

Kyoto International Conference Center, August 10 - 15, 2014



富嶽三子寫 凱風  
快晴

The 15th International  
Heat Transfer Conference

Conference Program

# Contents

## Welcome

Chair, IHTC-15 .....	1
President, HTSJ.....	2
President, AIHTC .....	2
Vice President, SCJ.....	3
Prime Minister of Japan.....	3
Acknowledgments .....	4

## General Information

Registration, Name Badges, Tickets.....	6
Welcome Reception.....	6
Lunches .....	6
Refreshment Breaks .....	6
Conference Banquet.....	6
Farewell .....	6
Questionnaire to Facilitate Food Saving .....	7
Smoking.....	7
EventMobile app for IHTC .....	7
Wireless Network System .....	7
Conference Proceedings .....	7
IHTC Digital Library (IDL).....	7
Cover page—Gaifukaisei (Katsushika Hokusai)—.....	8
IHTC Logo.....	8
Global Information .....	8

## Technical Program

Important Notes to Presenters, etc. ....	10
Floor Map .....	11
Schedule at a Glance.....	12
Plenary and Fourier Lectures .....	14
Plenary Panel Session .....	15
Keynote/Award Sessions in Parallel .....	16
Panel Session .....	28

General Sessions in Series .....	29
General Sessions in Parallel .....	94
Awards .....	118
Exhibitors .....	120

## Japan & Kyoto

Maps of Japan & Kyoto City .....	122
Education System in Japan.....	123
Kyoto (Heian-kyo) .....	123
Largest Full Moon of the Year: 10th, Sunday.....	124
Special Tour: 13th, Wednesday.....	124
Ikebana Experience: 14th, Thursday.....	124
Gozan-no-Okuribi: 16th, Saturday .....	124

## Miscellaneous Topics

History of IHTCs .....	126
Personal Memories of IHTCs .....	127
Special Public Seminar .....	128
Joule Energy Contest (JENECON) .....	129
Young Researcher Meeting (YRM) .....	130
Word Heritage.....	131
Cold and/or Hot Breaks .....	133

## Committees, Author Index, Statistics, End-Credit Rolls

Meetings.....	136
AIHTC .....	136
IHTC-15 Committees .....	137
Author Index .....	139
Statistics .....	153
End-Credit Rolls .....	154
Memo .....	

## Announcement of IHTC-16, Beijing, 2018

## Welcome



Welcome to the historic city of Kyoto and to the 15th International Heat Transfer Conference (IHTC-15), 2014.

Heat transfer, a major academic discipline originating from seminal studies of thermal non-equilibrium phenomena, has grown to include the science of transport phenomena for ions, electrons, and chemical species. This discipline deals with essential fundamentals such as energy, materials, food and water, and also with a range of technologies that support modern lifestyles. Heat transfer is now a vitally important field, as scientists and engineers face difficult challenges: development of cutting-edge technologies for highly efficient energy systems, massive information/communication equipment, high-value-added manufacturing, and for comfortable living environments, to name just a few. Due to its enormous scope and impact, the field of heat transfer is often called “thermal science.”

For more than 60 years, IHTC events, nicknamed “Heat Transfer Olympics,” have achieved worthy goals by offering unique opportunities for scientists and engineers to gather together, exchange state-of-the-art knowledge, and develop personal networks. This year’s Organizing Committee has continued IHTC traditions while improving certain aspects, so that IHTC-15 will meet the requirements of the rapidly changing scientific environment in the 21st century. First, we employed a rigorous review process for submitted manuscripts to ensure that the archive of contributed papers will be of journal quality. As a result, from the initially received collection of 1300 extended abstracts, 700 full papers were finally accepted for IHTC-15. To facilitate lively discussions, all of these papers will be presented in oral sessions, unlike the poster sessions of previous IHTCs. These documents will be officially registered and included in the Begell House IHTC Digital Library along with all previous IHTC papers.

In addition to exploring traditional research areas, IHTC-15 asks an important question in order to better serve society: “What is the role of thermal science in meeting societal challenges?” Clearly, we face major issues such as ensuring sustainable development, maintaining healthy ageing, providing sufficient food for all, and stimulating economic growth, and we need to develop scientific and technological solutions. Successfully meeting these challenges requires that we shape our current and future roles more concretely, and formulate an interdisciplinary framework for collaboration among colleagues active across a wider range of physical, life, and information sciences. Therefore, in addition to 30 keynote lectures, we have invited prominent scientific leaders and pioneers to deliver lectures and speak on panels. The Conference Program is now enriched with several special events such as the Special Public Seminar, the Joule Energy Contest, and the Young Researchers Meeting.

We are committed to making your time in Kyoto as enjoyable and productive as possible. To facilitate this process, we are providing the EventMobile app for mobile devices, so you can easily access information about technical programs, session rooms and speakers, and also customize a personal schedule. To nourish your body as well as your mind, we have ensured the provision of quality Japanese food, “Washoku,” which was designated an intangible cultural heritage by UNESCO earlier this year. We hope you will enjoy exploring traditional Japanese culture around Kyoto. If you extend your stay, you can experience the Gozan Fire Festival in Kyoto that takes place on Saturday evening, August 16, an event with an ancient history that is both exciting and profound.

Finally, I am grateful to the Science Council of Japan, the Heat Transfer Society of Japan, the International Centre for Heat and Mass Transfer, and numerous cooperating technical societies and companies, for their generous supports. I would also like to express my sincere thanks to the members of the Assembly of IHTCs, all IHTC-15 Committee members, the secretariat, and student aids, for their enormous contributions in organizing and running this outstanding conference.

**Nobuhide Kasagi**

Conference Chair

Vice President, The Assembly for International Heat Transfer Conferences  
Deputy Director-General, Center for Research and Development Strategy,  
Japan Science and Technology Agency  
Professor Emeritus, The University of Tokyo

## Welcome Greetings from the Heat Transfer Society of Japan (HTSJ)



On behalf of the Heat Transfer Society of Japan (HTSJ), I am pleased to extend my hearty welcome to all IHTC-15 participants in Kyoto.

The HTSJ was established in 1961 after carrying out much challenging research, at the dawn of heat transfer studies in Japan. Since then, heat transfer research in Japan has burgeoned not only along fundamental lines but also in newly developed interdisciplinary fields of micro- and nano-scale phenomena, bio-heat and mass transfer, chemical reactions, interfaces, quantum phenomena, electronics, and various energy-related phenomena. Research on a broad range of fronts has contributed to the realization of superlative energy saving technologies in Japan.

The 50th HTSJ anniversary ceremony was held in November, 2011; we reviewed 50 years of concerted effort and embarked on a new era of innovations. To commemorate this occasion, the HTSJ established a new international prize, the “Nukiyama Memorial Award,” to be awarded to a globally distinguished researcher every two years. The second presentation of this award will be celebrated during IHTC-15.

The previous IHTC in Japan was the 5th IHTC, held in Tokyo in 1974, forty years ago. It is our great pleasure to host the IHTC again, and I hope all participants will have a comfortable stay and enjoy not only fruitful technical discussions, but also traditional Japanese culture, food and nature in the ancient capital city, Kyoto.

### **Ken Okazaki**

President, The Heat Transfer Society of Japan  
Professor, Tokyo Institute of Technology

## Welcome from the Assembly for International Heat Transfer Conferences (AIHTC)



The Assembly for International Heat Transfer Conferences (AIHTC), along with its delegates and 23 member national organizations, is delighted to welcome all the participants from around the world to the 2014 International Heat Transfer Conference in Kyoto, Japan, held under the joint-sponsorship of the Science Council of Japan and the Heat Transfer Society of Japan.

The AIHTC was founded in Chicago in 1966 to provide a worldwide forum for the presentation, discussion, and identification of future directions and priorities in the various domains of thermal science and engineering. This 15th IHTC is a testament to the wisdom of the founders of AIHTC and to the vitality of the international thermal science and engineering community. The Heat Transfer Society of Japan has been a stalwart member of the AIHTC since its earliest days, serving as co-host of the 5th International Heat Transfer Conference in Tokyo in 1974, nurturing this domain of science and technology through its annual National Heat Transfer Symposium and its Thermal Science and Engineering Journal, and co-hosting us once again at this 2014 IHTC.

These two Conferences, 40 years apart, along with the active participation of Japanese researchers and engineers in the quadrennial IHTC's, serves to showcase Japan's continuing contributions on the world stage and its pivotal role as a major international center for heat transfer and thermal engineering research and development.

We look forward to an outstanding IHTC-15—good science, good friendship, and good food!

### **Avram Bar-Cohen**

President, The Assembly for International Heat Transfer Conferences  
Distinguished University Professor  
University of Maryland

## Welcome Address



It is a great pleasure for me, as Science Council of Japan representative, to welcome all of you to the 15th International Heat Transfer Conference (IHTC-15).

Science Council of Japan is an organization representing a broad range of the Japanese scientific community in the fields of humanities, social sciences, life sciences, physical sciences, and engineering. Our main purpose is to fulfill the diverse social responsibilities of the Japanese scientific community through the development of science.

Since its establishment in 1949, Science Council of Japan has constantly promoted international exchange in science through its cooperation with academic organizations from around the world. To this end, we have hosted international conferences in Japan, and sent researchers to conferences held abroad.

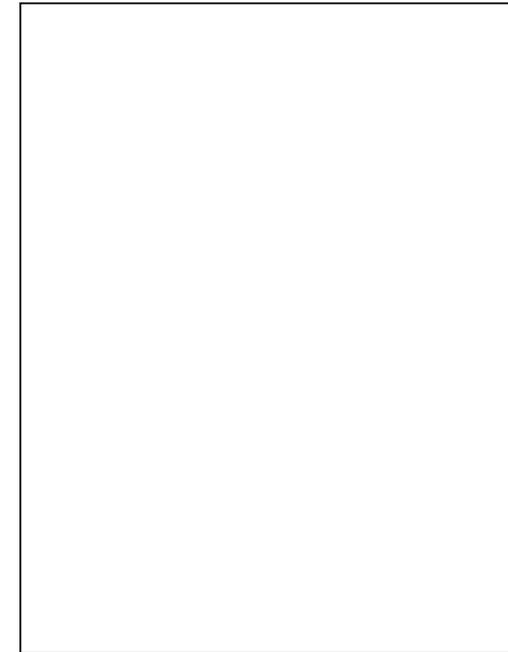
By co-hosting this International Conference with the Heat Transfer Society of Japan, I am especially delighted to have this opportunity to welcome world-renowned scientists in this field to Kyoto, and I expect that their lectures, papers, and panel discussions, will inspire significant communication and contribute to further progress. IHTC-15 is a particularly opportune occasion to share and appreciate progress at the frontier of heat transfer research, and ensure that the fruits of our research bring maximum benefit to humankind.

I would like to thank all the supporters and organizing committee members, and I share their hope that IHTC-15 will be a resounding success. I also hope that each of you will have an enjoyable and memorable stay in Kyoto and gain a deeper understanding of Japanese culture.

### **Fumiko Kasuga**

Vice-President, Science Council of Japan  
Director, National Institute of Health Sciences, Ministry of Health, Labour and Welfare, Japan

## Message from the Prime Minister of Japan



*(Photo is permitted only on the hardcopy)*

© Courtesy of Cabinet Public Relations Office, the Government of Japan

I am pleased to extend my hearty welcome to all participants from all over the world on this occasion of the opening ceremony of the 15th International Heat Transfer Conference in Kyoto.

I am happy to express that the conference is held under the joint-sponsorship of the Science Council of Japan and the Heat Transfer Society of Japan.

I wish a great success of this international conference for advancement in the field of Heat Transfer.

### **Shinzo Abe**

Prime Minister

# Acknowledgments

## Hosting Organizations

The Heat Transfer Society of Japan  
Science Council of Japan



## Umbrella Organization

The Assembly for International Heat Transfer Conferences



## Supporting Organizations

International Centre for Heat and Mass Transfer  
The Japan Society of Mechanical Engineers  
The Society of Chemical Engineers, Japan



## Cooperative Organizations

Kyoto City  
Kyoto Prefecture  
Kyoto Convention Bureau  
Kyoto City Board of Education  
Kyoto Prefectural Board of Education  
Japan Science and Technology Agency  
Institute of National Colleges of Technology

Architectural Institute of Japan  
Atomic Energy Society of Japan  
Combustion Society of Japan  
Cryogenics and Superconductivity Society of Japan

Gas Turbine Society of Japan  
Heat Pump & Thermal Storage Technology Center of Japan  
Hydrogen Energy Systems Society of Japan  
Japan Society of Energy and Resources  
Japan Society of Thermophysical Properties  
Japan Solar Energy Society  
Society of Automotive Engineers of Japan  
The Japan Society for Aeronautical and Space Sciences  
The Japan Institute of Energy  
The Japan Institute of Marine Engineering  
The Japan Society of Calorimetry and Thermal Analysis  
The Japan Society of Fluid Mechanics  
The Japan Society of Refrigerating and Air Conditioning Engineers  
The Japanese Society for Multiphase Flow  
The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan  
The Thermoelectrics Society of Japan  
The Visualization Society of Japan

## Sponsors

Begell House Inc.  
<http://www.begellhouse.com/>



Kameyama Candle House  
<http://k-design.kameyama.co.jp/index.html>



Suntory Holdings Limited  
<http://www.suntory.com/index.html>



# General Information



From the “Choju Giga” (The Scrolls of Frolicking Animals)  
handed down for centuries at Kozanji Temple.

# General Information

## Registration, Name Badges, Tickets

### Hours and Location

The registration desk will be located at the entrance hall of the Kyoto International Conference Center and will be open during the following times:

Sunday,	10 August	15:00 - 19:00
Monday,	11 August	07:30 - 17:00
Tuesday,	12 August	07:45 - 17:00
Wednesday,	13 August	07:45 - 12:00
Thursday,	14 August	07:45 - 19:00
Friday,	15 August	08:00 - 16:00

### On-site Registration Fees

Regular* <sup>1</sup>	80,000 JPY
Student with Banquet* <sup>1</sup>	50,000 JPY
Student without Banquet* <sup>2</sup>	40,000 JPY
Accompanying Person* <sup>3</sup>	10,000 JPY

\*1 Includes admission to all technical sessions, conference proceedings data on a USB flash drive, final program, name badge, welcome reception on Aug.10, lunches on Aug. 11, 12, 14 and 15, conference banquet on Aug. 14, and break refreshments.

\*2 Includes admission to all technical sessions, conference proceedings data on a USB flash drive, final program, name badge, welcome reception on Aug.10, lunches on Aug. 11, 12, 14 and 15, and break refreshments.

\*3 Includes name badge, welcome reception on Aug.10, and conference banquet on Aug. 14.

\* Students must present a valid student ID.

### Name Badge

Each delegate registered for IHTC-15 will receive a name badge at the registration desk. Admission to all conference functions is via the official IHTC-15 badge only. Please wear your name badge at all times

### Tickets

Each delegate will receive various tickets together with their name badge at the registration desk. The number and type of tickets you receive depend on your registration category. Use your name holder to keep your tickets handy. The conference organizers cannot reissue any ticket.

## Welcome Reception

Sunday, 10 August, 18:30–20:00, Swan and Garden  
Everybody with a name badge is welcome.

## Lunches

Enjoy lunches in the designated lunch areas, Sakura and Swan. Please exchange your lunch ticket of the day for a lunch box at the entrance to Sakura and Swan.

