaku Kurata (Kyushu Univ.), Hiroshi Takamatsu (Kyushu Univ.)		
Room: Naupaka VII Topic ID: (b-5) Heat and Mass Transfer in Air Conditioners & Refrigeration (2) Chairperson: Keumnam Cho (Sungkyunkwan Univ.)	PRTEC-14505 Evaluation of Air-to-Refrigerant Heat Exchangers using Alternative Lower Global Warming Refrigerants, Omar Abdelaziz (ORNL), Som Shrestha (ORNL)	PRTEC-14984 Low-Cost Phase-Distribution Enhancement for Two-Phase Heat Exchangers, John Bustamante (Mainstream Engineering), Josh Sole (Mainstream Engineering)	PRTEC-14669 Boiling Heat Transfer in the Multi-Tube Evaporator and its Dependence on the Compressor Oil, Daisuke Komai (Toyohashi Univ. Tech.), Shaun Samuel Devadasan (Toyohashi Univ. Tech.), Masafumi Nakagawa (Toyohashi Univ. Tech.)	PRTEC-15109 Flow Boiling Heat Transfer and Vapor-Liquid Two-Phase Pressure Drop of a Refrigerant in Horizontal Triangular Mini-Channels, Kazushi Miyata (Kyushu Univ.), Kento Hirata (Kyushu Univ.), Takuya Nakatsuru (Honda Motor), Hideo Mori (Kyushu Univ.), Yoshinori Hamamoto (Kyushu Univ.)	PRTEC-15234 Correlation of Heat Transfer Coefficients for both Ammonia and Fluorocarbon Refrigerants Evaporating inside an Internally Spirally Grooved Steel Tube, Satoru Momoki (Nagasaki Univ.), Koki Kasai (Nippon Steel and Sumitomo Metal Corporation), Tomohiko Yamaguchi (Nagasaki Univ.), Hideshiro Moritaka (Nagasaki Univ.), Hirofumi Arima (Saga Univ.)
Room: Ali'I I Topic ID: (a-2) Heat and Mass Transfer with Structured Materials Chairperson: Zhixiong Guo (Rutgers Univ)	PRTEC-14775 Numerical Analysis of Inverse Heat Conduction in a Hollow Cylinder Tube, Jung-Hun Noh (Hanyang Univ.), Se-Jin Yook (Hanyang Univ.)	PRTEC-15144 Thermo-Fluid Behaviour of Structured Granular Beds-Numerical Modelling and Optimisation, Nima Nadim (Curtin Univ.), Tilak Chandratilleke (Curtin Univ.), Kerryn Batsioudis (Curtin Univ.)	PRTEC-14594 Effects of Diffusivities of Binary Moisture on Hygrothermal Field in a Porous Medum Considering Nonlinear Coupling between Heat and Moisture, Masayuki Ishihara (Osaka Pref. Univ.), Keita Ogasawara (Osaka Pref. Univ.), Yoshihiro Ootao (Osaka Pref. Univ.), Yoshitaka Kameo (Kyoto Univ.)	PRTEC-14562 Nonlinear Coupling between Heat and Moisture Diffusion in Two-Dimensional Porus Media in a Transient State, Keita Ogasawara (Osaka Pref. Univ.), Masayuki Ishihara (Osaka Pref. Univ.), Yoshihiro Ootao (Osaka Pref. Univ.)	PRTEC-14889 Numerical Investigation of Heat Transfer Characteristics of a Wavy-Tapered Micorchannels, Ahmed Eltaweel (Texas A&M Univ. Qatar), Ibrahim Hassan (Texas A&M Univ. Qatar)

Session	10:10	10:30	10:50	11:10	11:30
Room: Ali'I II Topic ID: (a-4) Radiative Heat Transfer (1) Chairperson: Pamela Norris (Univ. Virginia)	PRTEC-14901 Measurement of Near-Field Radiation Intensity above a Tungsten Emitter using a Fibrous Optical Microscope, Katsunori Hanamura (Tokyo Inst. Tech.), Daisuke Hirashima (Tokyo Inst. Tech.), Kota Fujii (Tokyo Inst. Tech.)	PRTEC-15071 Spectral Control of Near-Field Radiation using Surface with Periodic Diffraction Limit Resonators, Kazuaki Fujita (AIST), Daisuke Hirashima (Tokyo Inst. Tech.), Katsunori Hanamura (Tokyo Inst. Tech.)	PRTEC-15046 Designing Near-Field Thermophotovoltaic Device with a Hyperbolic Metamaterial as an Emitter, Seokmin Jin (KAIST), Mikyung Lim (KAIST), Seung S. Lee (KAIST), Bong Jae Lee (KAIST)	PRTEC-15177 Performance Analysis of Near-Field Enhanced Thermionic Energy Conversion, Mohammad Ghashami (Univ. Utah), Keunhan Park (Univ. Utah)	PRTEC-15178 Entropy Analysis of Near-Field Thermophotovoltaic Systems, Mohammad Ghashami (Univ. Utah), Keunhan Park (Univ. Utah)
Room: Ali'I III					
Room: Paniolo I Topic ID: (b-1) Flame Stabilization and Extinction 1 Chairperson: Satoshi Kadowaki (Nagaoka Univ. Tech.)	PRTEC-14586 Extinction Characteristics of Ammonia/Air Counterflow Premixed Flames at Various Pressures, Sophie Colson (Tohoku Univ.), Takashi Goto (Tohoku Univ.), Taku Kudo (Tohoku Univ.), Akihiro Hayakawa (Tohoku Univ.), Hideaki Kobayashi (Tohoku Univ.)	PRTEC-14733 A Flow-Field Study of Lifted Flames in Low-Swirl Combustor, Hwanghui Jeong (Sunchon Nat. Univ.), Seulgi Kim (Sunchon Nat. Univ.), Keeman Lee (Sunchon Nat. Univ.), Dongsoon Noh (Korea Inst. Energy Research)	PRTEC-14623 Effects of Lewis Number on the Initiation of Primary Acoustic Instability in a Combustion Tube, Sunghwan Yoon (Hokkaido Univ.), Taejoon Noh (Hokkaido Univ.), Osamu Fujita (Hokkaido Univ.)	PRTEC-14537 Lifted Flames in Laminar Jets of Methane in Co-Flow Air, Narayan Pandurang Sapkal (Pukyong Nat. Univ.), Won June Lee (Pukyong Nat. Univ.), Jeong Park (Pukyong Nat. Univ.), Oh Boong Kwon (Pukyong Nat. Univ.), Sewon Kim (Korea Inst. Industrial Tech.), Changyeop Lee (Korea Inst. Industrial Tech.)	
Room: Paniolo II Topic ID: (c-3) Applications of Micro/Nano Technology Chairperson: Yong Tae Kang (Korea Univ.)	PRTEC-14895 Solid-State Thermionic Energy Conversion in Layered Materials from First-Principles, Keivan Esfarjani (Rutgers Univ.), Xiaoming Wang (Rutgers Univ.), Mona Zebarjadi (Rutgers Univ.)	PRTEC-14680 Converting Light into High Temperature Heat with Nanoparticles, Drew DeJarnette (Univ. Tulsa), Todd Otanicar (Univ. Tulsa), Ebrima Tunkara (Univ. Tulsa), Kenneth Roberts (Univ. Tulsa), Nick Brekke (Univ. Tulsa), Sara Mesgari (Univ. New South Wales), Robert A. Taylor (Univ. New South Wales)	PRTEC-15189 Car-Parrinello Molecular Dynamics Study of Guest-Host Interaction in Ammonia Clathrate Hdyrate, Masaki Hiratsuka (Kogakuin Univ.), Ryo Ohmura (Keio Univ.), Amadeu K. Sum (Colorado School Mines), Saman Alavi (Nat. Research Council Canada), Kenji Yasuoka (Keio Univ.)	PRTEC-14709 Development of Nanoemulsion Absorbents for CO_2 Absorption Performance Enhancement, Myunghwan Jeong (Korea Univ.), Jae Won Lee (Korea Univ.), Seung Joo Lee (Korea Univ.), Yong Tae Kang (Korea Univ.)	PRTEC-14923 Uncovering the Potential of CNTS as Nano- Heat Pipes, Alexandros Askounis (Kyushu Univ.), Yutaka Yamada (Kyushu Univ.), Tatsuya Ikuta (Kyushu Univ.), Koji Takahashi (Kyushu Univ., CREST), Yasuyuki Takata, (Kyushu Univ., CREST), Khellil Sefiane (Univ. Edinburgh, Kyushu Univ.)
Room: Paniolo III Topic ID: (b-4) Heat Pipe Chairperson: Hajime Onishi (Kanazawa Univ.)	PRTEC-14172 Experimental and Numerical Analysis of Nanofluid Heat Pipe Thermal Performance, Marayam Shafahi (California State Polytech. Univ. Pomona), Kevin Anderson (California State Polytech. Univ. Pomona), Ali Borna (California State Polytech. Univ. Pomona), Ladan Amouzegar (California State Polytech. Univ. Pomona), Laila Jallo (California State Polytech. Univ. Pomona), Hiroki Nagai (Tohoku Univ.)	PRTEC-14265 A Study on Heat Transfer Enhancement in Radial Direction of Gas Flow for Thermoelectric Power Generation, Bo Li (Univ. Nottingham), Yuying Yan (Univ. Nottingham)	PRTEC-14673 Numerical Investigation of Menisci of Bubbles in Oscillating Heat Pipe, Takuya Inoue (Tokai Univ.), Shun Takahashi (Tokai Univ.), Taku Nonomura (JAXA), Hideyuki Fuke (JAXA)	PRTEC-15013 Investigation of Thermal and Flow Characteristics of Thermally Induced Two Phase Oscillation in a Capillary Tube, Ryusei Ishida (Univ. Tokyo), Youngjik Youn (Univ. Tokyo), Kenshiro Muramatsu (DENSO CORPORATION), Kimio Kohara (DENSO CORPORATION), Youngbae Han (Hongik Univ.), Naoki Shikazono (Univ. Tokyo)	
Room: Lehua II-III Topic ID: (b-4) PEFC 1 Chairperson: Yutaka Tabe (Hokkaido Univ.)	PRTEC-14702 Analysis of Oxygen Transport Properties in PEFC Cathode Catalyst Layer, Shota Umeda (Tokyo Inst. Tech.), Thang Phu Nguyen (Tokyo Inst. Tech.), Kazuyoshi Fushinobu (Tokyo Inst. Tech.)	PRTEC-14796 Composition and Evaluation of Single-Layer Electrode PEMFCs for Mass Transfer Analysis, Takahiro Suzuki (Osaka Univ.), Toshimitsu Miyauchi (Tokyo Univ. Sci.), Masanori Hayase (Tokyo Univ. Sci.), Shohji Tsushima (Osaka Univ.)	PRTEC-15036 Multipoint Measurements of Local Temperature in PEMFC by using Thin Film Thermocouples, Koki Kobayashi (Yokohama Nat. Univ.), Jun Tsujikawa (Yokohama Nat. Univ.), Takuto Araki (Yokohama Nat. Univ., PRESTO)	PRTEC-14407 Employing Hot Wire Anemometry to Directly Measure the Water Balance of a Proton Exchange Membrane Fuel Cell, Saher Al Shakhshir (Aalborg Univ.), Torsten Berning (Aalborg Univ.)	

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Session	14:35	14:55	15:15	15:35	15:55
Room: Naupaka I-IV					
Room: Naupaka V Topic ID: (a-8) Thermophysical Properties (Measurement Technique 1) Chairperson: Dong Rip Kim (Hanyang Univ.)	PRTEC-14811 Development of Micro Optical Diffusion Sensor for High-Sensitive Detection of Biological Samples in a Solution, Yoshiaki Takaba (Keio Univ.), Yoshihiro Taguchi (Keio Univ.), Yuji Nagasaka (Keio Univ.)	PRTEC-14706 Development of Low Voltage Electrothermal MEMS Mirror for Micro Optical Diffusion Sensor, Yuki Kiuchi (Keio Univ.), Yoshihiro Taguchi (Keio Univ.), Yuji Nagasaka (Keio Univ.)	PRTEC-15016 Evaluation of Thermal Resolution of Infrared Camera System using Two Different Noise Analysis Methods, Dong-Ik Kim (KAIST), Ghiseok Kim (Seoul Nat. Univ.)	PRTEC-15041 Measurement of 3-D Thermal Diffusivities for CFRTP Having Discontinuous Fiber, and Application to Method for Measuring Fiber Orientation, Ryohei Fujita (Nagoya Univ.), Hosei Nagano (Nagoya Univ.)	PRTEC-15114 Thermal Conductivity Measurement of a Single E-Glass Fiber below 100 K, Kento Okuzawa (Tokyo Inst. Tech.), Takayoshi Inoue (Tokyo Inst. Tech.)
Room: Naupaka VI Topic ID: (a-3) Condensation 1 Chairperson: Hiroyasu Ohtake (Kogakuin Univ.)	PRTEC-14728 Enhanced Filmwise Condensation with Thin Porous Coating, Ying Zheng (Advanced Cooling Technologies, Inc.), Chien-Hua Chen (Advanced Cooling Technologies, Inc.), Howard Pearlman (Advanced Cooling Technologies, Inc.), Richard Bonner (Advanced Cooling Technologies, Inc.)	PRTEC-14795 Obtain Energy using Areas with Different Temperature of Phase Transition, Eduard Narygin (Tyumen State Univ.), Pavel Zubkov (Tyumen State Univ.)	PRTEC-14968 An Experimental Study on the Steam Condensation and Injection Characteristics of a Passive Safety Injection Tank, Hwang Bae (KAERI), Sung-Uk Ryu (KAERI), Byung-Guk Jeon (KAERI), Hyo-Bong Ryu (KAERI), Woo-Jin Jeon (KAERI), Nam-Hyun Choi (KAERI), Kyoung-Ho Min (KAERI), Yong-Cheol Shin (KAERI), Sung-Jae Yi (KAERI), Hyun-Sik Park (KAERI)	PRTEC-14640 Thermodynamic Effects to Radial Motion of a Single Multi Component Vapor Bubble, Soichiro Ogawa (Gunma Univ.), Taiki Sakai (Gunma Univ.), Keita Sato (Gunma Univ.), Hisanobu Kawashima (Gunma Univ.), Tsuneaki Ishima (Gunma Univ.)	
Room: Naupaka VII Topic ID: (b-5) Heat and Mass Transfer in Air Conditioners & Refrigeration (3) Chairperson: Nick Francis (Sandia National Labs.)	PRTEC-15127 Development of Heat Exchanger for Centrifugal Chiller using HFO-1233zd (E), Naoya Miyoshi (Mitsubishi Heavy Industries, LTD.), Kenji Ueda (Mitsubishi Heavy Industries, LTD.), Yoshinori Shirakata (Mitsubishi Heavy Industries, LTD.), Kazuki Wajima (Mitsubishi Heavy Industries, LTD.), Yasushi Hasegawa (Mitsubishi Heavy Industries, LTD.), Noriyuki Matsukura (Mitsubishi Heavy Industries, LTD.)	PRTEC-15170 Characteristics of Condensation Local Heat Transfer in a Plate Heat Exchanger, Keishi Kariya (Saga Univ.), Akitoshi Kawazoe (Saga Univ.), Akio Miyara (Saga Univ.)	PRTEC-14441 Screening of Ionic Liquid for CO2 Absorbent for WCA Refrigeration Cycle, Jina Choi (KRICT), Jung-Ae Lim (KRICT), Dongwoo Lee (KAIST), Jonghyun Kim (KAIST), Beom-sik Kim (KRICT), Wonhee Lee (KAIST)	PRTEC-14665 Study of Collection Performance in the Electrostatic Precipitator under Variable Humid Conditions, Changhee Son (Korea Inst. Industrial Tech., Yeongnam Univ), Chan Byon (Yeongnam Univ.), Woojin Kim (Korea Inst. Industrial Tech.)	PRTEC-15089 Effect of Vehicle Door Opening on Thermal Load and Thermal Sensation of Passenger, Hideaki Nagano (Tokyo City Univ.), Taki Sato (Tokyo City Univ.), Itsuhei Kohri (Tokyo City Univ.), Yuzuru Yoshinami (Nissan Motor Co., Ltd.)
Room: Ali'I I Topic ID: (a-2) Cooling Techniques 1 Chairperson: Masayuki Ishihara (Osaka Pref. Univ.)	PRTEC-14512 Compact Thermal Model of Microfluidically Cooled Stacked Chips for Co-Design, Yuanchen Hu (Georgia Tech.), Yogendra K. Joshi (Georgia Tech.)	PRTEC-15094 Heat Transfer Characteristics and Cooling Performance of Intensive Quenching for Different Quench Media, Moon Joo Hyun (Chung-Ang Univ.), Chan Ho Jeong (Chung-Ang Univ.), Jungho Lee (KIMM), Chang Kyoung Choi (Michgan Tech. Univ.), Seong Hyuk Lee (Chung-Ang Univ.)	PRTEC-15138 Estimation of Hot Spot Temperature of Power Si MOSFET with CFD and Electro-Thermal Analysis, Risako Kibushi (Toyama Pref. Univ.), Tomoyuki Hatakeyama (Toyama Pref. Univ.), Shinji Nakagawa (Toyama Pref. Univ.), Masaru Ishizuka (Toyama Pref. Univ.)	PRTEC-14708 Numerical Study for the Performance of Commercial Thermoelectric Module in Three-Dimensional Simulation, Hyun Muk Lim (Univ. Seoul), Tae Kyeong Lee (Univ. Seoul), Gwang Hoon Rhee (Univ. Seoul)	
Room: Ali'I II Topic ID: (a-4) Radiative Heat Transfer (2) Chairperson: Se-Jin Yook (Hanyang Univ.)	~~PRTEC-14549~~ ~~Near-Field Radiative Heat Transfer between Millimeter-Size Flat Surfaces, Michael Bernardi (Univ. Utah), Mathieu Francoeur (Univ. Utah)~~ **Canceled**	PRTEC-15081 Scattering and Absorption Coefficients of Human Skin in Japanese People, Takahiro Kono (Shibaura Inst. Tech.), Syoko Touma (Nat. Cancer Center), Keiko Nozawa (Nat. Cancer Center), Jun Yamada (Shibaura Inst. Tech.)	PRTEC-15111 Effect of Scattering Particle Size on Extinction Coefficient of Artificial Human Skin, Kantawan Sarasuk (Shibaura Inst. Tech.), Takahiro Kono (Shibaura Inst. Tech.), Kae Nakamura (Shibaura Inst. Tech.), Jun Yamada (Shibaura Inst. Tech.)	PRTEC-15116 High-Temperature Solar-Selective Absorbers using Core-Shell Nanoparticle Arrays, Atsushi Sakurai (Niigata Univ.), Tomoaki Kawamata (Niigata Univ.)	PRTEC-15217 Numerical Analysis of Energy Budget for an Isolated Tree Crown Considering the Detailed Foliage Structure, Shinichi Kinoshita (Osaka Pref. Univ.), Atsumasa Yoshida (Osaka Pref. Univ.), Shoko Hashida (Meisei Univ.)

Session	14:35	14:55	15:15	15:35	15:55
Room: Ali'i III					
Room: Paniolo I Topic ID: (b-1) Flame Stabilization and Extinction 2 Chairperson: Chae Hoon Sohn (Sejong Univ.)	PRTEC-14856 DNS Investigation of Thermoacoustic Oscillation Modes and Acoustic Energy Transfer in Lean Premixed Swirling Flames, Kozo Aoki (Tokyo Inst. Tech.), Masayasu Shimura (Tokyo Inst. Tech.), Yoshitsugu Naka (Tokyo Inst. Tech.), Mamoru Tanahashi (Tokyo Inst. Tech.)	PRTEC-14970 An Experimental Assessment of Combustion Stability Characteristics for Recess Length of Coaxial Swirl Injectors, Jun Hyeong Park (Doosan Heavy Industries & Construction), Byung Chul Song (Chung Nam Nat. Univ.), HongJip Kim (Chung Nam Nat. Univ.)	PRTEC-14927 Evaluation of the Damping Capacity According to the Geometric and the Number of Resonator with Thermal environment using a Rijke Tube, Yunho Choi (Chungnam Nat. Univ.), Seonghwi Jo (Chungnam Nat. Univ.), Hongjip Kim (Chungnam Nat. Univ.)		
Room: Paniolo II Topic ID: (c-3) Numerical Simulations for Heat Conduction in Solids Chairperson: Yoonjin Won (UC Irvine)	PRTEC-14894 Recent Progress on Thermal Transport Modeling from First Principles, Keivan Esfarjani (Rutgers Univ.), Vazrik Chiloyan (MIT), Jivtesh Garg (Univ. Oklahoma), Gang Chen (MIT)	PRTEC-14638 BTE-Based Modelling of Phonon/Electron Transport, Shunsuke Mukai (Kyoto Univ.), Satoshi Seo (Kyoto Univ.), Mitsuhiro Matsumoto (Kyoto Univ.)	PRTEC-14590 Ballistic to Diffusive Heat Transfer in Molecular Building Blocks of Inorganic/Organic Multilayers, Ashutosh Giri (Univ. Virginia), Janne-Petteri Niemela (Aalto Univ.), John Gaskins (Univ. Virginia), Brian Donovan (Univ. Virginia), Maarit Karppinen (Aalto Univ.), Patrick Hopkins (Univ. Virginia)	PRTEC-15130 Thermal Conductivity of Porous Media from Phonon Transport Viewpoint, Makoto Kashiwagi (Univ. Tokyo), Yuta Sudo (Univ. Tokyo), Takuma Hori (Univ. Tokyo), Takuma Shiga (Univ. Tokyo), Junichiro Shiomi (Univ. Tokyo)	
Room: Paniolo III Topic ID: (b-4) Heat Transfer Enhancement Chairperson: Ik-Tae Im (Chonbuk Nat. Univ.)	PRTEC-14828 Experimental Study on the Liquid Film Thickness in Decelerated Micro Two-Phase Flows, Youngjik Youn (Univ. Tokyo), Kenshiro Muramatsu (DENSO CORPORATION), Youngbae Han (Hongik Univ.), Naoki Shikazono (Univ. Tokyo)	PRTEC-14765 Numerical Study on Liquid Film Thickness of Unsteady Slug Flow in a Micro Tube, Kenshiro Muramatsu (Univ. Tokyo, DENSO CORPORATION), Youngjik Youn (Univ. Tokyo), Youngbae Han (Hongik Univ.), Yosuke Hasegawa (Univ. Tokyo), Naoki Shikazono (Univ. Tokyo)	PRTEC-15126 Orientation Effects on Thermal Performances of Passively-Cooled Solid Hybrid Fin Heat Sinks, Kyoung Joon Kim (Pukyong Nat. Univ.), Nico S. Effendi (Pukyong Nat. Univ.)	PRTEC-14213 Effects of Geometric Parameters on the Thermal Performance of a Rectangular Natural Circulation Loop Containing PCM Suspensions, C. J. Ho (Nat. Cheng-Kung Univ.), Rong-Horng Chen (Nat. Chiayi Univ.), C.P. Chen (Nat. Cheng-Kung Univ.), Chi-Ming Lai (Nat. Cheng-Kung Univ.)	PRTEC-14412 Numerical Study on Heat Transfer Enhancement through a Circular Duct Fitted with Centre-Trimmed Twisted Tape, Suvanjan Bhattacharyya (Mckv Inst. Eng.), Himadri Chattopadhyay (Jadavpur Univ.), Ali Cemal Benim (Duesseldorf Univ. Applied Sci.)
Room: Lehua II-III Topic ID: (b-4) PEFC 2 Chairperson: Min Soo Kim (Seoul Nat. Univ.)	PRTEC-15070 Analysis of Liquid Water Transport in Gas Diffusion Layer of PEFC by Lattice Boltzmann Method, Satoshi Sakaida (Hokkaido Univ.), Takeshi Azuma, (Hokkaido Univ.), Kengo Suzuki (Hokkaido Univ.), Yutaka Tabe (Hokkaido Univ.), Takemi Chikahisa (Hokkaido Univ.)	PRTEC-14542 Reactive Molecular Dynamics Study of Proton Transport in Water Cluster Models of Polymer Electrolyte Membrane, Takuya Mabuchi (Tohoku Univ.), Takashi Tokumasu (Tohoku Univ.)	PRTEC-14637 Molecular Dynamics Study of Effect of Morphology in Ionomer on Proton Transport, Joji Aochi (Tohoku Univ.), Takuya Mabuchi (Tohoku Univ.), Takashi Tokumasu (Tohoku Univ.)	PRTEC-14411 A Computational Fluid Dynamics Analysis of Air Flow through a Telecom Back-up Unit Powered by an Air-Cooled Proton Exchange Membrane Fuel Cell, Xin Gao (Aalborg Univ.), Torsten Berning (Aalborg Univ.), Søren K. Kær (Aalborg Univ.)	PRTEC-14452 Lattice Boltzmann Simulation on Water Transport in GDL of PEMFC, Dong Hyup Jeon (Dongguk Univ.)