In accordance with public health center guidelines, lunch boxes must be consumed within the conference center. Thank you for your cooperation.

## Refreshment Breaks

Refreshment services will be available during the following times near the entrance of Room A, Rooms C1 & C2, and Room D.

Monday,	11 August	15:30 - 16:00
Tuesday,	12 August	08:00 - 08:35 16:00 - 16:30
Wednesday,	13 August	07:45 - 08:15
Thursday,	14 August	07:45 - 08:15
Friday,	15 August	08:00 - 08:35 14:50 - 15:10

## Conference Banquet

Thursday, 14 August, 19:00–21:00, Event Hall  
Individual banquet tickets are required to enter the Event Hall. The Hall opens at 18:15.

## Farewell

Friday, 15 August, 17:20–18:00, in front of Room D  
Everybody with a name badge is welcome.

## Questionnaire to Facilitate Food Saving (only for persons who skip at least one meal)

Although we are fortunate to have more than a thousand participants from 41 countries (as of July 9), predicting the required numbers of lunches and dinners is extremely difficult. To minimize the amount of leftover food that will go to waste, please answer the questionnaire at:

<https://www.t.kyoto-u.ac.jp/survey/ja/aihtc/food-saving>

**no later than July 25, 2014.** Those who kindly fill out the questionnaire will receive a small token of our appreciation at the registration desk.

## Smoking

Smoking is strictly prohibited anywhere other than in the designated smoking areas outside.

## EventMobile app for IHTC

### TripBuilder Media EventMobile

EventMobile is a mobile app for conferences that helps participants browse the conference schedule, check information about speakers, view floor maps, check exhibits, create customized schedules, received alerts from the conference office, and also connect with other participants.



### Downloading the App

Enter <http://www.tripbuildermedia.com/apps/ihtc-15> in your mobile device's web browser. This link will automatically detect your phone type and access the appropriate page where you can download the app. Or, just snap the QR code & download the app now!



### Login ID and Password

Only IHTC-15 participants can log in to EventMobile. Your ID and password will be sent to you by email after you complete the registration process. The ID and password are also printed on your name badge sheet. If you registered onsite or have forgotten your ID or password, please inquire at the registration desk.

### To edit your information

**Participants:** To edit your profile on the Attendee List, tap the MyProfile icon on the main screen and then tap the Edit icon in the upper right corner.

**Speakers & Exhibitors:** As a speaker, you can edit your entry in the Speakers section of the app. As an exhibitor, you can edit your entry in the Exhibitors section of the app. You should have received an email from TripBuilder Media that includes a URL and login credentials to edit these data. Simply follow the instructions in the TripBuilder Media email to edit your data and create poll questions. If you have forgotten your ID or password, please inquire at the registration desk.

## Wireless Network System

Wireless network service will be available in the conference area of the Kyoto International Conference Center. The network name and login code are printed on your name badge sheet.

## Conference Proceedings

### Proceedings on USB drive

The conference program and proceedings of the keynote and general papers will be distributed on USB drives.

### Proceedings on Homepage

A special site on the conference homepage that has the conference proceedings will go live during the conference. You will be able to access the keynote and general papers from this site.

<http://www.ihtc-15.org>

A password is required to access this site and view the papers. The password is printed on your name badge sheet.

## IHTC Digital Library (IDL)

The AIHTC and Begell House have agreed to establish an IHTC Digital Library (IDL). The IDL is an online archival library with an interactive web interface and advanced search engine for the use of active researchers and engineers. It will

# General Information

contain past and future Proceedings of the International Heat Transfer Conferences held under the auspices of the AIHTC. Thus, all papers presented will be uploaded and included in the IDL after IHTC-15.

<http://ihtcdigitallibrary.com/>

## Cover page

### —Gaifukaisei (Katsushika Hokusai)—

The picture on the cover page is a reproduction of an Ukiyo-e print of Mount Fuji. Ukiyo-e is a style of woodblock printing that first emerged in the late sixteenth century. Ukiyo-e are created using multiple woodblocks, each skillfully carved, inked with a different color, and sequentially printed to produce single images. This Ukiyo-e was made by Katsushika Hokusai, one of the most famous Japanese artists of the 18th century Edo-period. Hokusai is best known as the creator of the Ukiyo-e series “Fugaku Sanjurokei,” meaning thirty-six views of Mount Fuji, and the Gaifukaisei image is included in this series. “Gaifu” means south wind and “Kaisei” means clear weather. The picture depicts the beloved mountainside, dyed red by the dawn light of the sun on a clear summer day, and is also known as “the red Mount Fuji.”

Mount Fuji, or Fuji-san, is the highest mountain in Japan, at 3,776m. An active stratovolcano that last erupted in 1707–08, it was designated by UNESCO as a World Heritage Site in 2013. [<http://www.mtfuji.or.jp/en/>]

From the standpoint of thermo-fluid dynamics, lenticular cloud formations above Mt. Fuji are very famous and beautiful. You can enjoy spectacular images and descriptions of various cloud formations at the following site:

*60 INSANE CLOUD FORMATIONS FROM AROUND THE WORLD [PICS]*

<http://matadornetwork.com/bnt/60-insane-cloud-formations-from-around-the-world-pics/>

## IHTC Logo

A special logo for the IHTC was authorized by the AIHTC on October 16, 2013, and introduced in 2014 for the first time since the conference was held, in 1951. The logo shown here offers a metaphorical expression of multi-modal



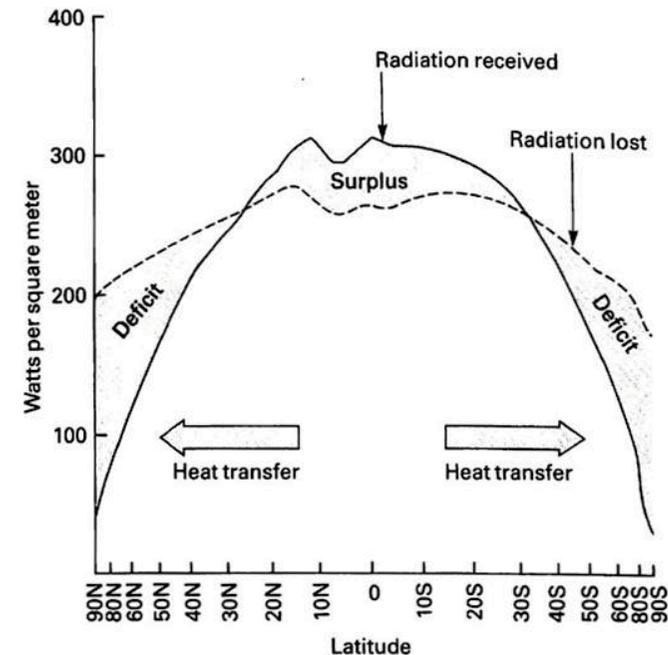
and multi-scale heat transfer phenomena. The center sphere with the small sphere on a ring stands for the sun and the earth, or a molecule with an orbiting electron, while the outer arcs represent flame, heat conduction, and radiation.

This logo is now used on the conference homepage, conference program, documents, USB drive, other related items, and by the IHTC Digital Library that Begell House has established.

## Global Information

### The Greatest Heat Transfer on Earth

*How many people are aware of it?*



Comparison of the incoming solar radiation and outgoing terrestrial radiation.

J. R. Eagleman, *Meteorology, the Atmosphere in Action*, 2nd ed., Wadsworth Pub. Co. (1985).

# Technical Program



From the “Choju Giga” (The Scrolls of Frolicking Animals)  
handed down for centuries at Kozanji Temple.

## Important Notes to Presenters, etc.

To presenters:

Please be sure to arrive at least 5 minutes before your session's starting time, and please inform the session staff of your arrival.

### **Only at the General Sessions:**

The timing and duration of conference events is strictly controlled, using an automatic timer that runs through each session. This way, events in one room are synchronized with events occurring in other rooms. Please obey the following limits.

13 min.: presentation
5 min.: discussion
2 min.: transition

To chairpersons:

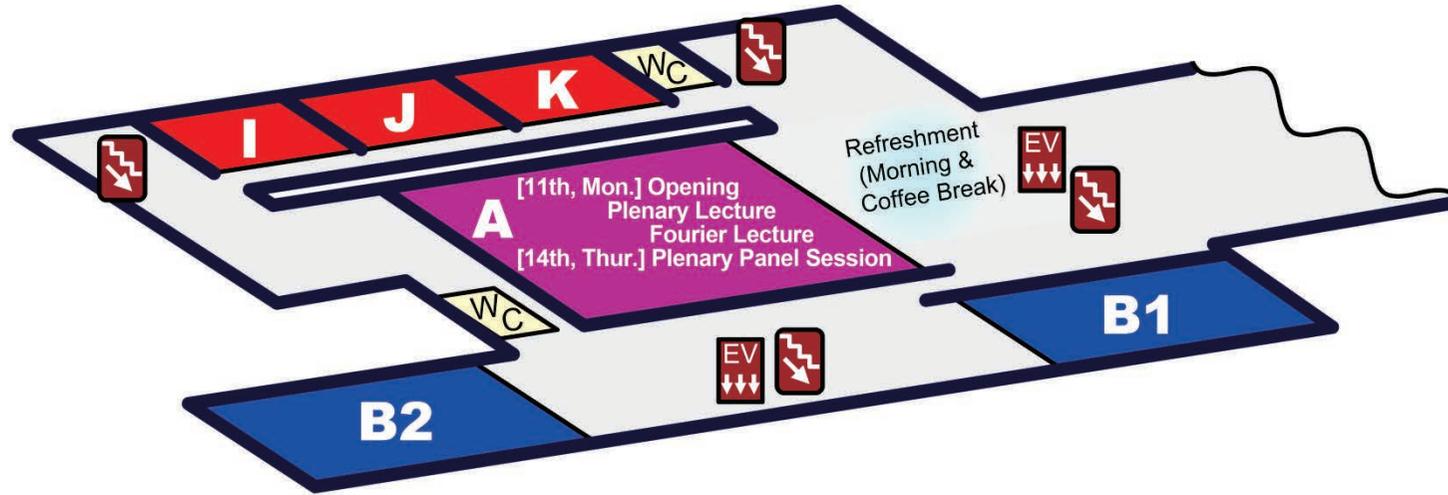
Please inform the session staff of your arrival prior to the start of the session.

### **Only at the General Sessions:**

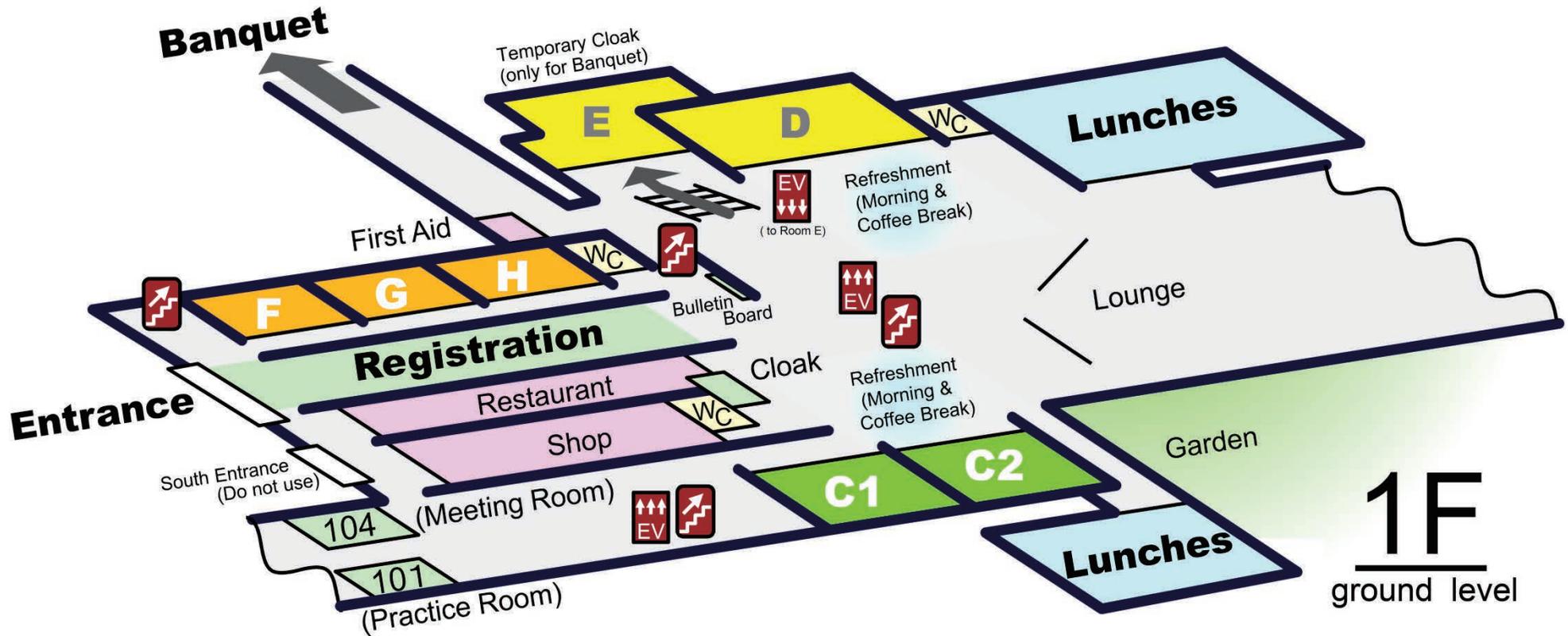
Please see the details in the instruction for the chairpersons distributed separately. Even if a “**no-show**” occurs, please **DO NOT** jump ahead of the schedule.

To questioners/commentators:

Please clearly identify yourself before asking your question or making your comment.