Wednesday, March 16, 2016

Session	16:25	16:45	17:05	17:25	17:45
Room: Naupaka I-IV					
Room: Naupaka V Topic ID: (a-8) Thermophysical Properties (Novel Materials) Chairperson: Hosei Nagano (Nagoya Univ.)	PRTEC-14606 Development of Novel Laser-Induced Dielectrophoretic Device using Sputtered a-Si:H for Micro Optical Diffusion Sensor, Makoto Kamata (Keio Univ.), Kan Yamada (Kyodo International, Inc.), Yoshihiro Taguchi (Keio Univ.), Yuji Nagasaka (Keio Univ.)	PRTEC-14792 Experimental Study on Thermophysical Properties of Aluminum Alloys, Gaosheng Wei (North China Electric Power Univ.), Gang Wang (North China Electric Power Univ.), Chao Xu (North China Electric Power Univ.), Xiaoze Du (North China Electric Power Univ.), Lijing Xing (North China Electric Power Univ.)	PRTEC-14678 Development of Temperature Imaging Method for Nano Light Emitter using Fluorescence Lifetime in Near-Field, Shogo Nishio (Keio Univ.), Yoshihiro Taguchi (Keio Univ.), Hideyuki Maki (Keio Univ.), Toshiharu Saiki (Keio Univ.), Yuji Nagasaka (Keio Univ.)	PRTEC-14566 Vapor Pressure and Saturated Liquid Density of HFO-1336mzz(Z), Katsuyuki Tanaka (Nihon Univ.), Ryo Akasaka (Kyushu Sangyo Univ.), Eiichi Sakaue (Toshiba Corporation)	PRTEC-14513 Enhanced Thermal Conductivity for Dimethicone Nanocomposites Containing Copper Nanowires, Wei Yu (Shanghai Second Polytech. Univ.), Luping Zhu (Shanghai Second Polytech. Univ.), Huaqing Xie (Shanghai Second Polytech. Univ.)
Room: Naupaka VI Topic ID: (a-3) Condensation 2 Chairperson: In-Cheol Chu (KAERI)	PRTEC-14652 Condensation Growth of Sub-Micrometer Water Droplets on Silicon Surfaces with Different Nanoscale Roughness: an Environmental Scanning Electron Microscopy Study, Kenya Fujimoto (Univ. Tokyo), Takuya Honda (Univ. Tokyo), Katsuo Mogi (Tokyo Inst. Tech.), Ikuya Kinefuchi (Univ. Tokyo), Yasuhiko Sugii (Tokyo Inst. Tech.), Shu Takagi (Univ. Tokyo)	PRTEC-14674 Condensation on Hybrid/Patterned Copper Surface, Mohammad Alwazzan (Univ. South Carolina), Karim Egab (Univ. South Carolina), Benli Peng (Univ. South Carolina), Jamil Khan (Univ. South Carolina), Chen li (Univ. South Carolina)	PRTEC-15091 Condensation Phenomenon on Micropillars with Different Nanoscale Roughness Orientation, Daniel Orejon (Kyushu Univ.), Orest Shardt (Princeton Univ.), Naga Siva Kumar Gunda, (York Univ.), Sushanta K. Mitra (York Univ.), Yasuyuki Takata (Kyushu Univ.)	PRTEC-15171 Directional Condensate Motion of Highly Wetting Fluids on an Asymmetrically Structured Surface, Eric Truong (UC Davis), Shashank Natesh (UC Davis), Vinod Narayanan (UC Davis), Sushil Bhavnani (Auburn Univ.)	PRTEC-14932 Surface Wettability Tuning for Submicron-Scale Condensation and Evaporation, Yutaka Yamada (Kyushu Univ.), Tatsuya Ikuta (Kyusyu Univ.), Takashi Nishiyama (Kyushu Univ.), Koji Takahashi (Kyushu Univ., CREST), Yasuyuki Takata (Kyushu Univ., CREST), Khellil Sefiane (Univ. Edinburgh, Kyushu Univ.)
Room: Naupaka VII Topic ID: (b-5) Heat and Mass Transfer in Air Conditioners & Refrigeration (4) Chairperson: Keishi Kariya (Saga Univ.)	PRTEC-14869 Investigation of the Effects of Blended Propane-Ammonia and Propane-Carbon Dioxide Refrigerants on the COP of Refrigeration Cycles, Walid Mazyan (Univ. British Columbia), Ali Ahmadi (Univ. British Columbia), Hussain Ahmed (American Univ. Sharjah), Mina Hoorfar (Univ. British Columbia)	PRTEC-14999 Adsorption Desalination Cycle for the Production of Cooling Effect and Ultrapure Water, Young-Deuk Kim (Hanyang Univ.), Sung-Eyl Kim (Hanyang Univ.), Seong-Yong Woo (Hanyang Univ.), June-Seok Choi (Korea Inst. Construction Tech.)	PRTEC-14799 Visualization of the Shock Waves in Water Two-phase Flow Ejector, Kyohei Tsuchii (Toyohashi Univ. Tech.), Haruyuki Nishijima (Toyohashi Univ. Tech.), Masafumi Nakagawa (Toyohashi Univ. Tech.)	PRTEC-14645 Two-Dimensional Expansion of Carbon Dioxide Two-Phase Flow at the Outlet of the Supersonic Nozzle, Krishna Morrthy Rovichandran (Toyohashi Univ. Tech.), Yosuke Kawamura (Toyohashi Univ. Tech.), Masafumi Nakagawa (Toyohashi Univ. Tech.)	PRTEC-14926 A Numerical Study on the Minimum Injection Quality in a Two-Phase Injection Heat Pump System, Bo Gyeom Kim (Korea Univ.), Dongwoo Kim (Korea Univ.), Kilsoo Son (Korea Univ.), Yongchan Kim (Korea Univ.)
Room: Ali'I I Topic ID: (a-2) Cooling Techniques 2 Chairperson: Seok Ho Yoon (KIMM)	PRTEC-14747 CFD Simulation of Ethanol Adsorption onto Activated Carbon for Adsorption Cooling Applications, Skander Jribi (Kyushu Univ., Univ. Sfax), Takahiko Miyazaki (Kyushu Univ.), Bidyut Baran Saha (Kyushu Univ.), Shigeru Koyama (Kyushu Univ.), Shinnosuke Maeda (Calsonic Kansei Corp.), Tomohiro Maruyama (Calsonic Kansei Corp.)	PRTEC-15158 Investigation of the Effects of the Pulsating Impinging Jet and Heat Flux Variation Frequencies on the Cooling Performance of the Heat Source with Porous Heat Sink, Chen-Chung Wu (Nat. Taipei Univ. Tech.), Po-Chuan Huang (Nat. Taipei Univ. Tech.), Chien-Cheng Hung (Nat. Taipei Univ. Tech.)	PRTEC-15185 Computational Analysis for Dry-Ice Sublimation Assisted CO_2 Jet Impingement Flow, Songmi Kwak (UNIST), Dongsu Kimand (UNIST), Jaeseon Lee (UNIST)	PRTEC-14520 Thermal Performance of Multiple Jet Impingement Cooling in a Divertor of Nuclear Fusion Reactor, Hyo-Yeon Jung (Inha Univ.), Kwang-Yong Kim (Inha Univ.)	
Room: Ali'I II Topic ID: (a-4) Radiative Heat Transfer (3) Chairperson: Katsunori Hanamura (Tokyo Inst. Tech.)	PRTEC-14449 Augmented Quadratures for the Discrete Ordinates Method using Reduced Order Modeling Approaches, John Tencer (Sandia National Labs.), Marvin Larsen (Sandia National Labs.), Kevin Carlberg (Sandia National Labs.), Roy Hogan (Sandia National Labs.)	PRTEC-14470 Validity of WSGGM with Zone Method for Inhomogeneous Non-Isothermal Participating Plane Layer Media, Ki-Hong Byun, (Dongguk Univ.)	PRTEC-14625 Simulation of Multi-Mode Heat Transfer in a Square Cavity with Continuous Fins on Vertical Isothermal Walls, Sudhanshu Pandey (IIT Madras), Sateesh Gedupudi (IIT Madras), S.P. Venkateshan (IIT Madras)	PRTEC-15160 Optical Determination of Temperature and Concentrations for Homogeneous Laminar and Turbulent Gas Mixture, Tao Ren (UC Merced), Michael Modest (UC Merced)	