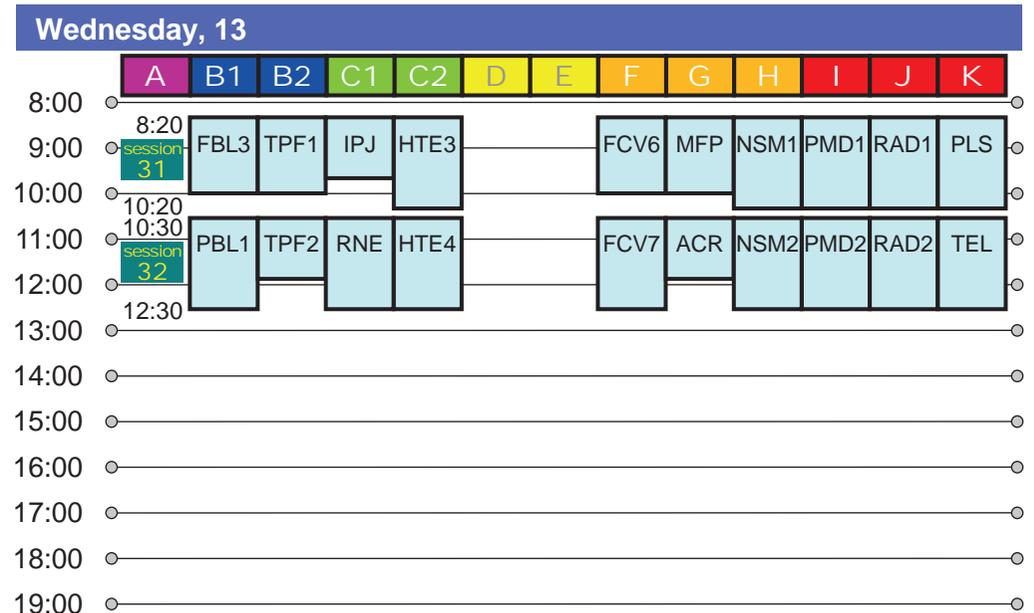
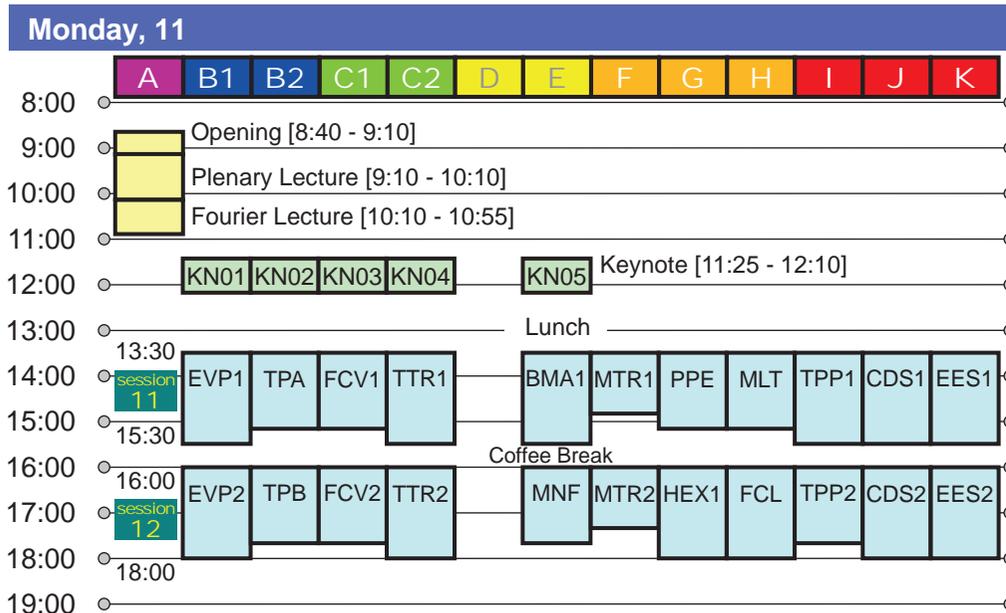
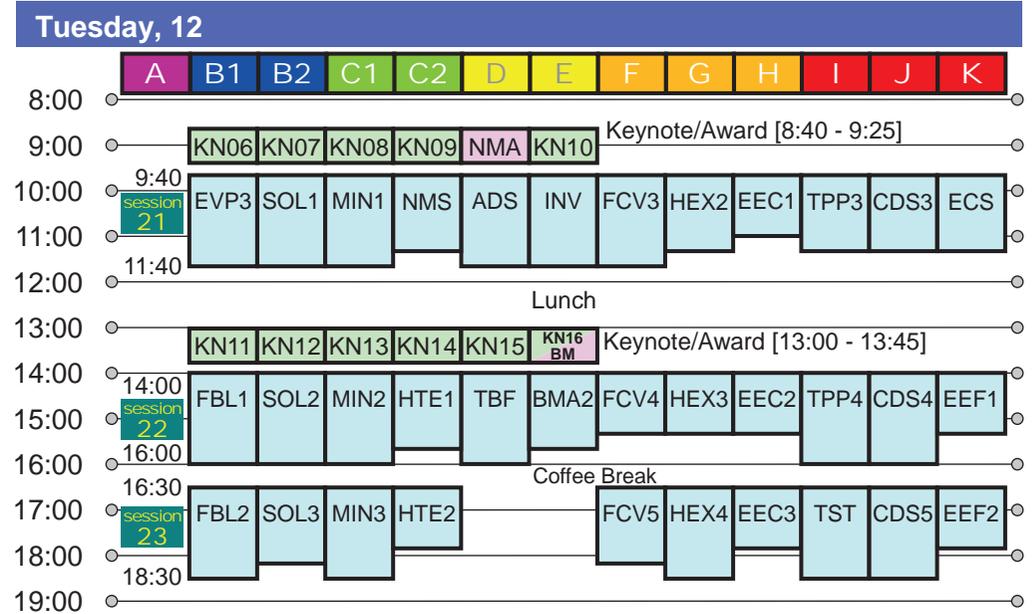
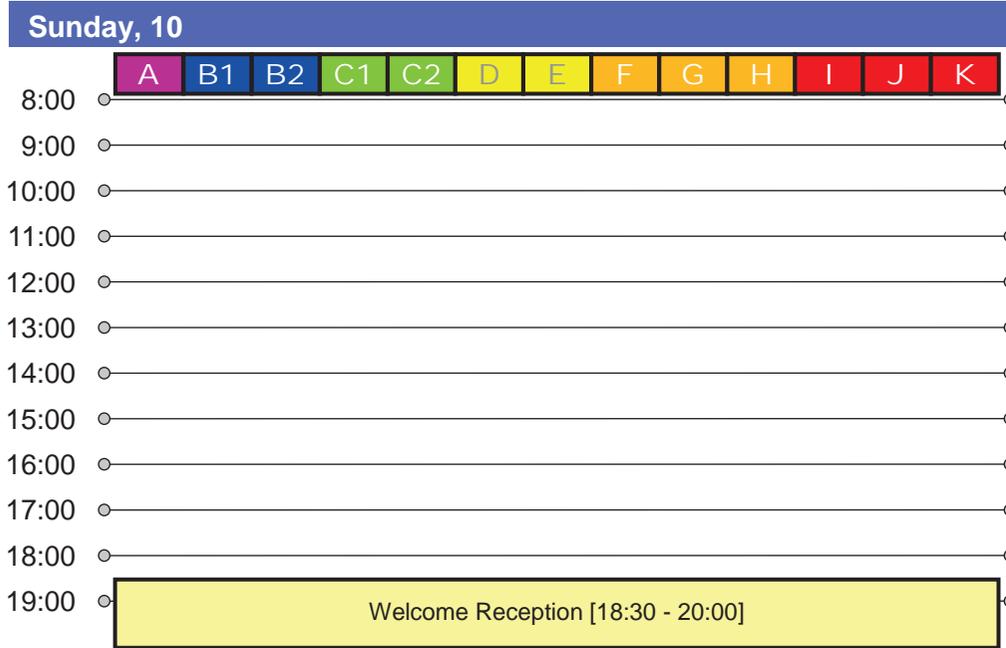


**2F**  
upper level

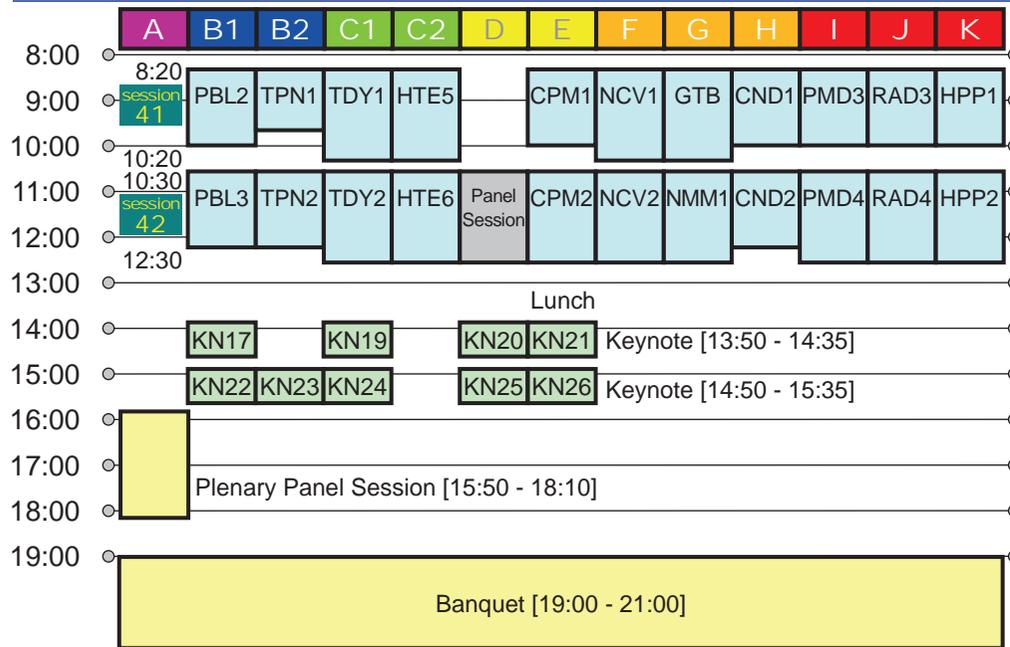


**1F**  
ground level

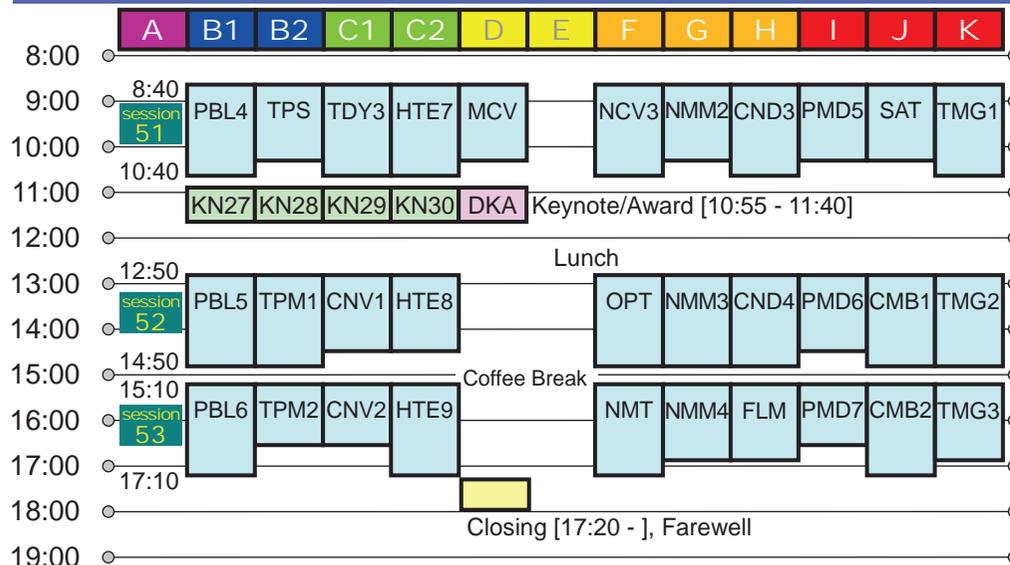
# Schedule at a Glance



## Thursday, 14



## Friday, 15



### 3-letter Codes for General Sessions

ACR	Air Conditioning and Refrigeration (1)
ADS	Adsorption and Desorption (1)
BMA	Bio and Medical Applications (2)
CDS	Condensation (5)
CMB	Combustion (2)
CND	Conduction (4)
CNV	Convection (2)
CPM	Computational Methods (2)
ECS	Energy Conversion and Storage (1)
EEC	Electronic Equipment Cooling (3)
EEF	Energy Efficiency (2)
EES	Energy Environmental Systems (2)
EVP	Evaporation, Droplet/Spray/Liquid Film (3)
FBL	Flow Boiling (3)
FCL	Fuel Cell (1)
FCV	Forced Convection (7)
FLM	Film (1)
GTB	Gas Turbine (1)
HEX	Heat Exchanger (4)
HPP	Heat Pipe (2)
HTE	Heat Transfer Enhancement (9)
INV	Inverse Problems (1)
IPJ	Impinging Jet (1)
MCV	Mixed Convection (1)
MFP	Materials and Foods Processing (1)
MIN	Measurement and Instrumentation (3)
MLT	Molecular Transport (1)
MNF	Manufacturing (1)
MTR	Mass Transfer and Drying (2)
NCV	Natural Convection (3)
NMM	Nano/Micro Scale Measurement and Simulation (4)
NMS	NEMS/MEMS (1)
NMT	New Materials (1)
NSM	Numerical Simulation (2)
OPT	Optimal Control/Theory (1)
PBL	Pool Boiling (6)
PLS	Plasma (1)
PMD	Porous Media (7)
PPE	Photon, Phonon and Electron Transport (1)
RAD	Radiation (4)
RNE	Renewable Energy (1)
SAT	Spray and Atomization (1)
SOL	Solar Energy (3)
TBF	Two-phase, Bubble Flow, Water Film (1)
TDY	Thermodynamics (3)
TEL	Thermoelectric Devices (1)
TMG	Thermal Management (3)
TPA	Two-phase, Application (1)
TPB	Two-phase, Boiling/Condensation (1)
TPF	Two-phase, Flow Behaviour (2)
TPM	Two-phase/Multiphase Flow (2)
TPN	Two-phase, Numerical Simulation (2)
TPP	Thermophysical Properties (4)
TPS	Two-phase, Spray/Droplet (1)
TST	Thermal Storage (1)
TTR	Turbulent Transport (2)

# Plenary and Fourier Lectures

11th, Monday

Room A

**09:10 - 10:10**

**Plenary Lecture**

## ***Science of Scientific Advice***



**Hiroyuki Yoshikawa**

Director, Center for Research and Development Strategy,  
Japan Science and Technology Agency  
Past President of the University of Tokyo  
and the International Council of Science  
Japan

### **Abstract**

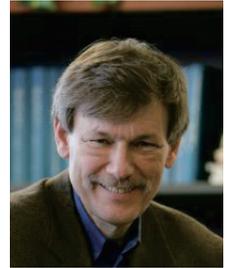
As the most part of society is affected by scientific knowledge, the wisdom of its use is indispensable. The use contains various issues. As an example, heat is definitely a discipline in science, so scientists with special knowledge research the heat. Looking at the heat in society, however, we find it everywhere as complicated systems. In all artefacts such as machinery of various kinds it often plays the major role. Heat is essential for household, too.

Heat system of living beings is another which is to be admired. Thus, society is full of heat systems and the governance of all is now a high priority for security and sustainability; this requests the disciplinary mix even of fields other than heat. Then, who will care and govern it? Definitely government is obliged to do it. As politicians or civil servants are not specialists in heat, they can act correctly only when they receive right advices from scientists. In this lecture, this role of scientists will be discussed more generally to depict new scientists as a good advisor to government.

**10:10 - 10:55**

**Fourier Lecture**

## ***Thermal Science and Engineering - From Macro to Nano in 200 Years***



**Avram Bar-Cohen**

Distinguished University Professor, PhD  
President, Assembly for International Heat Transfer Conferences  
Department of Mechanical Engineering  
University of Maryland  
U.S.A.

### **Abstract**

During the past 200 years thermal science and engineering has experienced a remarkable transformation of scale. Principles and theories that had been established in support of steam engine development and design, at the meter and centimeter scale, are now routinely applied to the design and optimization of nanoelectronic devices, at the micron and nanometer scale. This Fourier Lecture will briefly review the genesis and foundations of the heat transfer discipline and its formative years, continue with a recapitulation of the history of the Assembly for International Heat Transfer Conferences, and then delve into the evolution and “inward migration” of thermal packaging of electronics to illustrate this transformation of scale

14th, Thursday  
15:50 - 18:10  
Room A

## “The Role of Thermal Science in Meeting Societal Challenges”

### *Moderator*

**Prof. Nobuhide Kasagi**  
Japan Science and Technology Agency  
The University of Tokyo  
Japan

### *Panelists*

**Prof. Yildiz Bayazitoglu**  
Rice University  
Department of Mechanical Engineering and Materials Science  
U.S.A.

**Prof. Yogesh Jaluria**  
Rutgers University  
Department of Mechanical and Aerospace Engineering  
U.S.A.

**Prof. Joon Sik Lee**  
Seoul National University  
Department of Mechanical and Aerospace Engineering  
Korea

**Prof. Dimos Poulikakos**  
Swiss Federal Institute of Technology in Zurich (ETH Zurich)  
Switzerland

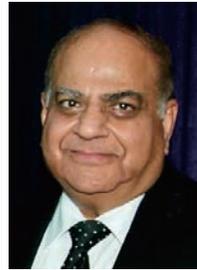
**Prof. Peter Stephan**  
Technische Universitat (TU) Darmstadt  
Germany



N. Kasagi



Y. Bayazitoglu



Y. Jaluria



J. S. Lee



D. Poulikakos



P. Stephan

### **Abstract**

Science and technology are helping to drive solutions to current and future global challenges. Economic progress in every community worldwide has meanwhile become increasingly interdependent with massive traffic of information and knowledge. Challenges related to ensuring sufficient food and water, natural resources, quality healthcare, and a sustainable environment for a growing population demand science, innovation and international dialogue. Addressing these challenges also depends upon discoveries emerging from the convergence of physical, life, engineering, and social sciences in innovative ways that are most useful to society.

We, as a member of the world science community, are faced to several important questions. What roles should scientists and engineers of thermal science play in resolving various societal issues and leading further balanced societal development? How research themes should be designed and set forth in order to respond to societal wishes while keeping spontaneous motivation of researchers? How those issues and research themes should be tackled with for more productive and innovative outcomes?

This panel is focused upon these important questions by inviting leading scientists. Some of the concrete issues are research on research planning, public funding and its usage, promotion of research collaboration, linking research outcomes to innovation, human resource development, norm of science, and scientific advice to policy, to name a few. Forward-looking discussions empowered by international leaders of different views will hopefully shape the role and responsibility of thermal science and engineering in the years to come.

# Keynote/Award Sessions in Parallel

11th, Monday

Keynote (11:25 - 12:10)

	Room B1	Room B2	Room C1
	Stephan Kabelac Helmut Schmidt University, Germany	Pedro Coelho University of Lisbon, Portugal	Charl G. du Toit North-West University, South Africa
11:25	<p><b>KN01</b> <b>Controlling Hydrodynamics, Heat Transfer and Phase Change in Thin Liquid Films and Drops</b></p>  <p>Dr. <b>Tatiana Gambaryan-Roisman</b> Technische Universität Darmstadt, Germany</p> <p><b>Abstract</b> Many technological applications in energy and process industry rely on transport processes and phase change in liquid films and drops. These processes also play an important role in fabrication of patterns on substrates, for example, by inkjet printing or dip coating. Controlling hydrodynamics and transport processes in liquid films and drops is an important challenge in the variety of applications. Most of the efforts towards the achievement of this goal have been focused on modification of substrates in contact with films and drops, primarily through using structured wall surfaces. In the present paper an overview of the phenomena triggered by surface structuring and by alternative methods of influencing films and drops is given. In particular, hydrodynamics and heat transfer of films over substrates with spatially varying thermal properties are considered.</p>	<p><b>KN02</b> <b>Multi-scale Interfacial Phenomena and Heat Transfer Enhancement</b></p>  <p>Prof. <b>António L. N. Moreira</b> University of Lisbon, Portugal</p> <p><b>Abstract</b> Recent inventions in micron- and submicron- scale systems driven by the rapidly expanding capability of micromachining technology have shown tremendous benefits in flow processes in many established and emerging fields of growing economic importance and great potential for innovation. The detailed understanding of the governing mechanism are at the heart of realizing many future technologies, but poses several new challenges relating multidisciplinary scientific areas: surface energy becomes increasingly important at the micron- and submicron- scales and processes turn out to be largely affected by the physical geometry of the domain and the molecular structure of the surface. Interfacial transport phenomena integrate information from microfluidics, surface chemistry, biological sciences, micro fabrication, to develop research dedicated to improve an in-depth understanding of the basic physics in the above fields, as well as to provide useful information for direct applications. It refers to mass, momentum, energy and entropy transfer across and along fluid/fluid and fluid/solid interfaces, including the interfacial kinetics in multiphase combustion systems. In this context, wettability becomes an important influential parameter which can be changed by chemically treatment, patterning, or only different material deposition onto the surface. New micro/nano structured surface fabrication techniques allow tailoring special lyophobic and lyophilic mixed surfaces with great potential for miniaturized heat transfer devices and are currently driving a renewable research interest for both, experimental and theoretical, studies in multi-scale transport phenomena. This paper intends to review the interfacial transport phenomena from the perspective of their potential to enhance both, the heat transfer and the critical heat flux, in multi-scale heat transfer applications, namely pool boiling, spray and droplet</p>	<p><b>KN03</b> <b>Heat Transfer in Tubes in the Transitional Flow Regime</b></p>  <p>Prof. <b>Josua P. Meyer</b> University of Pretoria, South Africa</p> <p><b>Abstract</b> Not much work has been done in the transitional flow regime in tubes where the flow changes from laminar to turbulent flow. This region has become more important with the introduction of enhanced tubes as they give a good compromise between heat transfer and pressure drop, and therefore, more data is needed for design purposes. The purpose of this keynote paper is to give an overview of the state of the art, to present some of the latest work, to discuss it critically and to identify gaps and opportunities for more work that needs to be done. Challenges with experimental work and methodologies will also be highlighted. The state of the art is discussed in terms of the definition of transition, different heating and cooling boundary conditions, the effect of different types of inlets for macro- and microtubes, the effect of relative tube roughness, different types of geometries with specific reference to enhanced tubes, and the effect of different types of fluids on transition including nanofluids. It is hoped that this paper will be used as a guideline for future research.</p>

Keynote (11:25 - 12:10)

11th, Monday

	Room C2	Room D	Room E
11:25	<p>Luiz Fernando Milanez University of Campinas, Brazil</p> <p><b>KN04</b> <b><i>Heat and Mass Transfer in Wax Deposition in Pipelines</i></b></p>  <p>Prof. <b>Angela O. Nieckele</b> PUC-RIO, Brazil</p> <p><b>Abstract</b> Wax deposition continues to be a critical operational problem in crude oil pipelines operating in cold environments. Therefore, accurate prediction of wax deposition rates and deposited wax spatial distribution is invaluable information for the design of subsea lines. Unfortunately, wax deposition is a complex process for which the mechanisms are still not fully understood. The present paper is part of an ongoing research effort directed at identifying the relative importance of the mechanisms responsible for paraffin deposition. The research program encompasses experiments at the laboratory scale and numerical simulations. The experiments employ test sections with simple geometries with well-defined and controlled boundary and initial conditions, using simple oil-paraffin laboratory solutions, and with known transport properties. The results obtained from these controlled experiments are then compared to numerical simulations that try to faithfully reproduce the experimental conditions. Contrary to the experimental studies, the simulations studies permit that different models proposed for deposition mentioned in the literature can be tested individually, allowing, thereby, an assessment of the relative importance of each of the deposition mechanisms. The present paper focus on the comparison of measured and predicted laminar and turbulent deposition data obtained under controlled conditions with numerical simulations of the conservation equations of mass, momentum, energy and concentration. Based on the experimental evidences, different deposition models were investigated. All models predicted the same deposit thickness at steady state with a reasonable agreement with experimental data. However, the transient evolution of the deposit was not well capture, indicating that the deposition mechanisms proposed in the literature still do not proper represent the phenomenon.</p>	 <p><b>IHTC</b> SINCE 1951</p>	<p>Shigenao Maruyama Tohoku University, Japan</p> <p><b>KN05</b> <b><i>Engineering Approach to Irreversible Electroporation</i></b></p>  <p>Prof. <b>Hiroshi Takamatsu</b> Kyushu University, Japan</p> <p><b>Abstract</b> Irreversible electroporation (IRE) is a new less-invasive therapy to treat abnormal tissues by applying a high voltage between the electrodes inserted in the tissue. Since the cell membrane exposed to the potential difference above a certain threshold is permanently disrupted, the IRE has a potential to necrotize cells without causing damage to the extracellular matrix (ECM), which is favorable for tissue regeneration during healing. However, determining an optimal condition of electrode configuration and applied pulses is critically important because an underdose of electrical pulses makes abnormal cells remain alive, while an overdose induces Joule heating of the tissue that causes thermal damage to the ECM. Studies from engineering point of view are therefore of great help to successful IRE. The present keynote lecture is a review of the authors' work associated with the IRE which includes a three-dimensional numerical simulation to estimate electric field and temperature distribution around electrodes, evaluation of cell destruction and thermal injury, detection of ultra-short temperature rise using a thermo-responsive ink, detection of denaturation of protein using Raman spectroscopy, and the IRE experiment with threedimensional cell culture model.</p>

# Keynote/Award Sessions in Parallel

12th, Tuesday

Keynote/Award (08:40 - 09:25)

	Room B1	Room B2	Room C1
08:40	<p>Dimos Poulikakos Swiss Federal Institute of Technology in Zurich, Switzerland</p> <p><b>KN06</b> <b><i>Recent Advances in On-chip Cooling Systems: Experimental Evaluation and Dynamic Modeling</i></b></p>  <p>Prof. <b>John R. Thome</b> Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland</p> <p><b>Abstract</b> Extensive work on flow boiling in microchannels with the aim of cooling of electronics has been undertaken in the past decade. With this knowledge in hand, the next step is to develop detailed, accurate and validated simulation codes for steady-state and transient operation of (i) the entire thermal package (micro-channel evaporator, its inlet and outlet ports, the thermal interface material and the electronic chip), (ii) the flow distribution to multiple chips to be cooled in parallel, and (iii) the rest of the cooling system (condenser, accumulator, driver and controller). First of all, the experimental results reported here will focus on controllability of the cooling systems under conditions of steady-state, transient, balanced and unbalanced heat loads on two parallel pseudo-chips to mimic the real operation of a server blade. The results show that the experimentally evaluated systems are highly effective cooling solutions, providing significant reductions in cooling energy consumption when compared with current air-cooling systems, and guaranteed high uniformity and low levels of the multiple chips' temperatures. Then, three different scales of simulation codes of the two-phase on-chip liquid pump loop are described: (i) thermal cooling package of one CPU, (ii) grouping of multiple thermal packages operating in parallel, and (iii) the entire two-phase cooling loop with flow controls. Simulations are presented to illustrate the features and capability of these codes and to provide evidence of the validity of using two-phase on-chip cooling as an effective green electronics cooling technology.</p>	<p>Gad Hetsroni Israel Institute of Technology, Israel</p> <p><b>KN07</b> <b><i>Heat Transfer in High-temperature Volumetric Solar Receivers</i></b></p>  <p>Prof. <b>Abraham Kribus</b> Tel Aviv University, Israel</p> <p><b>Abstract</b> High conversion efficiency is key to the success and competitiveness of solar thermal power plants, and can be achieved with cycles based on gas turbines and combined cycles that may reach around 30% solar-to-electricity efficiency. This requires the difficult task of heating air with solar radiation to over 1,000°C for the gas turbine inlet. Volumetric receivers made from porous ceramic structures can reach these temperatures but currently their radiation-to-heat conversion is low, typically around 70% rather than the desirable range of over 90%. Modeling of radiative and convective heat transfer in a volumetric receiver enables analysis and optimization of the various geometric and material-dependent properties to achieve a significant performance improvement. The model represents the porous medium as an effective or averaged medium with homogeneous properties. A parametric study of the volumetric receiver performance reveals several guidelines for improving the receiver design. Optimization of geometry (higher porosity and larger characteristic pore diameter) is insufficient, and improved efficiency requires a significant increase in convection heat transfer beyond the normal behavior of ceramic foams, and a reduction in thermal conductivity. Finally, spectral selectivity of the absorber material can also help in further increase of efficiency, in contrast to the common opinion that it is effective only at low temperatures.</p>	<p>Neima Brauner Tel Aviv University, Israel</p> <p><b>KN08</b> <b><i>Transfer Processes in Vortex Flow</i></b></p>  <p>Prof. <b>Sergey Alekseenko</b> Russian Academy of Sciences, Russia</p> <p><b>Abstract</b> Fundamentals of vortex dynamics in application to the problems of power engineering are presented in the current presentation. Recent advances in diagnostics and simulation of vortex flows, multiphase media, flames and heat and mass transfer processes are presented. The basic vortex-based control methods of transfer processes are considered; they are divided into the passive (flow swirl, developed heat exchange surfaces with fins, holes and microrelief) and active (mixing, periodic forcing) methods. Examples of vortex technology application in power engineering, including heat exchangers, burners, furnaces, combustion chambers, hydroturbines and multiphase apparatuses of cyclone and condenser types, are described. In some technical applications several vortex devices and methods are used simultaneously, for instance, in coalwater fuel combustion technology. The conclusions addressing efficiency of application of vortex devices (methods) in different power engineering challenges are made.</p>

Keynote/Award (08:40 - 09:25)

12th, Tuesday

	Room C2	Room D	Room E
08:40	<p>Katsunori Hanamura Tokyo Institute of Technology, Japan</p> <p><b>KN09</b> <i>Nanoscale Thermal Transport in Thermoelectrics</i></p>  <p>Prof. <b>Junichiro Shiomi</b> The University of Tokyo, Japan</p> <p><b>Abstract</b> We investigate nanoscale thermal transport in thermoelectrics by developing methodology to calculate multiscale phonon transport in crystals. With the anharmonic interatomic force constants calculated from firstprinciples, accurate phonon transport calculations was realized by using the lattice dynamics or molecular dynamics methods. The calculations have successfully reproduced and predicted lattice thermal conductivity of various materials in forms of not only single crystal but also solid solutions, where molecular dynamics method is particularly useful to capture local variation of mass and force fields. With the capability to calculate phonon transport properties in mode-dependent fashion, influence of nanostructures on lattice thermal conductivity was estimated by a simple boundary scattering model or more rigorously by solving the phonon Boltzmann transport equation with Monte Carlo method. This multiscale phonon transport calculation is expected to help us understand and design bulk nanostructured thermoelectric materials.</p>	<p>Masanori Monde Saga University, Japan</p> <p><i>Award Lecture</i> <i>The Nukiyama Memorial Award</i></p> <p><i>Heat Transfer at Interfaces</i></p>  <p>Prof. <b>Gang Chen</b> Massachusetts Institute of Technology, USA</p> <p><b>Abstract</b> Research over the past three decades in understanding micro/nanoscale heat transfer phenomena and mechanisms has significantly broadened our knowledge base. Future vitality of the field hinges on further advances in the fundamentals and their application to real world problems. This talk will use examples to illustrate significant opportunities in thinking heat transfer at interfaces --- interfaces between materials as well as between boundaries. At the fundamental level, we witnessed the blurring of the boundaries among heat transfer, physics, and chemistry. Examples will be given including ballistic and coherent heat conduction in solids, and the convergence of heat conduction and thermal radiation when the two surfaces are brought near contact. New insights on heat transfer mechanisms led to opportunities in developing materials for heat transfer and energy applications such as high thermal conductivity plastics and improved thermoelectric energy conversion materials. Great opportunities exist in taking the fundamental understandings and advanced materials to develop innovative systems. Examples will be giving including solar steam-generation and thermoelectric energy conversion.</p>	<p>Sebastian Volz Ecole Centrale Paris, France</p> <p><b>KN10</b> <i>Experimental Inverse Problems: Potentials and Limitations</i></p>  <p>Prof. <b>Denis Maillet</b> University of Lorraine, France</p> <p><b>Abstract</b> Techniques for solving inverse problems as well as their applications are currently rapidly developing in all the different domains of physical sciences and particularly in Heat Transfer. These techniques are usually developed by applied mathematicians, statisticians and signal processing specialists. Experimentalists desiring to go beyond traditional data processing techniques for estimating the parameters of a model with the maximum accuracy feel often ill-prepared in front of inverse techniques. This paper is devoted to the presentation of the common methodology that can be used by a heat transfer specialist in order to solve either a parameter estimation problem (thermal characterization of a material for example) or a function estimation problem (estimation of a transient heat flux at the front face of a wall for example), starting from transient temperature measurements inside or on the external boundaries of the physical system. Once this common methodology shared by specialists of measurement inversion techniques, modeling techniques and experimental techniques, a very wide variety of tools (analysis of the sensitivity matrix, variance-covariance matrix of estimates, regularization and Bayesian techniques) are now available in order to avoid biases at different levels of this kind of involved task.</p>