Session	16:25	16:45	17:05	17:25	17:45
Room: Ali'i III					
Room: Paniolo I Topic ID: (c-2) Microscale Heat Transfer 1 Chairperson: Tomohiro Nozaki (Tokyo Inst. Tech.)	PRTEC-14885 Inkjet Printed Heater for Paper Based Analytical Device, Yu Matsuda (Nagoya Univ.), Keigo Uete (Nagoya Univ.), Shobu Shibayama (Nagoya Univ.), Hiroki Yamaguchi (Nagoya Univ.), Tomohide Niimi (Nagoya Univ.)	PRTEC-15115 Analysis of MEMS-Based Thermal Triple-Axis Accelerometer, Naoya Murakita (Ritsumeikan Univ.), Yoshifumi Ogami (Ritsumeikan Univ.), Koji Fukudome (Ritsumeikan Univ.)	PRTEC-14959 Improvement of Active Thermometry on Scanning Thermal Microscopy, Masanori Mizobe, (Meiji Univ.), Osamu Nakabeppu (Meiji Univ.)	PRTEC-14911 Microscale Swimming Engine Powered by Marangoni Convection, Takanori Yoshida (Shibaura Inst. Tech.), Ryota Sasaki (Shibaura Inst. Tech.), Yoshiki Nagira (Shibaura Inst. Tech.), Manabu Tange (Shibaura Inst. Tech.)	
Room: Paniolo II Topic ID: (c-3) Characterization of Micro/Nano Structured Materials Chairperson: Koji Miyazaki (Kyushu Inst. Tech.)	PRTEC-14880 Electron Thermal Microscopy of Suspended MWCNT, Seigo Nakajima (Kyushu Univ.), Kazuma Nomoto (Kyushu Univ.), Tatsuya Ikuta (Kyushu Univ.), Takashi Nishiyama (Kyushu Univ.), Koji Takahashi (Kyushu Univ.)	PRTEC-14849 Thermal Expansion Coefficients of Vertically Aligned Carbon Nanotubes, Assaf Ya'akobovitz (Ben Gurion Univ. Negev)	PRTEC-14930 TiO2 Micro/Nano Structure Formation on Silica Microparticle through AACVD, Chang-Gyu Woo (KIMM), Bangwoo Han (KIMM), Hak-Joon Kim (KIMM), Yong-Jin Kim (KIMM)		
Room: Paniolo III Topic ID: (b-4) Heat Pump Chairperson: Tian Cui (Uni. Minnesota)	PRTEC-15084 Investigation of Absorption Heat Pump Cycle Driven by Low Temperature Waste Heat, Haruka Matsumoto (Waseda Univ.), Hironori Hattori (Waseda Univ.), Yoshiharu Amano (Waseda Univ.)	PRTEC-15151 Advanced Heat Pump through the Maisotsenko Cycle, Valeriy Maisotsenko (Coolerado Inc.), Sergey Anisimov (Wroclaw Univ. Tech.), Demis Pandelidis (Wroclaw Univ. Tech.), Takahiko Miyazaki (Kyushu Univ.), Oleksandr Galaka (Brotep-Eco)	PRTEC-15007 Development of a Steam Generator from Waste Hot Water, Koki Miyake (Okayama Pref. Univ.), Tomotaka Kashiwada (Okayama Pref. Univ.), Tuguhiko Nakagawa (Okayama Pref. Univ.)	PRTEC-15083 Estimation of Cooling and Heating Energy from Adsorption Refrigeration and Heat Pump System Driven by Solar Thermal Energy, Yoshinori Hamamoto (Kyushu Univ.), Hideo Mori (Kyushu Univ.)	
Room: Lehua II-III Topic ID: (b-4) PEFC3 & MCFC Chairperson: Hirhoshi Iwai (Kyoto Univ.)	PRTEC-14388 Effect of Coolant Flow Rate on the Systematic Efficiency of Polymer Electrolyte Fuel Cell Module, Jaehyun Park (Changwon Nat. Univ.), Heesung Park (Changwon Nat. Univ.)	PRTEC-15192 Experimental Investigation on Evaporative Cooling Technology with Porous Flow-Field in PEFC, Masaya Kozakai (Hokkaido Univ., Hitachi, Ltd.), Yutaka Tabe (Hokkaido Univ.), Takemi Chikahisa (Hokkaido Univ.)	PRTEC-15186 Full Scale Experiment and Analysis for High Temperatrue Blower of Performance in Molten Carbonate Fuel Cells, Seon-Hwa Kim (Gyeongsang Nat. Univ.), Yong-Seok Kim (Gyeongsang Nat. Univ.), Hyeon-Tak Yu (Gyeongsang Nat. Univ.), Byung-Hyun Ahn (Gyeongsang Nat. Univ.), Jung-Pil Noh (Gyeongsang Nat. Univ.), Byeong-Keun Choi (Gyeongsang Nat. Univ.)	PRTEC-15188 Frequency Analysis of the Vibration Signal Defect Type Heat Exchanger, Sun-Hwi Park (Gyengsang Nat. Univ.), Jeong-Min Ha (Gyengsang Nat. Univ.), Byung-Hyun Ahn (Gyengsang Nat. Univ.), Hyo-Jung Kim (Gyengsang Nat. Univ.), Hyo-Min Jeong (Gyengsang Nat. Univ.), Jung-Pil Noh (Gyengsang Nat. Univ.), Byeong-Keun Choi (Gyengsang Nat. Univ.)	

Thursday, March 17, 2016

Donald Q. Kern Award Lecture

8:30—9:05 (Naupaka I-IV) Chairperson: Sumanta Acharya (Univ. Memphis, USA)
Prof. Kenneth E. Goodson, Stanford University, USA
Electronics Thermal Management at the Extremes

The heat generated by semiconductor devices and electronic components is a big problem for a variety of products and systems including smartphones, electric vehicles, servers, and satellites. “Extreme” is a unifying theme, from nanometer features and 10+ kW chips to severe materials heterogeneity. This presentation will summarize these challenges and our progress on research topics including electron and phonon transport in transistors and novel electronic materials, nanostructured packaging materials, and microfluidic two-phase heat sinks. Thermal conduction at extreme nanoscale dimensions is discussed in the context of compact logic and memory devices for low-power chips. For these devices, fundamental challenges include electron-phonon interactions at metal-semiconductor and interfaces and the impact of atomic-scale disorder. Progress on convective boiling at extreme heat fluxes is described in the context of high power radar chips, and includes diamond microfluidic heat sinks and 3D separation and routing strategies for the liquid and vapor phases. This presentation will also highlight two decades of collaborations with the semiconductor industry and silicon valley startups.

Plenary Lectures

PRTEC-1PL07
9:05—9:45 (Naupaka I-IV) Chairperson: Takemi Chikahisa (Hokkaido Univ., Japan)
Prof. Naoki Shikazono, The University of Tokyo, Japan
Numerical Simulation of Solid Oxide Fuel Cell Electrodes

Solid oxide fuel cell (SOFC) has been attracting large attentions because of its high efficiency and high fuel flexibility. Since SOFC operates at high temperature, great efforts have been made by many research groups to overcome the durability issues. It is widely recognized that the electrode microstructures have significant impacts on cell performance as well as cell durability. For the anode, porous nickel-yttria stabilized zirconia (Ni-YSZ) is the most commonly used material in SOFCs. It is known that coarsening of Ni by sintering is one of the major degradation mechanisms during the long time operation of SOFC. Thus, controlling the sintering process is of key importance for achieving high performance as well as long term durability. In the present study, phase field and lattice Boltzmann methods are applied to numerically predict the degradation phenomena in the SOFC anode. Temporal evolutions of the three dimensional microstructures are validated by the FIB-SEM reconstruction.

Memorial Session for Professor Yasutaka Nagano

9:50—10:20 (Lehua II-III) Chairperson: Masato Tagawa (Nagoya Inst. Tech.)

Keynote Lectures

PRTEC-1KL15

9:50—10:20 (Naupaka I-IV) Chairperson: Yogesh Jaluria (Rusters Univ., USA)

Prof. Sumanta Acharya, Univ. Memphis, USA,

The Hydrodynamics of Turbine Airfoil Cooling

PRTEC-1KL16

9:50—10:20 (Ali'l I) Chairperson: Jin Taek Chung (Korea Univ., Korea)

Prof. Man Yeong Ha, Pusan National University, Korea

High Efficiency Heat Exchanger for Future Aero-Engines

PRTEC-1KL17

9:50—10:20 (Ali'l II) Chairperson: Taku Ohara (Tohoku Univ., Japan)

Prof. Koji Miyazaki, Kyushu Institute of Technology, Japan,

Enhanced Figure of Merit of a Self-Assembled Micro-Porous Bismuth Telluride Thin Film