# Keynote/Award Sessions in Parallel

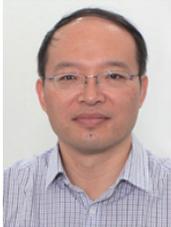
12th, Tuesday

Keynote (13:00 - 13:45)

	Room B1	Room B2	Room C1
13:00	<p>Theo H. van der Meer University of Twente, The Netherlands</p> <p><b>KN11</b> <b><i>Decoding Fundamental Boiling Processes in Micro Domains - Experimental Challenges and Opportunities</i></b></p>  <p>Prof. <b>Yoav Peles</b> Rensselaer Polytechnic Institute, USA</p> <p><b>Abstract</b> Flow boiling in microchannels has been extensively studied since the mid-1990. Accurate measurements at the micro scale are very demanding, and as a result, fundamental knowledge pertinent to boiling heat transfer in diminishing length scales is severely lacking. The main obstacles include significant conjugate conduction/convection processes and the lack of high frequency synchronized temperature/flow visualization measurements. Here we report on a new hybrid numerical-experimental method that overcomes major obstacles inhibiting progress pertinent to this important field. A new parameter, termed the S coefficient, which allows accounting for the conduction process, and therefore, isolating the convection process, is introduced and numerically calculated. It is then demonstrated on three high speed experimental measurements. Surface temperature with micron size thermistors are obtained at high frequencies (O(10kHz)); boiling events are simultaneously visualized and used in conjunction with transient temperature measurements and the S coefficient to infer processes controlling heat transfer in a microchannel. It was shown that high thermal conductivity substrates typically used to form microchannels, such as silicon and copper, are not suitable for elucidating fundamental transient processes in microchannels. Low thermal conductivity materials, such as Pyrex and Benzocyclobutene (BCB), are more applicable. However, this can only be done through careful numerical analysis of the conduction heat transfer within the solid structure used to form the microchannel.</p>	<p>Michael Jensen Rensselaer Polytechnic Institute, USA</p> <p><b>KN12</b> <b><i>The Role of Heat Transfer in Sunlight to Fuel Conversion Using High Temperature Solar Thermochemical Reactors</i></b></p>  <p>Program Director <b>James F. Klausner</b> University of Florida, USA.</p> <p><b>Abstract</b> The synthesis of fuel from sunlight is a research area that has attracted significant attention in recent years due to the potential of providing a fully sustainable pathway for transportation. Due to the high energy density and the existing global infrastructure for fuel transport and handling, the storage of solar energy as a fuel is a superior concept. The cost effective, solar thermochemical production of Syngas, using non-volatile metal oxide looping processes as a precursor for clean and carbon neutral synthetic hydrocarbon fuels, such as synthetic petroleum, is the overarching goal of a number of research groups worldwide. The high temperature solar thermochemical approach uses water and recycled CO<sub>2</sub> as the sole feed-stock and concentrated solar radiation as the sole energy source. Thus, the solar fuel is completely renewable and carbon neutral. Highly reactive, high surface area metal oxide porous structures are used to enable CO<sub>2</sub> and water splitting for the production of Syngas. Two critical issues that drive the reaction conversion efficiency are chemical kinetics and heat and mass transport within the solar reactor. This lecture will consider the interplay between chemical reaction kinetics and thermal transport within the solar thermal chemical reactor. A framework for modeling the very complex multimode thermal transport within reactive porous structures will be described. The concentrated solar thermal radiant transport into the chemical reactor is simulated using a Monte-Carlo ray tracing model. Heat transport within the reactive porous structures, including conduction, convection, radiation, and chemical reactions, is simulated using a thermal lattice Boltzmann model. The model is used to guide reactor scaling and appropriate operating conditions for efficient solar fuel production. The results suggest that new material synthesis that enables thermal reduction at temperatures below 1100°C can enable transformative solar to fuel conversion technology.</p>	<p>Bengt Sundén Lund University, Sweden</p> <p><b>KN13</b> <b><i>Influence of Drop Shape and Coalescence on Dropwise Condensation over Textured Surfaces</i></b></p>  <p>Prof. <b>Krishnamurthy Muralidhar</b> Indian Institute of Technology Kanpur, India</p> <p><b>Abstract</b> The authors of the present study have developed a mathematical model of dropwise condensation on the underside of horizontal and inclined surfaces. The condensation process starts with nucleation, proceeding to growth and coalescence, followed by the movement of unstable drops that initiates fresh nucleation on exposed portions of the substrate. From the distribution of drops of various sizes, the instantaneous surface averaged heat transfer coefficient and wall shear stress are computed. The largest drop diameter achieved depends on gravitational stability with respect to the interfacial forces at the three-phase contact line. Drop instability controls the periodicity of the condensation process and so, the heat transfer coefficient and wall shear stress. The developed model (i) simplifies drop shapes as spheroidal and (ii) assumes droplet coalescence process as instantaneous. To examine the consequence of these two simplifications on the overall dropwise condensation process, the sensitivity of the heat transfer coefficient and wall shear stress to drop deformation and coalescence has been studied in the present work. The shape of the drop on the underside of an inclined surface has been determined using a software tool based on the principle of minimization of potential and surface energies. Velocity and timescales of droplet coalescence are experimentally determined from high speed imaging. With the drop shape correctly determined, results show that improved wall shear stress and heat transfer coefficient are both smaller but the overall integrated predictions are not severely sensitive to these additional details. With coalescence, large heat fluxes attained for short time duration do not contribute much to the surface-averaged value. On the other hand, large wall shear stresses are momentarily created and these can impact the life of surface coatings.</p>

## Keynote (13:00 - 13:45)

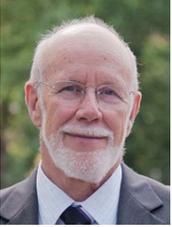
## 12th, Tuesday

	Room C2	Room D	Room E
13:00	<p>Xing Zhang Tsinghua University, China</p> <p><b>KN14</b> <b><i>Entransy Theory for the Analysis and Optimization of Thermal Systems</i></b></p>  <p>Prof. <b>Zeng-Yuan Guo</b> Tsinghua University, China</p> <p><b>Abstract</b> New optimization methods are needed to increase the energy efficiencies of various kinds of thermal systems as entropy theory is not always suitable for optimizing heat transfer problems, such as the derivation of Fourier's law of heat conduction, volume to point heat conduction, and counter-flow heat exchangers, which lead to the development of the new quantities of entransy, entransy dissipation and the corresponding optimization principle. Entransy is of the nature of "potential energy" because it is in fact the simplified expression of potential energy of thermomass, which describes the heat release capability during a time period. Unlike the traditional definition of thermal resistance, the entransy dissipation thermal resistance (EDTR) is defined, which may describe the irreversibility and optimization of various heat transfer process not related to heat-work conversion. A temperature-heat transfer rate (<math>T-Q</math>) diagram is also introduced, which can graphically calculate the entransy dissipation rate of heat transfer processes and be used to conveniently optimize thermal systems. Then a brief review is made on applications of the minimum EDTR principle and <math>T-Q</math> diagram for optimization of different thermal systems, including a heat exchanger couple, a single stream heat exchanger network and chemical processes with recuperation technologies. Comparisons of the optimized results for different thermal systems indicate that the minimum EDTR principle, rather than the minimum entropy generation principle, should be used to optimize the thermal systems without heat to work conversion. Finally, a global optimization method is then given for thermal systems with the EDTR as an intermediate parameter with applications to a building central chilled water system, a district heating network and a spacecraft heat exchanger network.</p>	<p>António Luis Moreira University of Lisbon, Portugal</p> <p><b>KN15</b> <b><i>Flow Boiling Heat Transfer and Two-Phase Flow in Microgravity</i></b></p>  <p>Dr. <b>Giuseppe Zummo</b> ENEA C.R. Casaccia, Italy</p> <p><b>Abstract</b> Flow boiling heat transfer can provide high heat transfer rates due to latent heat transportation. Its possible use is therefore potentially important to reduce size and weight of cooling systems in space platforms and satellites. A comprehensive knowledge is also important for the safe operation of existing single-phase systems in case of accidental increase of heat generation rate. For space applications and appropriate design of components accommodating flow boiling heat transfer, it is important to understand the influence of microgravity conditions on forced convective boiling heat transfer. The number of existing researches on flow boiling in reduced gravity is very small due to large heat loads required and reduced available room in a 0-g apparatus for experiments, as well as complexity of the experimental facility for microgravity environment. This lecture will summarize the results of the few researches carried out on flow boiling heat transfer in microgravity, discussing flow pattern, heat transfer coefficient, critical heat flux, with a particular emphasis to the recent experiments carried out at ENEA. The experiments were carried out at low gravity during the ESA (European Space Agency) parabolic flights campaign of November 2013. The paper will show the analysis of differences between flow patterns and vapor bubble parameters at normal and at zero gravity.</p>	<p>Helcio Orlande Federal University of Rio de Janeiro, Brazil</p> <p><b>KN16 / Award Lecture</b> <b><i>The William Begell Medal</i></b></p>  <p><b><i>Ways Toward Targeted Freezing or Heating Ablation of Malignant Tumor: Precisely Managing the Heat Delivery inside Biological Systems</i></b></p> <p>Prof. <b>Jing Liu</b> Chinese Academy of Sciences, China</p> <p><b>Abstract</b> The minimally invasive freezing or heating ablation of tumor, commonly known as cryosurgery or hyperthermia, is increasingly adopted as an important weapon to attack cancer disease. A most critical issue impeding the success of such physical therapies lies in the precise delivery of external heat or cold to the target tissues, which however still remained a tough challenge so far. This article aims to synergistically discuss the hyperthermia and cryosurgical ablation modalities together by way of their common temperature variation basis. It is dedicated to comprehensively interpret the clinics oriented complex multi-scale bioheat transfer issues either with or without phase change and summarize the author lab's efforts toward a highly conformal ablation in order to effectively overcome the ubiquitous shortcomings facing conventional strategies. The topic covers treatment planning, precise management of heat transport from cell to organ level as well as development of therapeutic materials, and devices therein. Critical factors to result in irregular bioheat transfer were briefly outlined. Selective administration of multi-array heating or freezing probes or their combinations either in space or temporal category to realize desired conformal ablation were illustrated. Further, nanotechnologies mediated hyperthermia or cryosurgery was especially evaluated. In addition, medical images such as MRI guided ablation including nanoparticles enhanced heat transfer to tackle irregular tissues or discrete vessels were discussed. Lastly, several latest freezing or heating biomedical technological modalities were commented, with translational medical prospects explained. It is expected that a precise understanding, planning and managing of heat transport inside the target tissues will drive the way for future high quality tumor treatment.</p>

# Keynote/Award Sessions in Parallel

14th, Thursday

Keynote (13:50 - 14:35)

	Room B1	Room B2	Room C1
13:50	<p>Subhash Mishra Indian Institute of Technology Guwahati, India</p> <p><b>KN17</b> <b><i>Heat Transfer Challenges in Novel Power Cycles for Concentrating Solar Power</i></b></p> <p>Prof. <b>Pradip Dutta</b> Indian Institute of Science, India</p>  <p><b>Abstract</b> The demand for distributed and scalable solar thermal power plants necessitates the use of novel power cycles which are efficient and cost effective at low to medium scales. For regions pertaining to high insolation intensities, the supercritical CO<sub>2</sub> based Brayton cycle is now recognized to be a suitable candidate, having potential to yield high efficiencies at moderate operating temperatures of about 700°C. However, development of components for such power cycles, such as solar receivers, recuperators and storage systems involve significant heat transfer challenges which are highlighted in the present paper. For moderate insolation intensity areas, the Organic Rankine Cycle (ORC) is found to be suitable for multi-scale operation. However, high efficiency ORCs require high temperature organic working fluids which are generally flammable, thus requiring the development of novel power cycles with stable organic fluid mixtures. There are challenging heat transfer issues with the design of heat exchangers with these organic fluid mixtures, which are also discussed and highlighted in the present paper.</p>	 <p><b>IHTC</b> SINCE 1951</p>	<p>Steven Armfield The University of Sydney, Australia</p> <p><b>KN19</b> <b><i>Correct Representation of Flow and Heat Transfer Fields</i></b></p> <p>Prof. <b>Gordon D. Mallinson</b> The University of Auckland, New Zealand</p>  <p><b>Abstract</b> The correctness of methods used to visually represent numerically sampled heat transfer vector fields is considered from two perspectives, accuracy and the ability to correctly portray the properties of the fields. The sources of errors in commonly used algorithms are discussed and their effects illustrated for natural convection flows. In particular the algorithm most usually used in CFD visualisation packages is demonstrated to produce unrealistic visualisations, whereas algorithms that use interpolations derived from scalar and vector potentials do not. Methods of generating these potentials, via the Helmholtz theorem, are applied to conduction and convection heat fluxes together with the energy transport vector. The derivation of a simple method that obviates the need to explicitly apply heat flux boundary conditions during a post processing stage has the potential to encourage more widespread use of potential based methods. Examples show how vector fields with non-zero divergence can be visualised using these methods and some, such as the conduction heat flux field, provide new interpretive visualisations of heat transfer processes.</p>