Technical Sessions

Thursday, March 17, 2016

Session	10:40	11:00	11:20	11:40	12:00
Room: Naupaka I-IV Topic ID: (a-1) Heat Transfer Enhancement and Cooling 1 Chairperson: Jin Taek Chung (Korea Univ.)	PRTEC-14701 Cooling Performance of Impingement Heat Sink with Slot Jet, Tae Hoon Kim (KIMM), Kyu Hyung Do (KIMM), Byung-Il Choi (KIMM), Yong Shik Han (KIMM), Myungbae Kim (KIMM)	PRTEC-14414 Heat Transfer of Single Drops Impacting Liquid Film Flowing on Heated Surface, Xuan Gao (Univ. British Columbia), Lingjian Kong (Shandong Univ.), Ri Li (Univ. British Columbia), Jitian Han (Shandong Univ.)	PRTEC-14545 Experimental Investigation of Convective Heat Transfer Coefficient for Open-Cell Porous Metal Fins at Low Reynolds Number, SungHo Park (Pusan Nat. Univ.), Tae Hyeon Kim (Pusan Nat. Univ.), Ji Hwan Jeong (Pusan Nat. Univ.)	PRTEC-15095 Flow Velocity and Temperature Distributions in a Porous Medium, Ganbat Davaa (Nat. Inst. Tech., Yuge College), Jambal Odgerel (Nat. Inst. Tech., Yuge College)	PRTEC-14663 Improvement of Heat Transfer from Multi Arranged Electro-Chemical Capacitor, Hidetoshi Yasuhara (Gunma Univ.), Hisanobu Kawashima (Gunma Univ.), Tsuneaki Ishima (Gunma Univ.)
Room: Naupaka V Topic ID: (a-8) Thermophysical Properties (Simulation and Measurement) Chairperson: Yoshihiro Taguchi (Keio Univ.)	PRTEC-14197 Equilibrium Properties of Methane Hydrate by Gibbs Ensemble Monte Carlo Simulations, Paul Brumby (Keio Univ.), Daisuke Yuhara (Keio Univ.), David Wu (Colorado School Mines), Amadeu Sum (Colorado School Mines), Kenji Yasuoka (Keio Univ.)	PRTEC-14612 Experimental and Numerical Investigations of Thermal Properties of Aluminum Foams and Phase Change Material-Foam Composites, Jaona Randrianalisoa (Univ. Reims), Jean-François Henry (Univ. Reims), Didier Caron (Univ. Reims), Maximilien Cloosen (Univ. Reims)	PRTEC-14515 Development of Sensing Technique for Mass Transport Phenomena in Ternary Mixtures by Soret Forced Rayleigh Scattering Method with Two Wavelength Probing Lasers, Hiroaki Matsuura (Keio Univ.), Yuji Nagasaka (Keio Univ.)	PRTEC-14559 Speed of Sound and Relative Permittivity Measurement of 1,1,1,3,3-Pentafluoropropane in Gas Phase, Yuya Kano (AIST)	
Room: Naupaka VI Topic ID: (a-3) Condensation 3 Chairperson: Koji Takahashi (Kyushu Univ.)	PRTEC-15204 Comparison of Detailed Measurements and Theory for Condensation in Microchannels, Huasheng Wang (Queen Mary, Univ. London), John Rose (Queen Mary, Univ. London)	PRTEC-14661 A Heat Transfer Correlation for Carbon Dioxide Flow Condensation in Annular Flows, Peihua Li (Univ. Auckland), Stuart Norris (Univ. Auckland)	PRTEC-15069 Condensation Behaviors of Spray-Coated Robust Superhydrophobic Surfaces, Seungtae Oh (Kyung Hee Univ.), Donghyun Seo (Kyung Hee Univ.), Choongyeop Lee (Kyung Hee Univ.), Youngsuk Nam (Kyung Hee Univ.)	PRTEC-15125 Experimental Investigation on Effect of Surface Wettability on Condensation Heat Transfer by using MEMS Technology, Yuki Mikoshiba (Kogakuin Univ.), Hiroyasu Ohtake (Kogakuin Univ.), Koji Hasegawa (Kogakuin Univ.)	PRTEC-14554 Numerical Simulation of the Gravity Effect on Condensation for R410A in Circular Mini Tubes, Jingzhi Zhang (Zhejiang Univ.), Jinpin Lin (Zhejiang Univ.), Wei Li (Zhejiang Univ.)
Room: Naupaka VII Topic ID: (b-1) Novel Combustion Technologies Chairperson: Nam Il Kim (KAIST)	PRTEC-15023 The Crossover Point of Extinction Strain Rates for Air and O_2/CO_2 Flames and its Application to Swirl Stabilized Combustor, Hirotatsu Watanabe (Tokyo Inst. Tech.), Santosh Shanbhogue (MIT), Ahmed Ghoniem (MIT)	PRTEC-14639 Characteristics of a Non-Premixed Oxy-Methane Flame in a Slot Combustor, Jeongseog Oh (Korea Inst. Energy Research), Eungyeong Lee (Korea Inst. Energy Research), Dongsoon Noh (Korea Inst. Energy Research)	PRTEC-14386 Micro Biogas-Oxygen Diffusion Flames in Counterflow Burners, Satoshi Kadowaki (Nagaoka Univ. Tech.), Ryutaro Numata (Nagaoka Univ. Tech.), Yusuke Hashimoto (Nagaoka Univ. Tech.), Toshiyuki Katsumi (Nagaoka Univ. Tech.)	PRTEC-14721 A Study of Cavity Combustion for Pre-Burnt Injection Gas from a Single Hole in Supersonic Air Stream, Tatsuya Yamaguchi (Tohoku Univ.), Ko Murata (Tohoku Univ.), Taku Kudo (Tohoku Univ.), Akihiro Hayakawa (Tohoku Univ.), Hideaki Kobayashi (Tohoku Univ.)	PRTEC-14536 Effect of AC Electric Fields on Free-Jet Flow in Laminar, Gyeong-Taek Kim (Pukyong Nat. Univ.), Won-June Lee (Pukyong Nat. Univ.), Jeong Park (Pukyong Nat. Univ.), Oh-Boong Kwon (Pukyong Nat. Univ.), Sang-In Keel (KIMM), Jin-Han Yun (KIMM), Min-kuk Kim (KIMM), Sang-Min Lee (KIMM), Chang-Yeop Lee (Korea Inst. Industrial Tech.), Se-Won Kim (Korea Inst. Industrial Tech.)
Room: Ali'I I Topic ID: (a-2) Heat and Mass Transfer Enhancement Chairperson: Bong Jae Lee (KAIST)	PRTEC-14836 Direct Numerical Simulation of Low-Reynolds-Number Pulsating Channel Flow for Heat Transfer Enhancement, Ryota Fukuchi (Tokyo Univ. Agri. & Tech.), Hiroya Mamori (Tokyo Univ. Sci.), Kaoru Iwamoto (Tokyo Univ. Agri. & Tech.), Akira Murata (Tokyo Univ. Agri. & Tech.), Satoshi Sakimichi (DENSO CORPORATION), Kimio Kohara (DENSO CORPORATION), Yoshiaki Nisijima (DENSO CORPORATION)	PRTEC-14835 Heat Transfer Enhancement in Periodically Converging-Diverging Turbulent Pipe Flow, Hanaki Yanagisawa (Tokyo Univ. Agri. & Tech.), Hiroya Mamori (Tokyo Univ. Sci.), Kaoru Iwamoto (Tokyo Univ. Agri. & Tech.), Akira Murata (Tokyo Univ. Agri. & Tech.)	PRTEC-14707 Effect of Offset Strip Flow Control on a Heat Transfer Performance in a Wavy Fin Heat Exchanger, Gun Woo Kim (Univ. Seoul), Gwang Hoon Rhee (Univ. Seoul)	PRTEC-15161 Adjoint-Based Shape Optimization of Extended Heat Transfer Surfaces for Enhanced Solidification Process with Heat Conduction in the Solid Wall, Kenichi Morimoto (Univ. Tokyo), Yuji Suzuki (Univ. Tokyo)	PRTEC-14957 A Study for Optimal Design of Heat Exchanger and its Performance in District Cooling System with Sea Water, Yong Hoon Im (Korea Inst. Energy Research), Ki-Yeol Shin (Yeungnam Univ.), Chung Mo (Yeungnam Univ.)

Sessions	10:40	11:00	11:20	11:40	12:00
Room: Ali'I II Topic ID: (a-3) Boiling and Evaporation 3 Chairperson: Jaeseon Lee (UNIST)	PRTEC-14462 A Study of Taylor Bubble Heat Transfer Mechanisms under Variable Gravity Conditions, Alex Scammell (Univ. Maryland), Jungho Kim (Univ. Maryland)	PRTEC-14530 Quasi Two-Dimensional Boiling under Reduced Pressure, Ogawa Keita (Kyoto Univ.), Yuichi Yasumoto (Kyoto Univ.), Mitsuhiro Matsumoto (Kyoto Univ.)	PRTEC-15172 Dynamics of Heat Transfer during Bubble Ebullition from a Microheater, Shashank Natesh (UC Davis), Vinod Narayanan (UC Davis)	PRTEC-14993 Pool Boiling Heat Transfer Performance on Graphene Coated Microchannel Surface, Alireza Jafari (Nat. Central Univ.), Chien-Yuh Yang (Nat. Central Univ.), Ching-Yuan Su (Nat. Central Univ.), A.S. Praveena (Nat. Central Univ.)	PRTEC-14681 Effects of Gravity and Micro-Sized Surface Roughness on Critical Heat Flux in Pool Boiling Condition, Dong Eok Kim (Kyungpook Nat. Univ.), Su Cheong Park (POSTECH), Dong In Yu (POSTECH), Moo Hwan Kim (POSTECH), Dong Wook Jerng (Chung-Ang Univ.), Tae-Il Seo (Incheon Nat. Univ.), Ho Seon Ahn (Incheon Nat. Univ.)
Room: Ali'I III					
Room: Paniolo I Topic ID: (c-2) Microscale Heat Transfer 2 Chairperson: Osamu Nakabeppu (Meiji Univ.)	PRTEC-14921 Investigation of Temperature Dependence of Alcohol Diffusion in Water by Near-Infrared Absorption Imaging, Hiroki Yamashita (Tokyo Metro. Univ.), Naoto Kakuta (Tokyo Metro. Univ.), Hidenobu Arimoto (AIST), Daisuke Kawashima (Tokyo Metro. Univ.), Katsuya Kondo (Tottori Univ.), Yukio Yamada (Univ. Electro-Communi.)	PRTEC-14946 A Prototype of a Thermal Energy Harvester using Thermo-Sensitive Magnetic Fluid, Satoshi Yamada (Shibaura Inst. Tech.), Yuta Suzuki (Shibaura Inst. Tech.), Kazuki Ohyama (Shibaura Inst. Tech.), Manabu Tange (Shibaura Inst. Tech.)	PRTEC-14736 Metallic Nanoemulsion with Liquid-Metal for High Heat-Flux Thermal Management, Yoshikazu Hayashi (Washington State Univ.), Gordon Yip (Washington State Univ.) Yoon Jo Kim (Washington State Univ.), Jong-Hoon Kim (Washington State Univ.)	PRTEC-14770 Flow and Heat Transfer in Hydrophobic Micro Pin Fins with Different Contact Angles, N. Guan (Shandong Univ.), T. Luan (Shandong Univ.), Z.G. Liu (Energy Research Inst. Shandong Acad. Sci.), G.L. Jiang (Energy Research Inst. Shandong Acad. Sci.), C.W. Zhang (Energy Research Inst. Shandong Acad. Sci.), N. Ding (Energy Research Inst. Shandong Acad. Sci.)	
Room: Paniolo II Topic ID: (b-3) Combustion and Heat Transfer in Engine Chairperson: Tatsuya Kuboyama (Chiba Univ.)	PRTEC-14826 A Direct Numerical Simulation Study on Flame-Wall Interaction for Methane-Air Premixed Flame with EGR at High Pressure Conditions, Basmil Yenerdag (Tokyo Inst. Tech.), Yoshitsugu Naka (Tokyo Inst. Tech.), Masayasu Shimura (Tokyo Inst. Tech.), Mamoru Tanahashi (Tokyo Inst. Tech.)	PRTEC-14841 Temperature Dependence Investigations of Gas-Phase Toluene Planar Laser-Induced Fluorescence in Rapid Compression-Expansion Machine, Jaeok Bae (Tokyo Inst. Tech.), Susumu Sato (Tokyo Inst. Tech.), Hidenori Kosaka (Tokyo Inst. Tech.)	PRTEC-15278 LES Analysis of Combustion Process for a Wall Impinging Diesel Spray, Hiroshi Kawanabe (Kyoto Univ.), Hirokazu Kojima (AIST), Jun Komae (Kyoto Univ.), Takuji Ishiyama (Kyoto Univ.)	PRTEC-14650 The Effect of Oxygenated Fuel Properties on Soot Formation, Wonah Park (KIMM, Univ. Wisconsin-Madison), Seunghyun Park (Univ. Wisconsin-Madison), Rolf D. Reitz (Univ. Wisconsin-Madison), Eric Kurtz (Ford Motor Company)	
Room: Paniolo III Topic ID: (b-4) Solar & Thermal Systems 1 Chairperson: Dong-Wook Oh (Chosun Univ.)	PRTEC-14212 Thermal Performance of a PV Module Integrated with a Double-Layer Water-Saturated MEPCM, C.J. Ho (Nat. Cheng Kung Univ.), Bor-Tyng Jou (Nat. Cheng Kung Univ.), Chi-Ming Lai (Nat. Cheng-Kung Univ.)	PRTEC-14694 Experimental Testing and Modeling of Benchtop Hybrid PV/T System using Selective Nanoparticles, Jordan Hoyt (Univ. Tulsa), Todd Otanicar (Univ. Tulsa), Kirk Smith (Univ. Tulsa), Nick Brekke (Univ. Tulsa)	PRTEC-14722 Effect on Thermal Regulation of Interface between Photovoltaic Panel and Phase-Change Material, Jenna Beckwith (Embry-Riddle Aeronautical Univ.), Andrew Rosenthal (Embry-Riddle Aeronautical Univ.), Sandra Boetcher (Embry-Riddle Aeronautical Univ.)	PRTEC-14914 Optimal Design of a Hybrid PV/T with Nano Particle Based Spectral Filtering Utilizing A 2-D Heat Transfer Model, Nicholas Brekke (Univ. Tulsa), Todd Otanicar (Univ. Tulsa), Drew DeJarnette (Univ. Tulsa), Matthew Orosz (MIT)	PRTEC-15039 Direct Solar Thermal to Acoustic Energy Conversion for Thermoacoustic Prime Mover, Kohei Matsumoto (Meiji Univ.), Kenichi Kobayashi (Meiji Univ.)
Room: Lehua II-III Topic ID: (b-4) SOFC Chairperson: Takuto Araki (Yokohama Nat. Univ.)	PRTEC-14668 Three Dimensional Microstructure Analysis of Electrode in Solid Oxide Fuel Cell and Solid Oxide Electrolysis Cell, Takaaki Shimura (Univ. Tokyo), Zhenjun Jiao (Univ. Tokyo), Naoki Shikazono (Univ. Tokyo, CREST)	PRTEC-14677 Investigation of Reaction Mechanism in $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_3$-$Gd_{0.1}Ce_{0.9}O_{1.95}$ Solid Oxide Fuel Cell Composite Cathode, Yongtae Kim (Univ. Tokyo), Akihiro Ohi (Univ. Tokyo), Zhenjun Jiao (Univ. Tokyo, CREST), Naoki Shikazono (Univ. Tokyo, CREST)	PRTEC-14619 Chromium Poisoning to LSM-YSZ Cathode: 3D Simulation of a Single Cell, Kota Miyoshi (Kyoto Univ.), Yuki Tanaka (Kyoto Univ.), Hiroshi Iwai (Kyoto Univ.), Masashi Kishimoto (Kyoto Univ.), Motohiro Saito (Kyoto Univ.), Hideo Yoshida (Kyoto Univ.)	PRTEC-14689 Formulation of Ammonia Decomposition Rate in Ni-YSZ Anode of Solid Oxide Fuel Cells, Masashi Kishimoto (Kyoto Univ.), Naoto Furukawa (Kyoto Univ.), Tatsuya Kume (Kyoto Univ.), Hiroshi Iwai (Kyoto Univ.), Motohiro Saito (Kyoto Univ.), Hideo Yoshida (Kyoto Univ.)	PRTEC-14551 Thermodynamic, Economic, and Environmental Evaluations of SOFC/ Engine Hybrid System, Young Duk Lee (KIMM, Tech. Univ. Berlin), Kook Young Ahn (KIMM), George Tsatsaronis (Tech. Univ. Berlin), Sanggyu Kang (KIMM)