## Keynote (13:50 - 14:35)

14th, Thursday

Room C2	Room D	Room E
<p>13:50</p> 	<p>Leonid A. Dombrovsky Russian Academy of Sciences, Russia</p> <p><b>KN20</b> <b><i>Volumetric Laser or Solar Heating with Plasmonic Nanoparticles</i></b></p> <p>Prof. <b>Yildiz Bayazitoglu</b> Rice University, USA.</p>  <p><b>Abstract</b> Over the past two decades, much effort has been focused on developing plasmonic nanoparticles, not only by means of new methods but also by using new materials to allow absorption of the maximum amount of energy at a given wavelength by laser or solar light, depending on their size, shape and composition. These plasmonic nanoparticles have many uses from biomedical to electronic applications. Here we review their progress as related to assisting the increase in localized temperature of the medium by means of laser or solar energy. A brief discussion of solid nanosphere, nanodisc, nanoshell, nanorod, nanobelt and nanocage nanostructures and their optical properties is provided. Selected groups of nanoparticles as applied to volumetric laser and solar heating applications are also discussed. Finally a single plasmonic nanoparticle use for localized and nanosize near field laser heating for heat assisted magnetic recording, and the multiple plasmonic nanoparticle use for local laser heating for cancer therapy, and for solar energy steam generation for power generation, distillation and sterilization are presented.</p>	<p>John R. Thome Ecole Polytechnique Federale de Lausanne, Switzerland</p> <p><b>KN21</b> <b><i>The Rational Nanostructuring of Surfaces for Extreme Icephobicity in Nature and Technology</i></b></p> <p>Prof. <b>Dimos Poulikakos</b> ETH Zurich, Switzerland</p>  <p><b>Abstract</b> Icing of surfaces is commonplace in nature, technology and everyday life, bringing with it sometimes catastrophic consequences. Superhydrophobic surfaces, with micro-, nano-, or (often biomimetic) hierarchical roughnesses, have shown in laboratory settings excellent repellency and low adhesion to water down to temperatures near the freezing point. For extreme icephobicity, however, additional important functionalities (in addition to superhydrophobicity) are required. Despite progress, suppressing ice formation passively with a rational methodology leading to the design of surfaces with extraordinary resistance to ice formation and adhesion under a variety of conditions remains elusive. Here we highlight our recent and, in this context, other related work in this area and present unexpected results on ice formation on surfaces. We show that homogeneous nucleation starting at the free surface of a droplet can become the preferred ice nucleation mode over the widely accepted heterogeneous nucleation. We discuss a new mechanism for the freezing of undercolled droplets on surfaces, explaining also how frost can propagate in dry environments. Finally we focus on the science base of deterministic surface texture design leading to extreme icephobicity. Employing (necessarily) knowledge from the crossroads of nucleation thermodynamics, fluid dynamics and (surface) nanotechnology, we show how surfaces can be made, where, for example, at <math>-21\text{ }^{\circ}\text{C}</math> the ice nucleation of a sessile mm-size water droplet supercooled at the same temperature is remarkably delayed by over 25 hours. Equally remarkable are results demonstrating complete surface drop impalement resistance (complete rebound) at <math>-30\text{ }^{\circ}\text{C}</math> for drop impact velocity of 2.6 m/s.</p>

# Keynote/Award Sessions in Parallel

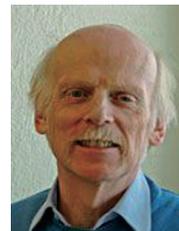
14th, Thursday

Keynote (14:50 - 15:35)

	Room B1	Room B2	Room C1
14:50	<p>Yasuyuki Takata Kyushu University, Japan</p> <p><b>KN22</b> <i>DNS and Advanced Laser Diagnostics of Turbulent Combustion</i></p> <p>Prof. Mamoru Tanahashi Tokyo Institute of Technology, Japan</p>  <p><b>Abstract</b> Detailed understanding of turbulent combustion phenomena is very important to develop high efficiency combustors which contribute to resolve global environmental issues. Since turbulent combustion involves strong interactions between turbulence and combustion reactions, highly-sophisticated measurement techniques and numerical simulations both for fluid motion and flames are required. In this talk, current state and perspective both of laser diagnostics and direct numerical simulations (DNS) of turbulent combustion are provided. For laser diagnostics, state-of-the-art stereoscopic particle image velocimetry (PIV) for turbulence research is combined with advanced planar laser induced fluorescence (PLIF) techniques such as simultaneous multi-radicals highspeed PLIF and stereoscopic PIV are presented and investigations on local flame structure, global/local flame dynamics and three-dimensional flame structures are surveyed. As for DNS of turbulent combustion, after presenting recent progress in combustion DNS, possibility of perfect simulations of IC engine is shown based on the perspective of DNS of turbulent combustion.</p>	<p>Denis Maillet University of Lorraine, France</p> <p><b>KN23</b> <i>Transfers in Porous Media</i></p> <p>Research Director Michel Quintard Institut de Mécanique des Fluides de Toulouse, France</p>  <p><b>Abstract</b> Modelling heat transfer in porous media requires to take into account multiple-scale aspects inherent to porous media structures. Several methodologies have been developed to upscale the equations at a lower-scale and to obtain upper-scale models as it is outlined in a brief review based on a simple heat conduction example proposed in the first part of this paper. The more general and classical problem of heat transfer in porous media is reviewed in this paper with the emphasis on the fact that different behaviours and hence different models emerge at a given macro-scale, depending on the interplay of the various characteristic times and lengths characterizing the problem. Various classes of models are discussed and their relationships outlined. Extensions to more complicated problems of heat transfer in porous media are discussed: coupling with mass diffusion, effect of heat sources, radiation, boiling, etc.</p>	<p>Patrick H. Oosthuizen Queen's University, Canada</p> <p><b>KN24</b> <i>Transport and Mixing Mechanisms in Littoral Waters Induced by Absorption of Radiation</i></p>  <p>Prof. John C. Patterson University of Sydney, Australia</p> <p><b>Abstract</b> This paper provides a bibliographical review on the unsteady natural convection in littoral waters induced by daytime radiative heating and further addresses recent and ongoing related investigations. The flow under consideration is an internally heated convection with an imposed boundary forcing. The direct absorption of the incoming radiation forms a stable thermal stratification, whilst the residual radiation reaching the bottom is absorbed and released back to the water body as a boundary flux, forming a potentially unstable thermal stratification adjacent to the bottom surface. Consequently, the differential heating intrinsically imposed by the varying topography drives the cross-shore circulation (i.e. horizontal convection), and the thermoconvective instability of the potentially unstable bottom thermal boundary layer induces the depthwise circulation (i.e. vertical mixing) in the form of rising plumes. Investigations have been widely conducted via analytical, experimental, numerical and scaling approaches to characterise the flow and stability mechanisms and their dependences on controlling parameters.</p>

## Keynote (14:50 - 15:35)

14th, Thursday

Room C2	Room D	Room E
<p>14:50</p> 	<p>Josua P. Meyer University of Pretoria, South Africa</p> <p><b>KN25</b> <i>Investigation of Nanoscale Heat Transfer with Highly Versatile Phase-locked Thermoreflectance</i></p>  <p>Prof. <b>Pamela M. Norris</b> University of Virginia, USA.</p> <p><b>Abstract</b> The precision of Time Domain Thermoreflectance (TDTR) measurements is often limited by the small data signal relative to a larger background noise. In order to reduce this noise, we propose the implementation of low-cost digital logic circuitry to phase-lock the optical detection scheme with the source laser frequency. Materials with small coefficients of thermoreflectivity, for example, yield a low signal, while experimental conditions, such as low modulation frequencies, may yield large noise levels. Either case leads to low signal-to-noise results preventing precise TDTR measurement results. The digital phase-locking procedure discussed in this paper can increase the signal-to-noise ratio by nearly a factor of four, thus making a wider array of measurements possible. The importance of a phase-locked system is discussed experimentally and theoretically and the design of the digital circuit is described. Thermoreflectance measurements of Al and Ni on Si are presented to display the significant improvement in the results after the phase-locking procedure is conducted.</p>	<p>Anton A. van Steenhoven Eindhoven University of Technology, The Netherlands</p> <p><b>KN26</b> <i>Multiscale Modeling Approaches of Transport Phenomena in Fuel Cells</i></p>  <p>Prof. <b>Bengt Sundén</b> Lund University, Sweden</p> <p><b>Abstract</b> Modeling is of key importance in fuel cell development beyond the current-state-of-the-art because it is beneficial to understand the mechanisms of various interacting phenomena and effects on the cell performance. It is also hard to measure the local parameters inside fuel cells, particularly inside the small scale functional materials. Modeling and simulation of charge transfer and electrochemical performance are critical to enable optimization of the geometry and performance. For macroscale modeling, the micro- and nano-structure related properties defining a porous media, e.g., the porosity and tortuosity and the specific area available for surface reactions are required. Thus the coupling of models valid at various scales is important for continued progress in the development of fuel cells. Within this paper both macroscale and micro-/nanoscale modeling approaches are presented for the fuel cell types SOFC (solid oxide fuel cell) and PEMFC (polymer electrolyte membrane fuel cell). In particular the electrodes, electrolyte and unit cells are considered. Some relevant results are provided.</p>

# Keynote/Award Sessions in Parallel

15th, Friday

Keynote/Award (10:55 - 11:40)

	Room B1	Room B2	Room C1
10:55	<p>Xing Zhang Tsinghua University, China</p> <p><b>KN27</b> <b><i>Recent Studies on Surface Roughness and Wettability Effects in Pool Boiling</i></b></p>  <p>Prof. <b>Ping Cheng</b> Shanghai Jiaotong University, China</p> <p><b>Abstract</b> Recent analytical, numerical and experimental studies on roughness and wettability effects in pool boiling from horizontal heated surfaces are summarized in this paper. Measurements on nucleation bubble density, bubble departure diameter, departure frequency, heat transfer coefficient, and critical heat flux (CHF) in pool boiling from hydrophilic heated surfaces with micro-structures (micro-pillars and micro-cavities) and nanostructures (nano wires and nano cavities) are compared. Thermodynamic analyses based on changes in Gibbs free energy and availability are presented, and wettability and microstructures effects on nucleation radius, nucleation temperature and nucleation heat flux are illustrated. A recent critical heat flux model based on a force balance on a bubble, with the wicking force in the microstructures and distortion of critical wave length taken into consideration, is shown to be in good agreement with experimental data. Lattice Boltzmann simulation results for bubble nucleation, growth and departure from cavities on a heated horizontal surface with various contact angles in pool boiling are presented.</p>	<p>Ulrich Gross TU Bergakademie Freiberg, Germany</p> <p><b>KN28</b> <b><i>Flow Structures and Heat Transfer in Submerged and Free Laminar Jets</i></b></p>  <p>Prof. <b>Reinhold Kneer</b> RWTH Aachen University, Germany</p> <p><b>Abstract</b> Impinging jets are central to a large amount of industrial processes and applications, and as such have been investigated extensively. Despite this fact, review of the literature shows that a comprehensive description for the flow and heat transfer of the basic underlying laminar single-jet case has not been given. Thereby the present study attempts to collect the understanding gained by previous studies, together with that obtained in recent studies by the authors, in a logical manner (following the flow), in order to formulate such a description. While not necessarily complete, more complex aspects such as turbulence, confinement and dissipation are not addressed, the present study takes a major step towards a unified description of this fundamental flow-configuration.</p>	<p>Leonid A. Dombrovsky Russian Academy of Sciences, Russia</p> <p><b>KN29</b> <b><i>Heat and Mass Transfer Processes in the Fischer-Tropsch Reactor</i></b></p>  <p>Prof. <b>Igor Derevich</b> Bauman Moscow State Technical University, Russia</p> <p><b>Abstract</b> Lecture is devoted to important scientific problems associated with synthesis of artificial oil. It will be discussed the following achievements. Methods for modelling thermodynamic equilibrium in a multicomponent system of liquid, solid and gaseous synthetic products are developed. These methods are based on modern ideas of nonequilibrium thermodynamics and statistical physics. Equilibrium compositions of liquid, solid and gaseous products are calculated on the base of system of ordinary differential equations that minimize the Gibbs energy of multicomponent mixture. Due to the absence of database on thermophysical properties of solutions of hydrocarbons with large number of carbon atoms the methods of modelling the required properties were developed. On the basis of Ergun's vacancy approach semi-empirical model of viscosity of hydrocarbon mixtures in the liquid and gaseous phases in a wide range of temperatures, pressures and concentrations is proposed. Questions connected with occurrence of temperature and concentrations auto-oscillations within catalyst granules with exothermic synthesis reactions are discussed. Based on modern methods of stochastic processes various scenarios leading to a thermal explosion of catalyst granules with internal heat release were studied. In the present paper theoretical method based on probability density function of random temperature of granules in a fluctuating temperature of synthesis products is attracted. Based on solving the system of stochastic ordinary differential equations method of simulation the random temperature of granules in fluctuating temperature of products is designed. Aerodynamics and mass transfer in a long microspore of structured synthesis reactor was considered.</p>

Keynote/Award (10:55 - 11:40)

15th, Friday

	Room C2	Room D	Room E
10:55	<p>Sung Jin Kim Korea Advanced Institute of Science and Technology, Korea</p> <p><b>KN30</b> <b><i>Performance Improvement of PEM Fuel Cell with Enhanced Heat and Mass Transport by Flow Pulsation</i></b></p> <p>Prof. <b>Min Soo Kim</b> Seoul National University, Korea</p>  <p><b>Abstract</b> The addition of oscillation effect into a laminar flow stream has been well documented to increase the effective heat and mass transport in the open literatures. The fuel cell system, especially a proton exchange membrane (PEM) fuel cell also consumes the hydrogen at the anode and the oxygen at the cathode to produce electricity in the laminar and humid condition, producing water at the cathode after the reaction. Hence, the proper water and fuel management is a key factor to operate the fuel cell stably and efficiently. In this study, assuming that the velocity profile, concentration profile and pressure gradient along the channel have sinusoidal motion, we investigate numerically the basic characteristics of pulsating flow and effective mass diffusivity with respect to the frequency and the amplitude as parameters. Sequentially, we experimentally observe the acceleration of the water removal along the channel and the enhancement of the oxygen diffusion rate through the gas diffusion layer caused by higher effective mass diffusivity, thereby improving the operation stability as well as the power performance. The polarization behavior shows the power enhancement up to 100% in an air breathing/cooling operation and the higher fuel utilization up to 98% in anodic dead end mode operation. Furthermore, we observe the higher power gain when examining a fuel cell stack rather than a single cell, implying that the pulsation solves the flow mal-distribution through a header inside a fuel cell stack. Finally, additional power gain, in other words, contribution of pulsation especially takes large portion in higher current loading region where the fuel cell experiences a large water production and heat generation.</p>	<p>Masahiro Kawaji The City College of New York, USA</p> <p><b>Award Lecture</b> <b><i>The Donald Q. Kern Award</i></b></p> <p><b><i>Flow Physics and Heat Transfer for Jets in Crossflow-Applications in Turbine Cooling</i></b></p> <p>Prof. <b>Sumanta Acharya</b> National Science Foundation, USA Louisiana State University, USA</p>  <p><b>Abstract</b> Modern gas turbine airfoils are subject to gas temperatures greater than 3000°F that exceed the thermal limits of the airfoil material. Therefore, the airfoils have to be actively cooled. In film cooling, the coolant air is bled off the compressor stage and is routed external to the surface through inclined holes drilled on the airfoil surface. The coolant jet exiting these inclined holes is expected to provide a protective coolant film on the material surface. While a significant body of experimental and computational literature exists on the film cooling problem, a fundamental understanding of how the major flow structures influence mixing and surface temperatures is not available. Only recently, in a series of papers, Large Eddy Simulation (LES) techniques have been demonstrated to be effective in capturing the range of anisotropic large scale structures, and in accurately predicting the surface cooling effectiveness. In this talk, LES simulation results are analyzed to understand the origin and development of flow structures including their spectral characteristics in order to identify the structures that play an important role on the temperature distributions near the surface (or the cooling effectiveness). These results indicate the significance of the more energetic lower frequencies on the surface temperatures. Inlet turbulence and boundary conditions are shown to play an important role on the surface heat transfer distribution. Strategies for exploiting the dynamics of the structures either actively through pulsing or passively via geometric modifications have been explored in the literature, and these strategies will be discussed in the presentation.</p>	 <p><b>IHTC</b> SINCE 1951</p>

14th, Thursday  
10:30 - 12:30  
Room D

## “The Role of Thermal Science for Nuclear Disaster Resilience”

### *Moderator*

**Prof. Tomoaki Kunugi**

Kyoto University  
Head, Department of Nuclear Engineering  
Japan

### *Panelists*

**Prof. Jun Sugimoto**

Kyoto University  
Department of Nuclear Engineering  
Japan

**Emeritus Prof. Masaharu Kitamura**

Tohoku University  
President, Research Institute for Technology Management Strategy  
Japan

**Prof. Michael Corradini**

University of Wisconsin-Madison  
Nuclear Engineering & Engineering Physics  
U.S.A.