Technical Sessions

Thursday, March 17, 2016

Sessions	13:40	14:00	14:20	14:40	15:00
Room: Naupaka I-IV Topic ID: (a-1) Heat Transfer Enhancement and Cooling 2 Chairperson: Atsuki Komiya (Tohoku Univ.)	PRTEC-14685 Heat Transfer by Oscillating Flow in a Two-Parallel Plate Channel with a Sinusoidal Temperature Distribution at the External Wall of the Channel, Jaeyeong Jo (KAIST), Sung Jin Kim (KAIST)	PRTEC-14989 Effects of Agitation on Convective Heat Transfer- Analysis and Results, Smita Agrawal (Univ. Minnesota), Terrence Simon (Univ. Minnesota), Tianhong Cui (Univ. Minnesota)	PRTEC-14699 Experimental Study on a Micro Gas Turbine Recuperator with Offset Strip Fins, Kyu Hyung Do (KIMM, Korea Univ. Sci. Tech.), Taehoon Kim (KIMM, Korea Univ. Sci. Tech.), Byung-Il Choi (KIMM, Korea Univ. Sci. Tech.), Yong-Shik Han (KIMM), Myung-Bae Kim (KIMM, Korea Univ. Sci. Tech.)	PRTEC-14966 Combined Forced Convection and Radiative Heat Transfer of Electronic Equipment with High Heat Flux, Jutaro Ozawa (Meiji Univ.), Kenichi P. Kobayashi (Meiji Univ.)	PRTEC-14982 Numerical Investigation of Heat Transfer Performance of Supercritical-Pressure Aviation Kerosene Flowing in Tubes with Asymmetric Fins, Dan Huang (Lund Univ., Zhejiang Univ.), Zan Wu (Lund Univ.), Bengt Sunden (Lund Univ.)
Room: Naupaka V Topic ID: (a-8) Thermophysical Properties (Fluids) Chairperson: Ryo Akasaka (Kyushu Sangyo Univ.)	PRTEC-14620 The Role of Flow Acceleration and Turbulence in Determining Slot Impinging Jet Heat Transfer at a Stagnation Point, Aziz Maurel Nguepnang (Univ. Witwatersrand), Yongbin Im (Samsung Electronics), Tongbeum Kim (Univ. Witwatersrand)	PRTEC-14437 On the Coupling between the Dynamic Viscosity and Thermal Conductivity for Al_2O_3 Nanofluids – Some Insights onto the Characterisation of Nanofluid Thermal Properties, Cong Tam Nguyen (Univ. Moncton), Marc-André Hachey (Univ. Sherbrooke), Nicolas Galanis (Univ. Sherbrooke), Catalin Viorel Popa (Univ. Reims)	PRTEC-14626 Recent Data of Specific Heat for Water-Based and Ethylene Glycol-Based Nanofluids, Catalin Viorel Popa (Univ. Reims), Cong Tam Nguyen (Univ. Moncton), Iulian Gherasim (Tech. Univ. Iasi)	PRTEC-14617 Effect of Pulsed Thermal Power on the Conversion Efficiency of a Thermoelectric Generator System, Leisheng Chen (Handong Global Univ.), Jaeyoung Lee (Handong Global Univ.)	
Room: Naupaka VI Topic ID: (a-3) Phase Change Material Chairperson: John Tencer (Sandia National Labs)	PRTEC-14691 Thermal Charging Study of Compressed Expanded Natural Graphite/Phase Change Material Composites, Anne Mallow (Georgia Tech.), Omar Abdelaziz (ORNL), Samuel Graham (Georgia Tech.)	PRTEC-14465 Thermal Management of Portable Electronics using Phase Change Materials: Initial Experiments, Ryan P. Scott (Dalhousie Univ.), Tousif Ahmed (Dalhousie Univ.), Dominic Groulx (Dalhousie Univ.)	PRTEC-15055 Experimental and Analytical Investigation of Thermal Energy Storage System for Automotive Applications, Lin Xie (Univ. Toronto), John Burgers (Dana Canada Corporation), Masahiro Kawaji (City College New York)	PRTEC-14820 Influence of Metal Fiber Materials on Natural Convection Flow in Heat Storage Process of Latent Heat Storage Paraffin with Metal Fiber Materials, Naoto Haruki (Okayama Univ.), Akihiko Horibe (Okayama Univ.)	PRTEC-15137 Numerical Investigation on a Latent Thermal Energy Storage with Aluminum Foam, Bernardo Buonomo (Seconda Univ. degli Studi Napoli), Davide Ercole (Seconda Univ. degli Studi Napoli), Oronzio Manca (Seconda Univ. degli Studi Napoli), Sergio Nardini (Seconda Univ. degli Studi Napoli)
Room: Naupaka VII Topic ID: (b-2) Gas Turbine/Turbulent Combustion Chairperson: Yuzuru Nada (Tokushima Univ.)	PRTEC-14490 A Study on the Self-Excited Instability Characteristics with the Combustor Length Variation in Model Gas Turbine Combustor, Munseok Jang (Sunchon Nat. Univ.), Keeman Lee (Sunchon Nat. Univ.), Inchan Choi (Doosan Heavy Industries & Construction), Dongsoon Noh (Korea Inst. Energy Research)	PRTEC-14583 A DNS Study on the Scalar Mixing Mechanism in Turbulent Premixed Swirling Flames for Reynolds-Averaged Reaction Rate Modeling, Yuki Minamoto (Tokyo Inst. Tech.), Kozo Aoki (Tokyo Inst. Tech.), Mamoru Tanahashi (Tokyo Inst. Tech.), Nedunchezhian Swaminathan (Univ. Cambridge)	PRTEC-14725 Morphological Features of Reaction Zones in MILD Combustion, Yuki Minamoto (Tokyo Inst. Tech.), Nedunchezhian Swaminathan (Univ. Cambridge)	PRTEC-15101 Flame Dynamics in a Low-Swirl Premixed Combustor under Combustion Instability, Kotaro Moriyama (Keio Univ.), Shigeru Tachibana (JAXA), Takeshi Yokomori (Keio Univ.)	
Room: Ali'i I Topic ID: (a-2) Turbulent Heat and Mass Transfer Chairperson: Kaoru Iwamoto (Tokyo Univ. Agri. & Tech.)	PRTEC-15148 Effects of Velocity and Measurement Uncertainties on Estimation of Scalar Source Intensity in Turbulent Channel Flow, Davide Cerizza (Univ. Tokyo), Tamer Zaki (Johns Hopkins Univ.), Yosuke Hasegawa (Univ. Tokyo)	PRTEC-14881 Turbulent Heat Transfer in Thermally-Stratified Boundary Layer over Two-Dimensional Hills by Means of DNS, Hirofumi Hattori (Nagoya Inst. Tech.), Shota Yoshikawa (Nagoya Inst. Tech.), Tomoya Houra (Nagoya Inst. Tech.), Masato Tagawa (Nagoya Inst. Tech.)	PRTEC-14425 Near-Wall Turbulence Structures Associated with Heat-Transfer Enhancement in Ribbed-Pipe Flow, Doohyun Park (Inha Univ.), Kyung-Soo Yang (Inha Univ.), Changwoo Kang (Inha Univ.), Hyungsu Ahn (Inha Univ.)	PRTEC-15104 Simulation of Turbulent Boundary Layers of Melting Liquid Metal Flow with a Mushy Layer, Takashi Ohta (Univ. Fukui), Naoto Akiyama (Univ. Fukui)	PRTEC-15133 Investigation of Turbulence Model for Heat Transfer Characteristics of Exhaust Manifold Systems, Yuji Kobayashi (Tokyo City Univ.), Taku Matsuda (Tokyo City Univ.), Hideaki Nagano (Tokyo City Univ.), Itsuhei Kohri (Tokyo City Univ.), Koichi Ishikawa (Mitsubishi Motors Corporation), Saneaki Akieda (Mitsubishi Motors Corporation), Zong Guang Wang (Mitsubishi Motors Corporation)

Sessions	13:40	14:00	14:20	14:40	15:00
Room: Ali'I II Topic ID: (a-3) Boiling and Evaporation 4 Chairperson: Yogesh Jaluria (Rutguers Univ.)	PRTEC-15163 Metrics for Quantifying Surface Wetting Effects on Boiling and Evaporation at Nanostructured Hydrophilic Surfaces, Claire Kunkle (UC Berkeley), Van Carey (UC Berkeley)	PRTEC-14903 Boiling Heat Transfer Enhancement with Hydrophobic Islands at Sub-Atmospheric Pressures, Masayuki Yamada (Kyushu Univ.), Biao Shen (Kyushu Univ., CREST), Hongbin He (Kyushu Univ.), Kento Furutsato (Kyushu Univ.), Sumitomo Hidaka (Kyushu Univ.), Masamichi Kohno (Kyushu Univ., CREST), Koji Takahashi (Kyushu Univ., CREST), Yasuyuki Takata (Kyushu Univ., CREST)	PRTEC-14704 Leidenfrost Phenomena on Well-Designed Micro-Scale Pillar Surface, Su Cheong Park (POSTECH), Seok Won Han (Incheon Nat. Univ.), Tae Il Seo (Incheon Nat. Univ.), Dong Eok Kim (Kyungpook Nat. Univ.), Moo Hwan Kim (Korea Inst. Nuclear Safety), Ho Seon Ahn (Incheon Nat. Univ.)	PRTEC-15136 Experimental Discussion of Mechanism of Boiling Heat Transfer on Critical Heat Flux by using Simultaneous Measurements of Two-Dimensional Temperature Field under Heated Surface and Behavior of Boiling Vapor Bubble, Masashi Inoue (Kogakuin Univ.), Hiroyasu Ohtake (Kogakuin Univ.), Koji Hasegawa (Kogakuin Univ.)	PRTEC-15074 Study on Microbubble Emission Boiling Based on Microlayer Model, Ken Kishihara (Kyushu Inst. Tech.), Takaharu Turuta (Kyushu Inst. Tech.), Hirofumi Tanigawa (Kyushu Inst. Tech.)
Room: Ali'I III					
Room: Paniolo I Topic ID: (c-1) Transport Phonomena in Nanometer Scale Systems 1 Chairperson: Yoichi Murakami (Tokyo Inst. Tech.)	PRTEC-14560 Photon Upconversion Based on Intermolecular Energy Transfers in Ionic Liquids: Kinetics of Triplet-Triplet Annihilation upon Formation of a Molecular Encounter-Complex Pair, Yoichi Murakami (Tokyo Inst. Tech.), Toshiyuki Ito (Tokyo Inst. Tech.), Akio Kawai (Tokyo Inst. Tech.)	PRTEC-14660 The Scattering Behavior of Water Molecules on Silicon Surface: Analysis of Anomalous Energy Dependence of the Scattering Directivity, Yusuke Kotsubo (Univ. Tokyo), Ikuya Kinefuchi (Univ. Tokyo), Shu Takagi (Univ. Tokyo)	PRTEC-14595 Study of Dispersion Phenomenon for an Optical Sensor with a Dual-Cross-Shaped Microchannel, Shang-Yi Yang (Nat. Taipei Univ. Tech.), An-Shik Yang (Nat. Taipei Univ. Tech.), Ying-Ming Su (Nat. Taipei Univ. Tech.), Chiang-Ho Cheng (Univ. Dayeh), Wen-Hsin Hsieh (Nat. Chung-Cheng Univ.), Szu-Yung Hsieh (Nat. Taipei Univ. Tech.)	PRTEC-15180 Development of a Sub-200-nm Four-Probe Resistive Nanothermometer on Substrate, Sina Hamian (Univ. Utah), Junghoon Yoon (KAIST), Timothy Walsh (Asylum Research), In-Kyu Park (KAIST), Keunhan Park (Univ. Utah)	
Room: Paniolo II Topic ID: (b-3) SI-Combustion Process Chairperson: Hidenori Kosaka (Tokyo Inst. Tech.)	PRTEC-15315 Investigation of Thermal Efficiency in a Supercharged Lean Burn SI Engine with EGR Dilution and Late Intake Valve Closing Timing, Toshiki Tatemura (Chiba Univ.), Tatsuya Kuboyama (Chiba Univ.), Yasuo Moriyoshi (Chiba Univ.), Makoto Kaneko (Chiba Univ.)	PRTEC-15135 A Study on Spark Ignition in Simulated Exhaust Gas Recirculation Ambience using Rapid Compression Machine, Osamu Imamura (Nihon Univ.), Yuya Fukumi (Nihon Univ.), Arina Dominik Montoya (Nihon Univ.), Kazuhiro Akihama (Nihon Univ.), Kazuki Sakaki (Univ. Tokyo), Shinji Nakaya (Univ. Tokyo), Mitsuhiro Tsue (Univ. Tokyo)	PRTEC-15045 Study on Spherically Propagating i-C_8H_{18} Turbulent Flames under Lean and EGR Conditions using Constant Volume Vessel, Yukihide Nagano (Kyushu Univ.), Yosuke Fukuda (Kyushu Univ.), Akira Noomo (Kyushu Univ.), Taiki Tsukamoto (Kyushu Univ.), Hiroaki Watanabe (Kyushu Univ.), Toshiaki Kitagawa (Kyushu Univ.)	PRTEC-14599 An Experimental Study on Performance and Lean Combustion Characteristics of Hydrogen Mixtures in a CNG Engine, Ingu Kim (Kookmin Univ.), Seungwon Park (Kookmin Univ.), Daein Kim (Kookmin Univ.), Seangwock Lee (Kookmin Univ.), Yongseok Cho (Kookmin Univ.)	PRTEC-14481 Spray and Combustion Characteristics of Gasoline and n-Butane in a Spray-Guided Direct Injection Spark Ignition Engine under Lean Stratified Conditions, Jinyoung Jung (KAIST), Sangjae Park (KAIST), Choongsik Bae (KAIST)
Room: Paniolo III Topic ID: (b-4) Solar & Thermal Systems 2 Chairperson: TBA	PRTEC-14292 Experimental and Numerical Investigation of Natural Convection in a Compost Waste-to-Energy Solar Tower, Kevin R. Anderson (California State Polytech. Univ. Pomona), Maryam Shafahi (California State Polytech. Univ. Pomona), Reza Baghaei Lakeh (California State Polytech. Univ. Pomona), Christopher McNamara (California State Polytech. Univ. Pomona), Pedro Perez, Benjamin Kampen (California State Polytech. Univ. Pomona)	PRTEC-14456 Performance Analysis of Nanostructured Cu-Based Solar Thermal Absorber Surfaces, Junghun Lee (Kyung Hee Univ.), Dasol Jeong (Kyung Hee Univ.), Youngsuk Nam (Kyung Hee Univ.)	PRTEC-14556 Determination of Solar Irradiance on the Glazed Thermal Collector with/without Diffuse Contribution, Wai Kwuen Choong (Nat. Cheng Kung Univ.), Keh Chin Chang (Nat. Cheng Kung Univ.)	PRTEC-14783 Thermodynamic Considerations of Spectral Splitting and Spectral Conversion for High-Efficiency Solar Energy Conversion, David Bierman (MIT), Andrej Lenert (MIT), Evelyn Wang (Univ. Michigan)	PRTEC-15141 Numerical Investigation on an Inclined Ventilated Roof with Different Exit Section, Bernardo Buonomo (Seconda Univ. degli Studi Napoli), Alessandra Diana (Seconda Univ. degli Studi Napoli), Oronzio Manca (Seconda Univ. degli Studi Napoli), Sergio Nardini (Seconda Univ. degli Studi Napoli)
Room: Lehua II-III Topic ID: (b-4) Cycle Chairperson: Yong Tao (Univ. North Texas)	PRTEC-14893 Heat Management in Thermoelectric Topping Cycles, Mona Zebarjadi (Rutgers Univ.)	PRTEC-14996 Coupled Simulation for Two-Phase Thermal-Hydraulics of Secondary Side of PWR Steam Generator, Jae Ryong Lee (KAERI), Han Young Yoon (KAERI).	PRTEC-15068 An Experimental Study on the Thermal-Hydraulic Phenomena in the Hybrid Safety Injection Tank, Sung Uk Ryu (KAERI), Hyo Bong Ryu (KAERI), Hyun-Shik Park (KAERI), Sung-Jae Lee (KAERI)		