**Prof. Yassin Hassan**

Texas A&M University  
Head, Department of Nuclear Engineering  
U.S.A.



T. Kunugi



J. Sugimoto



M. Kitamura



M. Corradini



Y. Hassan

### **Abstract**

The Great East Japan Earthquake in March, 2011 triggered the accident at the Fukushima Daiichi nuclear power plant in Japan. Several investigation committees in Japan have issued final reports, which include important lessons learned from the accident. Moreover, a committee established by the National Research Council of the US National Academy of Sciences is also preparing a report to the Nuclear Regulatory Commission and the Congress for improving the safety and security of nuclear plants in the US. Through those activities, the importance and necessity of “resilience in the nuclear engineering” have been emphasized.

The IHTC-15 should give us an opportunity to explore what the resilience in the nuclear energy utilization is and how to manage unexpected disastrous situations from a viewpoint of thermal science and engineering. So, this panel is planned to first summarize the existing knowledge and experiences related to the disaster resilience and then to clarify the critical technological issues of nuclear reactor systems. We hope we will reach a coherent view on the resilience engineering among us regardless of nuclear experts or not and will hopefully discuss how to develop human resources serving with this indispensable knowledge in the future.

To help and enhance the discussion among the participants, the following presentations will be made by international leaders:

- ◆ “Resilience Related Lessons Learned from Fukushima Daiichi Accident”
- ◆ “Resilience Engineering and Safety-II for Advanced Accident Management”
- ◆ “Resilience in Engineering for Long-Term Cooling in Nuclear Power Plants”
- ◆ “The role of Computational Fluid Dynamics & Safety System Codes for Nuclear Reactor Predictions and Nuclear Disaster Resilience”

## Room B1

**Session 11 (B1) [13:30 - 15:30]****EVP1 Evaporation, Droplet/Spray/Liquid Film (1)****Co-Chairs : Yoshinori Hamamoto & Youngsuk Nam****IHTC15-8581/EVP-B1-111***Vapor Flow Effect on Falling Film Evaporation of R134a Outside Horizontal Tube Bundle*  
Wen-Tao Ji, Chuang-Yao Zhao, Ya-Ling He (Xi'an Jiatong University, China), Guan-Nan Xi (Daikin Industries, Ltd.), Wen-Quan Tao (Xi'an Jiaotong University, China)**IHTC15-9374/EVP-B1-112***Effect of Initial Temperature of a Hot Steel Plate on Thermal Performance of Impinging Jets during Quenching Processes*  
Taehoon Kim, Kyu Hyung Do (Institute of Machinery and Materials, Korea), Dong-Wook Oh (Chosun University, Korea), Jungho Lee (Institute of Machinery and Materials, Korea), Jang-Min Park (Yeungnam University, Korea)**IHTC15-9732/EVP-B1-113***Influence of Dynamic Wettability on Evaporation Kinetics of Microscopic Sessile Droplets*  
Rishi Raj (Indian Institute of Technology Pantnagar, India), Evelyn N. Wang (Massachusetts Institute of Technology, USA)**IHTC15-9961/EVP-B1-114***The Effect of Humidity in Ambient Gas on HTWs in Volatile Drops*  
Yuki Fukatani, Masamichi Kohno, Yasuyuki Takata (Kyushu University, Japan), Khellil Sefiane (University of Edinburgh, UK), Jungho Kim (University of Maryland, USA)**IHTC15-9504/EVP-B1-115***Drop Spreading and Evaporation on a Heated Substrate under Variable Gravity Conditions*  
Oleg Kabov (Tomsk Polytechnic University, Russia), Dmitry Zaitsev, Elizaveta Gatapova (Kutateladze Institute of Thermophysics Siberian Branch of Russian Academy of Science, Russia), Andrey Semenov, Elena Bykovskaya, Ekaterina Karnauhova (Institute of Thermophysics Russian Academy of Sciences, Russia), Vladimir Ajaev (Southern Methodist University, USA), Dmitry Feoktistov, Genii Kuznetsov (Tomsk Polytechnic University, Russia)**IHTC15-9523/EVP-B1-116***Heat Transfer and Interaction of Suspended Droplets and Locally Heated Liquid Layer*  
Oleg Kabov (Kutateladze Institute of Thermophysics Siberian Branch of Russian Academy of Science, Russia), Alexander Fedorets (Tyumen State University, Russia), Igor Marchuk (Institute of Thermophysics Russian Academy of Sciences, Russia)**Session 12 (B1) [16:00 - 18:00]****EVP2 Evaporation, Droplet/Spray/Liquid Film (2)****Co-Chairs : Oleg A. Kabov & Masanori Monde****IHTC15-8367/EVP-B1-121***Spray Cooling by Gently-Deposited Droplets: Experiments and Modeling of Heat-Transfer Mechanisms*  
Paolo E. Santangelo (University of Maryland, USA), Mauro A. Corticelli, Paolo Tartarini (Università degli Studi di Modena e Reggio Emilia, Italy)**IHTC15-8936/EVP-B1-122***Modelling of Biodiesel and Diesel Fuel Droplet Heating and Evaporation*  
Sergei S. Sazhin, Mansour Al Qubeissi, Morgan R. Heikal (University of Brighton, UK)**IHTC15-9287/EVP-B1-123***Comparative Study of the Cooling of a Hot Temperature Surface Using Sprays and Liquid Jet*  
Alexandre Labergue, T. Aiguier, Michel Gradeck, Fabrice Lemoine (University of Lorraine, France)**IHTC15-9581/EVP-B1-124***An Experimental Study of the Leidenfrost Transition for Water on Nanostructured Superhydrophilic Surfaces*  
Jorge Padilla, Van Carey (University of California, USA)**IHTC15-9140/EVP-B1-125***Visual Observation of Liquid-Solid Contact Situations on Superheated Surface Cooled by Liquid Jet or Spraying*  
Niro Nagai, Hiroki Onishi (University of Fukui, Japan), Hitoshi Nikaido, Yoshihiro Serizawa (Nippon Steel & Sumitomo Metal Corporation, Japan)**IHTC15-9419/EVP-B1-126***Effect of Marangoni Flow on the Evaporation Rate of Sessile Droplets*  
Dinghua Hu, Huiying Wu, Zhenyu Liu (Shanghai Jiaotong University, China)

11th, Monday

Room B2

## Session 11 (B2) [13:30 - 15:10]

### TPA Two-phase, Application

**Co-Chairs : Coen Baltis & Akira Murata**

#### IHTC15-9100/TPA-B2-111

*Experimental Investigation on a Closed Loop Pulsating Heat Pipe in Hyper-Gravity Conditions*

Mauro Mameli, Miriam Manzoni (Università di Bergamo, Italy), Lucio Araneo (Politecnico di Milano, Italy), Sauro Filippeschi (Università di Pisa, Italy), Marco Marengo (Università di Bergamo, Italy)

#### IHTC15-9899/TPA-B2-112

*Effects of Filling Ratio and Input Heat Flux on the Thermal Performance and Flow Pattern of a Pulsating Heat Pipe*

Jungseok Lee, Sung Jin Kim (Korea Advanced Institute of Science and Technology, Korea)

#### IHTC15-9281/TPA-B2-113

*Measurement of Kinetic and Enthalpy of Chemical Reaction in Biphasic Millifluidic Droplet Flow by InfraRed Thermography*

Romano Marta (LoF Solvay, France), Pradere Christophe (Centre national de la recherche scientifique, France), Toutain Jean, Hany Cindy (LoF Solvay, France), Batsale Jean Christophe (Centre national de la recherche scientifique, France)

#### IHTC15-9228/TPA-B2-114

*Geometric Structure of Segmented Flow Networks*

Jason Stafford, Nicholas Jeffers (Bell Labs, USA)

#### IHTC15-9893/TPA-B2-115

*Analytical Investigation of Oblique Shock Waves in Two-Phase Flow with Different Sound Speeds*

Yosuke Kawamura, Masafumi Nakagawa (Toyohashi University of Technology, Japan)

## Session 12 (B2) [16:00 - 17:40]

### TPB Two-phase, Boiling/Condensation

**Co-Chairs : Sung Jin Kim & Yoshio Utaka**

#### IHTC15-8958/TPB-B2-121

*Flow Boiling Heat Transfer in Small Cross Section Area Tube with R134a and R32*

Francisco Ramirez-Rivera, Francisco Vera-García, José Ramón García-Cascales, Fernando Illán-Gómez (Technical University of Cartagena, Spain)

#### IHTC15-8598/TPB-B2-122

*Nucleation Site Interactions in Upward Flow Boiling Experiments*

Coen Baltis, Cees W. M. van der Geld (Eindhoven University of Technology, Holland)

#### IHTC15-8790/TPB-B2-123

*Numerical Investigation of Taylor-Bubble Characteristics during Flow Boiling in a Square Minichannel*

Arvind Pattamatta (Indian Institute of Technology Madras, India), Martin Freystein, Jochen Dietl, Peter Stephan (Technische Universität Darmstadt, Germany)

#### IHTC15-8999/TPB-B2-124

*Experimental Investigation of Hydrodynamics and Flow Boiling Heat Transfer in Minichannels at High Reduced Pressure*

Alexander Belyaev, A.V. Dedov, A.N. Varava, A.T. Komov (Moscow power engineering institute technical university, Russia)

#### IHTC15-8956/TPB-B2-125

*Two-Phase Flow Pressure Drop of R1234yf and R134a in a Mini-Channel Multiport Tube*

Francisco Vera-García, Alejandro Lopez-Belchí, Francisco Ramirez-Rivera, José Ramón García-Cascales, Fernando Illán-Gómez (Technical University of Cartagena, Spain)

## Room C1

**Session 11 (C1) [13:30 - 15:10]****FCV1 Forced Convection (1)****Co-Chairs : Katsuya Hirata & Patrick H. Oosthuizen****IHTC15-9221/FCV-C1-111***Numerical Study of Heat Transfer Characteristics for Different Solar Flux Distributions on Linear Fresnel Collector Absorber Tubes in Laminar Flow*

Izuchukwu Francis Okafor, Jaco Dirker, Josua P. Meyer (University of Pretoria, South Africa)

**IHTC15-8781/FCV-C1-112***Nonlinear Characteristics of Periodically Fully Developed Flow in Cross-Flow Tube Bundle*

Qingqing Yong, Mo Yang, Zhiyun Wang, Jian Chen (University of Shanghai for Science and Technology, China), Dan Su (Modern urban architectural design institute of Shanghai, China), Yuwen Zhang (University of Missouri, USA)

**IHTC15-9307/FCV-C1-113***Hybrid Solution for Convection Heat Transfer of Swirling Flows in Cylindrical Cavity with Rotating Top*

Carlos C. S. Cruz (Universidade Federal do Pará, Brazil), Luiz M. Pereira (Fundação Universidade Federal do Vale do São Francisco, Brazil), Emanuel Macêdo, João N.N. Quaresma (Universidade Federal do Pará, Brazil)

**IHTC15-9702/FCV-C1-114***Heat Transfer on Sharp and Blunted Flat Plate at Three-Dimensional Shock-Wave /Boundary-Layer Interaction*

Volf Borovoy, Ivan Egorov, Natalia Palchekovskaya (Central Aerohydrodynamics Institute, Russia)

**IHTC15-9252/FCV-C1-115***Numerical Study of Critical Fire Merging Distances in Square Arrayed Multiple Fires*

Koyu Satoh, Naian Liu, Xiaodong Xie, Wei Gao (University of Science and Technology of China, China)

**Session 12 (C1) [16:00 - 17:40]****FCV2 Forced Convection (2)****Co-Chairs : Zensaku Kawara & Min Soo Kim****IHTC15-9135/FCV-C1-121***Simultaneous Thermal and Flow Measurements in a Boundary Layer by Using High-speed Infrared Thermograph and PIV Combined System*

Shunsuke Yamada, Hajime Nakamura (National Defense Academy, Japan)

**IHTC15-8497/FCV-C1-122***Laminar, Transitional, and Turbulent Mixed Convective Heat Transfer from a Thin Inclined Plate Having a Uniform Surface Heat Flux*

Patrick H. Oosthuizen (Queen's University, Canada)

**IHTC15-8755/FCV-C1-123***Three-Dimensional Turbulent Convection inside a Parallelepiped with Two Heated Vertical Walls*

Victor I. Terekhov (Kutateladze Institute of Thermophysics Siberian Branch of Russian Academy of Science, Russia), Ali L. Ekaid (Technology University of Baghdad, Iraq)

**IHTC15-9377/FCV-C1-124***Entrainment Process in the Vicinity of Pool Fire under Ventilation Condition*

Yasuo Hattori (Central Research Institute of Electric Power Industry, Japan), Ken Matsuyama (Tokyo University of Science, Japan), Hitoshi Suto (Central Research Institute of Electric Power Industry, Japan), Eiji Onuma, Seiji Okinaga (Tokyo University of Science, Japan)

**IHTC15-8962/FCV-C1-125***Experimental Research of Adiabatic Wall Temperature Influenced by Separated Supersonic Flow*

Sergey Popovich (Lomonosov Moscow State University, Russia), Kirill Egorov (Bauman Moscow State Technical University, Russia), Urii Vinogradov (Moscow State University, Russia)

11th, Monday

Room C2

## Session 11 (C2) [13:30 - 15:30]

### TTR1 Turbulent Transport (1)

Co-Chairs : Sasa Kenjereš & Mamoru Senda

#### IHTC15-8762/TTR-C2-111

*Dynamic and Thermal Characteristics of the Mixing of Two Separated Flows with Different Scales*

Alex D'yachenko, Victor Terekhov, Yaroslav Smulsky, Nadezhda Yarygina (Kutateladze Institute of Thermophysics Siberian Branch of Russian Academy of Science, Russia)

#### IHTC15-9325/TTR-C2-112

*Effects of a Stepwise Change in Thermal Boundary Conditions on Heat Transfer Characteristics in a Turbulent Boundary Layer Developing on a Flat Plate*

Tomoya Houra, Yasutaka Nagano, Masato Tagawa (Nagoya Institute of Technology, Japan)

#### IHTC15-9647/TTR-C2-113

*Control of Momentum and Heat Transport in a Heated Axisymmetric Jet by Means of Vortex Generators*

Kensuke Miura, Kouji Nagata, Yasuhiko Sakai, Osamu Terashima, Yasumasa Ito (Nagoya University, Japan)

#### IHTC15-10000/TTR-C2-114

*Verification and Validation of Three Different CFD Codes in Simulating Mixed Convection Flows Using Two Advanced Eddy-Viscosity Models*