Technical Sessions

Thursday, March 17, 2016

Sessions	15:40	16:00	16:20	16:40	17:00
Room: Naupaka I-IV Topic ID: (a-1) Forced Convection Chairperson: Terry Simon (Univ. Minnesota)	PRTEC-14654 Transient Forced Convection Heat Transfer from a Horizontal Cylinder to Helium Gas in a Narrow Channel, Qiusheng Liu (Kobe Univ.), Akihiro Mitsuishi (Kobe Univ.), Li Wang (Kobe Univ.), Makoto Shibahara (Kobe Univ.), Katsuya Fukuda (Kobe Univ.)	PRTEC-15305 Drying Kinetics Comparison of Methylcellulose Gel vs. Mango Fruit in Forced Convective Drying with and without Electrohydrodynamic Enhancement, Erik Bardy (Grove City College), Sabrine Manai (ONIRIS), Michel Havet (ONIRIS), Olivier Rouaud (ONIRIS)	PRTEC-15072 Measurement of Average Convective Heat Transfer Coefficients from a Smooth NACA-4412 Airfoil with Varying Angles of Attack, Patrick Mensah (Southern Univ. and A&M College), Olaniran Asanbe (Southern Univ. and A&M College), Stephen Akwaboa (Southern Univ. and A&M College)	PRTEC-14769 Numerical Investigation of Marangoni Convection in a Micro-Scale Environment, Takuya Yamamoto (Osaka Univ.), Y. Okano (Osaka Univ.)	
Room: Naupaka V					
Room: Naupaka VI Topic ID: (a-3) Solid & Liquid Phase Change Chairperson: Naoto Haruki (Okayama Univ.)	PRTEC-14238 Saltwater Icing: Role of Surfaces on Freezing Kinetics of Saltwater Droplets, Katherine Carpenter (Univ. Texas Austin), Vaibhav Bahadur (Univ. Texas Austin)	PRTEC-14346 Numerical Investigation of Phase-Change Materials to Thermally Regulate Photovoltaic Panels, Rohit Gulati (Embry-Riddle Aeronautical Univ.), Jenna Beckwith (Embry-Riddle Aeronautical Univ.), Andrew Rosenthal (Embry-Riddle Aeronautical Univ.), Sandra Boetcher (Embry-Riddle Aeronautical Univ.)	PRTEC-14461 Geometrical Impacts on Phase Change Heat Transfer Modeling, Ali Cherom Kheirabadi (Dalhousie Univ.), Moe Kabbara (Dalhousie Univ.), Dominic Groulx (Dalhousie Univ.)	PRTEC-14940 Convective Flows and Instabilities during Crystal Growth via the Traveling Heater Method, Jeff Peterson (Univ. Minnesota), Jeffrey Derby (Univ. Minnesota)	PRTEC-14727 Numerical Modeling of an Alloy Droplet Deposition on a Substrate, Vimal Ramanuj (Univ. Texas Arlington), Albert Tong (Univ. Texas Arlington)
Room: Naupaka VII Topic ID: (b-2) New Technologies in Combustion Systems Chairperson: John Tencer (Sandia National Labs.)	PRTEC-15018 Fundamental Study on Fuel Pyrolysis Effects on Laminar Lifted Flame, Minkyu Jeon (KAIST), Min Jung Lee (KAIST), Yongjin Jung (KAIST), Nam Il Kim (KAIST)	PRTEC-15099 Effective Reaction Site of Porous Catalyst on a Wall for Combustion in Association with Limiting Processes, Motohiro Saito (Kyoto Univ.), Atsushi Ueyama (Kyoto Univ.), Syogo Sakurai (Kyoto Univ.), Hiroshi Iwai (Kyoto Univ.), Hideo Yoshida (Kyoto Univ.)	PRTEC-15154 A Preliminary Study on Non-Catalytic Partial Oxidation Reforming of CH_4/Air and CH_4/O_2 Mixtures in Two-Section Porous, Young Tae Guahk (KIER), Dae Keun Lee (KIER), Seung Gon Kim (KIER), Chang-Bog Ko (KIER), Dong-Soon Noh (KIER), Jong-Ho Park (KIER)	PRTEC-15243 Study on the Combustion Characteristics in 2-Section Porous Media Combustor for CF_4 Decomposition, Seung-Gon Kim (KIER), Dae Keun Lee (KIER), Dong-Soon Noh (KIER), Guahk Yeong Tae (KIER), Chang-Bog Ko (KIER)	PRTEC-15049 Subatmospheric Humid Air Brayton Power Cycle Efficiency Improvement, Olexiy D. Buyadgie (V.S. Martynovsky Inst. Refrig., Cryogenic Tech. Eco Energetics, Wilson), Dmytro I. Buyadgie (Wilson), Oleksii Y. Drakhnia (Wilson), Valeriy S. Maisotsenko (Coolerado Inc., Idalex Inc.), Takahiko Miyazaki (Kyushu Univ.), Andrei V. Chamchine (Univ. Central Lancashire)
Room: Ali'I I Topic ID: (a-2) Heat and Mass Transfer in High-Speed and High-Temperature Flows Chairperson: Takashi Ohta (Univ. Fukui)	PRTEC-14492 Numerical Study of Convergent-Divergent Nozzle Airflow Problem, JungMyoung Kim (Changwon Nat. Univ.), Heesung Park (Changwon Nat. Univ.)	PRTEC-15066 Numerical Simulation on Dispersion Process of Unsteady High Pressure Hydrogen Jet Flow, Keisuke Fujimoto (Kyushu Inst. Tech.), Daiki Muto (Kyushu Inst. Tech.), Makoto Asahara (Aoyama Gakuin Univ.), Nobuyuki Tsuboi (Kyushu Inst. Tech.)	PRTEC-14947 Flat Flame Structure with Strain Rates in Impinging Jet Flames of Syngas Fuel, Keunseon Sim (Sunchon Nat. Univ.), Jaeyeong Kim (Sunchon Nat. Univ.), Keeman Lee (Sunchon Nat. Univ.), Byounglok Jang (SAC Co.)	PRTEC-15501 Three Dimensional Modeling of Heat Transfer in a Conical Fluidized Bed Reactor, Ik-Tae Im (Chonbuk Nat. Univ.), H. M. Abdelmotalib (Chonbuk Nat. Univ., Minia Univ.), Chan Woo Park (Chonbuk Nat. Univ.), Min Soo Kim (Chonbuk Nat. Univ.), Nag Jung Choi (Chonbuk Nat. Univ.)	
Room: Ali'I II Topic ID: (a-3) Phase Change Miscellaneous Chairperson: Yogesh Jaluria (Rutguers Univ.)	PRTEC-15026 Effect of Ambient Temperature and Relative Water Humidity on Hydrothermal Waves (HTWs) of Volatile Drops, Yuki Fukatani (Kyushu Univ.), Daniel Orejon (Kyushu Univ.), Yutaku Kita (Kyushu Univ.), Yasuyuki Takata (Kyushu Univ., CREST), Jungho Kim (Univ. Maryland), Khellil Sefiane (Kyushu Univ., Univ. Edinburgh)	PRTEC-14748 Preservation of Carbon Dioxide Clathrate Hydrate in the Presence of Trehalose under Freezer Conditions for Novel Carbonated Dessert, Hironori D. Nagashima (Keio Univ.), Satoshi Takeya (AIST), Ryo Ohmura (Keio Univ.)	PRTEC-14827 Thermophysical and Crystallographic Properties of Structure H Hydrate Formed with Methane and Methylpiperidine, Kazuki Imasato (Keio Univ.), Thaneer Malai Narayanan (Keio Univ.), Kotaro Murayama (Keio Univ.), Satoshi Takeya (AIST), Saman Alavi (Univ. Ottawa), Ryo Ohmura (Keio Univ.)	PRTEC-14872 Multi-Spectral Remote Thermal Imaging of Building Envelopes – Improving Ability to Extract Thermal Characteristics from Single-Point-in-Time Images, Abdulrahman Alrobaian, (Univ. Dayton), Kevin Hallinan (Univ. Dayton), Robert Brecha (Univ. Dayton), S. Alshatshati (Univ. Dayton)	

Sessions	15:40	16:00	16:20	16:40	17:00
Room: Ali'i III					
Room: Paniolo I Topic ID: (c-1) Transport Phonomena in Nanometer Scale Systems 2 Chairperson: Arun Muley (Boeing Company)	PRTEC-14597 Flow Study of a Micro-Hydrodynamic Bearing with Herringbone Grooves, Yee-Ting Lee (Nat. Taipei Univ. Tech.), An-Shik Yang (Nat. Taipei Univ. Tech.), Chien-Sheng Liu (Nat. Chung Cheng Univ.), Chiang-Ho Cheng (Univ. Dayeh), Ying-Jen Wang (Nat. Taipei Univ. Tech.)	PRTEC-14758 Feasibility of using Micro-Beam Sensor for Gas Detection; Size Effect on Heat Conduction to Gases, Haidong Wang (Kyushu Univ.), Kosuke Hisada (Kyushu Univ.), Kosaku Kurata (Kyushu Univ.), Takanobu Fukunaga (Kyushu Univ.), Hiroshi Takamatsu (Kyushu Univ.)	PRTEC-15181 An Investigation on Thermal Transport from AFM Heated Cantilevers to Sub-200nm Resistive Nanothermometers, Sina Hamian (Univ. Utah), Junghoon Yoon (KAIST), In-Kyu Park (KAIST), Keunhan Park (Univ. Utah)		
Room: Paniolo II Topic ID: (b-3) Heat Transfer in Engine System Chairperson: Ji Hwan Jeong (Pusan Nat. Univ.)	PRTEC-14821 Heat Flux Measurement Method on Inner Wall of Engine with MEMS Sensor, Osamu Nakabeppu (Meiji Univ.), Tomohiro Tsuchiya (Meiji Univ.), Yuto Nakamura (Meiji Univ.), Keisuke Nagasaka (Meiji Univ.)	PRTEC-14633 Cooling Characteristics of Air-Cooled Cylinders with Various Fin Pitches and Number of Fins Mounted at Various Tilt Angles, Kohei Nakashima (Meijo Univ.), Masao Yoshida (Aichi Univ. Tech.), Kai Ishiko (Meijo Univ.)	PRTEC-14671 Coupled Flow Simulation of Piston Ring Model, Yuki Kawamoto (Tokai Univ.), Shun Takahashi (Tokai Univ.)	PRTEC-15314 Development of a Prediction Model of Turbocharger Including Thermal Effects, Tatsuya Kuboyama (Chiba Univ.), Takeaki Kudo (Chiba Univ), Yasuo Moriyoshi (Chiba Univ.)	
Room: Paniolo III Topic ID: (b-4) Thermal Energy Storage Chairperson: Koji Matsubara (Niigata Univ.)	PRTEC-14338 Effects of Thermal Fluid Properties on a Thermal Storage Tank Performance, Fang Liu (Shanghai Univ. Electric Power), Yang Cai (Shanghai Univ. Electric Power), Weiquan Zhu (Shanghai Univ. Electric Power)	PRTEC-14423 Experimental Study on Heat Transfer Characteristics of Molten Salt for High-Temperature Thermal Energy Storage, Seok Ho Yoon (KIMM), Dong Ho Kim (KIMM), Young Kim (KIMM), Chan Ho Song (KIMM), Jun Seok Choi (KIMM)	PRTEC-14994 Effect of Natural Convection on the Performance of an Isochoric Thermal Energy Storage System, Reza Baghaei Lakeh (California State Polytech. Univ., Pomona), Yetlanezi Guerrero (California State Polytech. Univ., Pomona), Karthik Nithyanandam (UCLA), Richard Wirz (UCLA)	PRTEC-15058 Transient Heat Transfer Analysis of a Ground Level Integrated Diverse Energy Storage (Glides) System, Adewale Odukomaiya (Georgia Tech.), Ayyoub Momen (ORNL), Samuel Graham (Georgia Tech., ORNL)	PRTEC-15162 Effectiveness Modeling of Transient Cold Storage in Phase Change Thermal Storage Components, Andrea Helmns (UC Berkeley), Darren Sholes (UC Berkeley), Van Carey (UC Berkeley)
Room: Lehua II-III Topic ID: (b-4) CGS Chairperson: Kook Young Ahn (KIMM)	PRTEC-14367 Thermo-Economic Performance Evaluation of a Cogeneration Medium-small Modular Nuclear Reactor Plant, Gaoming Ge (Univ. Saskatchewan), Tomohiko Ikegawa (Hitachi, Ltd.), Tanner Kirby (SNC-Lavalin Inc.), Koji Nishida (Hitachi-GE Nuclear Energy, Ltd.), Carey Simonson (Univ. Saskatchewan)	PRTEC-14448 Analysis of Performance of a Combo Heating System for Residential Space Heating Applications, Joseph Der (Univ. Alberta), Larry Kostiuk (Univ. Alberta), André McDonald (Univ. Alberta)	PRTEC-14607 A Model for Daily Operational Planning of a Residential Fuel-Cell Cogeneration System Based on Experiment, Takumi Furuichi (Waseda Univ., CREST), Akira Yoshida (Waseda Univ., CREST), Yoshiharu Amano (Waseda Univ., CREST)	PRTEC-15105 Impact of Demand Prediction Accuracy on Energy Saving Characteristics of Residential PEFC-CGS, Jun Yoshikawa (Waseda Univ., CREST), Akira Yoshida (Waseda Univ., CREST), Yoshiharu Amano (Waseda Univ., CREST)	PRTEC-14800 Particle Heat Carriers in the Stirling Engine Concept, H.L. Zhang (KU Leuven), T. Gowing (Gowing Engineering Limited), J. Degrève (KU Leuven), J. Baeyens (Univ. Warwick)

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