Amir Keshmiri (Manchester Metropolitan University, UK)

#### IHTC15-8699/TTR-C2-115

*Effect of Shark Skin Textures on Entropy Generation for Turbulent Channel Flow and Heat Transfer Problems*

Yan Jin, Heinz Herwig (Hamburg University of Technology, Germany)

#### IHTC15-9892/TTR-C2-116

*Drag Reduction of Thermally Stratified Flow in a Horizontal Pipe*

Kenichi Kobayashi, Shota Nakajima, Yu Kimura (Meiji University, Japan)

## Session 12 (C2) [16:00 - 18:00]

### TTR2 Turbulent Transport (2)

Co-Chairs : Amir Keshmiri & Masato Tagawa

#### IHTC15-8909/TTR-C2-121

*Effects of System Rotation on Transitional Boundary Layer*

Oaki Iida, Kensuke Noto (Nagoya Institute of Technology, Japan)

#### IHTC15-9516/TTR-C2-122

*Concurrent Large-Eddy Simulation of Wall-Jet Heat Transfer Enhanced by Systematically-Deformed Turbulence Promoter*

Yutaka Oda (Kansai University, Japan), Kenichiro Takeishi (Tokushima Bunri University, Japan)

#### IHTC15-9676/TTR-C2-123

*Operation of Functional Fluid by Local Wall Heating in a Drag-Reducing Surfactant Solution Flow*

Shumpei Hara, Shoko Kawada, Takahiro Tsukahara, Yasuo Kawaguchi (Tokyo University of Science, Japan)

#### IHTC15-9788/TTR-C2-124

*Direct Numerical Simulation on the Effects of Amplitude and Hydrophilicity of Wavy Wall on Turbulent Heat Transfer and Drag*

Ryota Akaiwa, Atsushi Nishida, Yoshimichi Hagiwara (Kyoto Institute of Technology, Japan)

#### IHTC15-9552/TTR-C2-125

*Impinging Jet Passive Control for Wall Shear Stress Enhancement*

Kodjovi Sodjavi, Brice Montagné (University of La Rochelle, France), Florin Bode (Technical University of Civil Engineering in Bucharest, Romania), Magdalena Kristiawan (Institut National de la Recherche Agronomique, France), Ilinca Nastase (Technical University of Civil Engineering in Bucharest, Romania), Amina Meslem (University of La Rochelle, France)

#### IHTC15-8416/TTR-C2-126

*Multi-scale Second Moment Modelling of Turbulence and Heat Transfer in Porous Media*

Yusuke Kuwata, Yota Sakurai, Kazuhiko Suga (Osaka Prefecture University, Japan)

## Room E

**Session 11 (E) [13:30 - 15:30]****BMA1 Bio and Medical Applications (1)****Co-Chairs : Bin Chen & Yukio Yamada****IHTC15-8489/BMA-E-111***A Study on the Temperature Profile and Thermal Damage in Human Skin Tissue*  
Ik-Tae Im, Suk Bum Youn, Dong Guk Ko (Chonbuk National University, Korea)**IHTC15-9884/BMA-E-112***Estimation of Blood Perfusion Rate and Its Temperature Dependency in Human Abdominal Area under Heating Condition*

Junnosuke Okajima, Takahiro Okabe, Tessai Sugiura, Atsuki Komiya, Takashi Seki, Shigenao Maruyama (Tohoku University, Japan)

**IHTC15-9715/BMA-E-113***Tumor Ablation with Near-Infrared Radiation Using Localized Injection of Nanoparticles*

Anup Paul, Nanda Kishor Bandaru, Arunn Narasimhan, Sarit Kumar Das (Indian Institute of Technology Madras, India)

**IHTC15-8772/BMA-E-114***State Estimation Problem in Hyperthermia Treatment of Tumors Loaded with Nanoparticles*

Bernard Lamien, Helcio R. B. Orlande (Federal University of Rio de Janeiro, Brazil), Guillermo E. Eliçabe (University of Mar del Plata, Argentina), André J. Maurente (Federal University of Rio Grande do Norte, Brazil)

**IHTC15-9350/BMA-E-115***3-D Investigation of Thermal-structure Analysis in a Kidney during Cold Perfusion*

Kai Zhu, Yabo Wang, Fei Liang (Tianjin University of Commerce, China), Yamin Zhang (Tianjin First Center Hospital, China)

**IHTC15-9624/BMA-E-116***Colloidal Magnetic Clusters for Hyperthermia Heating*

Rong Fu, Yuying Yan (University of Nottingham, UK)

**Session 12 (E) [16:00 - 17:40]****MNF Manufacturing****Co-Chairs : Takushi Saito & Yimin Xuan****IHTC15-8586/MNF-E-121***Mass Spectroscopy of Intermediate Products Involved in Chemical Vapor Deposition Synthesis of Carbon Nanotube*

Shuheii Inoue, Daisuke Nakahara, Yosuke Oga, Yukihiko Matsumura (Hiroshima University, Japan)

**IHTC15-9843/MNF-E-122***Development of an in-Plane Thermal Diffusivity Measurement Method with a Lock-in Thermography and Application to High Thermal Conductive CFRPs*

Takuya Ishizaki, Hosei Nagano (Nagoya University, Japan)

**IHTC15-8623/MNF-E-123***High Thermal Conductive Graphite Films from Thin Polymer Films*

Atsushi Tatami, Masamitsu Tachibana (Kaneka Corporation, Japan), Takashi Yagi, Megumi Akoshima (National Institute of Advanced Industrial Science and Technology, Japan), Mutsuaki Murakami (Kaneka Corporation, Japan)

**IHTC15-9223/MNF-E-124***Experimental Investigation of the Work Piece Temperatures in Dry Orthogonal Metal Turning*

Marc Deppermann, Hendrik Puls, Michael Burghold, Reinhold Kneer, Fritz Klocke (RWTH Aachen University, Germany)

**IHTC15-9077/MNF-E-125***Four-Dimensional Flow Measurements of UV Curable Resin at a Thermally-Assisted Nanoimprint Process*

Motoharu Asano, Noriyuki Unno, Shin-ichi Satake, Jun Taniguchi (Tokyo University of Science, Japan)

# General Sessions in Series

11th, Monday

Room F

## Session 11 (F) [13:30 - 14:50]

### **MTR1** Mass Transfer and Drying (1)

*Co-Chairs : Michel Quintard & Kenichiro Takeishi*

#### **IHTC15-8582/MTR-F-111**

*Surface Tension-Driven Flows within Drying Paint Films*

Nazli Saranjam, Sanjeev Chandra, Javad Mostaghimi (University of Toronto, Canada), H. Fan, J. Simmer (General Motors R&D, USA)

#### **IHTC15-9024/MTR-F-112**

*Application of Entransy in Match Property of Liquid Desiccant Dehumidification*

Lun Zhang, Xiaohua Liu, Yi Jiang (Tsinghua University, China)

#### **IHTC15-8746/MTR-F-113**

*MRI Measurement and Numerical Modeling of Moisture Transport in Microwave Vacuum Drying of Porous Media*

Takaharu Tsuruta, Hirofumi Tanigawa (Kyushu Institute of Technology, Japan)

#### **IHTC15-8875/MTR-F-114**

*Investigation of Heat Transfer within an Array of Impinging Jets with Local Extraction of Spent Fluid*

Philipp Cavadini, Philip Scharfer, Wilhelm Schabel (Karlsruhe Institute of Technology, Germany)

---

## Session 12 (F) [16:00 - 17:20]

### **MTR2** Mass Transfer and Drying (2)

*Co-Chairs : Gary Rosengarten & Takao Tsukada*

#### **IHTC15-9089/MTR-F-121**

*Direct Numerical Simulation Modeling of Multidisciplinary Transport during Li-Ion Battery Charge/Discharge Processes*

Fangming Jiang, Jianbang Zeng, Wei Wu, Peng Peng (Guangzhou Institute of Energy Conversion, Chinese Academy of Sciences, China)

#### **IHTC15-9185/MTR-F-122**

*Effect of Velocity and Evaporation on Non-Isothermal Meniscus in a Capillary*

Antoine Voirand, Adel Benselama, Yves Bertin (Institut PPrime, France)

#### **IHTC15-9351/MTR-F-123**

*Effect of Module Inclination Angle on Air Gap Membrane Distillation*

David E. M. Warsinger, Jaichander Swaminathan, John H. Lienhard V (Massachusetts Institute of Technology, USA)

#### **IHTC15-9151/MTR-F-124**

*Experimental Investigation of Interfacial Temperature Evolution during Evaporation of Sessile Droplet*

Martin Still, Tatiana Gambaryan-Roisman, Peter Stephan (Technische Universität Darmstadt, Germany)

---

## Room G

**Session 11 (G) [13:30 - 15:10]****PPE Photon, Phonon and Electron Transport****Co-Chairs : Philippe Ben-Abdallah & Mitsuhiro Matsumoto****IHTC15-8551/PPE-G-111***The Effect of Distributions of Nanoparticles on Thermal Conductivity of Nanocomposites*  
Jin Zhang, Bo Shi, Yimin Xuan (Nanjing University of Aeronautics and Astronautics, China)**IHTC15-8641/PPE-G-112***Circuits for Thermal Light*  
Philippe Ben-Abdallah (Laboratoire Charles Fabry, France), Svend-Age Biehs (Oldenburg University, Germany)**IHTC15-9038/PPE-G-113***A New Theoretical Model of Selectively Photothermolysis to Aid Laser Treatment of Poor Responding Port Wine Stain Blood Vessels*  
Dong Li, Bin Chen (Xi'an Jiaotong University, China), Guo-xiang Wang (The University of Akron, USA), Wenjuan Wu, Y L He (Xi'an Jiaotong University, China)**IHTC15-9156/PPE-G-114***Thermal Conductivity Calculation of Magnesium Silicide Alloys by Lattice Dynamics and Molecular Dynamics Methods*  
Takuma Shiga, Takuru Murakami, Takuma Hori (The University of Tokyo, Japan), Keivan Esfarjani (Rutgers University, USA), Junichiro Shiomi (The University of Tokyo)**IHTC15-9064/PPE-G-115***In-Plane Thermal Conductivity of Si Thin Films from First-Principles Calculation*  
Xinjiang Wang, Baoling Huang (The Hong Kong University of Science and Technology, China)**Session 12 (G) [16:00 - 18:00]****HEX1 Heat Exchanger (1)****Co-Chairs : Jihwan Jeong & Ryosuke Matsumoto****IHTC15-8816/HEX-G-121***Numerical Simulation of Complicated Chevron Plates Passages*  
Hui-bao Luan (Shanghai Marine Diesel Engine Research Institute, China), Wen-Quan Tao (Xi'an Jiaotong University, China), Guo-Qing Zhu, Bin Chen, Song Wang (Shanghai Marine Diesel Engine Research Institute, China)**IHTC15-8647/HEX-G-122***Investigation of the Flow Distribution for Supercritical Carbon Dioxide Fluid in a Plate Heat Exchanger*  
Yi-Chun Tang, Chen-Xi Chu (National Chiao Tung University, Taiwan), Yur-Tsai Lin (Yuan-Ze Institute of Technology, Taiwan), Rony Sian, Chi-Chuan Wang (National Chiao Tung University, Taiwan)**IHTC15-9411/HEX-G-123***A Computer Model for Simulation of Drying and Preheating of Wet Iron ore in a Rotary Kiln*  
Ashish Agrawal, Partha Ghoshdastidar (Indian Institute of Technology Kanpur, India)**IHTC15-8503/HEX-G-124***Effect of Sand Fouling on Compact Fin Heat Exchangers*  
Sarah Obadina, Josh Fody, Serguei Dessiatoun, Michael Ohadi, Amir Shooshtari (University of Maryland, USA)**IHTC15-9412/HEX-G-125***Thermal Performance and Characteristics of Spiral-Tube Ground Heat Exchanger for Ground-Source Heat Pump*  
Jalaluddin Haddada (Hasanuddin University, Indonesia), Akio Miyara (Saga University, Japan)**IHTC15-9149/HEX-G-126***Comparison between the Thermal Performance of Single and Two-Layer Microchannels Inserted with Micro Pin Fins*  
Olayinka O. Adewumi (University of Pretoria, South Africa), Tunde Bello-Ochende (University of Cape Town, South Africa), Josua P. Meyer (University of Pretoria, South Africa)

11th, Monday

Room H

## Session 11 (H) [13:30 - 15:10]

### MLT Molecular Transport

Co-Chairs : Yongping Chen & Taku Ohara

#### IHTC15-8513/MLT-H-111

*Molecular Dynamics Study on Influences of Surface Structural Characteristics on Thermal Energy Transport over Liquid-Solid Interfaces*

Masahiko Shibahara, Ryohei Toda, Sho Murakami (Osaka University, Japan), Taku Ohara (Tohoku University, Japan)

#### IHTC15-9055/MLT-H-112

*Molecular Dynamics Investigation on the Wetting Process of Liquid Droplet on a Solid Surface*

Eisuke Arakaki, Shogo Nishida, Donatas Surblys, Yasutaka Yamaguchi (Osaka University, Japan), Koji Kuroda, Masaru Kagawa, Tadashi Nakajima, Hideo Fujimura (R&D Center Dai Nippon Printing Co., Ltd., Japan)

#### IHTC15-8514/MLT-H-113

*Photon Upconversion Based on Inter-Molecular Energy Transfer in Ionic Liquids: A Technology for Utilizing Sub-Bandgap Wasted Solar Energies*

Yoichi Murakami, Akio Kawai (Tokyo Institute of Technology, Japan)

#### IHTC15-9635/MLT-H-114

*Heat Transferred from Cold to Hot in Near-Critical Fluids under Low Gravity*

Guo-Jie Hu, Hai-Dong Wang, Zengyuan Guo (Tsinghua University, China)

#### IHTC15-9499/MLT-H-115

*A Coupling Scheme of Lattice Boltzmann Method and Finite Volume Method for Multi-Component Diffusion Processes*

Zi-Xiang Tong, Ya-Ling He, Wei-Wei Yang, Wen-Quan Tao (Xi'an Jiaotong University, China)

## Session 12 (H) [16:00 - 18:00]

### FCL Fuel Cell

Co-Chairs : Ashley Fly & Shohji Tsushima

#### IHTC15-9494/FCL-H-121

*Optimization of Oxygen and Proton Transfer in Heterogeneous PEFC Catalyst Layer by Controlling Local Carbon Black Aggregate Structure*

Gen Inoue, Shohei Baba (Kyoto University, Japan)

#### IHTC15-9267/FCL-H-122

*Measurements of the Temperature Distribution of a PEMFC Catalyst Layer Using an Ultra Thin Thermocouple Array*

Takuto Araki, Toshiki Sugimoto (Yokohama National University, Japan)

#### IHTC15-9176/FCL-H-123

*Study on the Effect of Micro Porous Layer on Water Transport Phenomena in PEFC by Using Neutron Radiography*

Hideki Murakawa, Katsumi Sugimoto, Nobuki Kitamura, Hitoshi Asano, Nobuyuki Takenaka (Kobe University, Japan), Yasushi Saito (Kyoto University, Japan)

#### IHTC15-9587/FCL-H-124

*Effect of Heat and Mass Transfer and Electrochemistry on Performance in Solid Oxide Fuel Cell Stacks*

Robert Nishida, Steven Beale, Jon Pharoah (Queen's University, Canada)

#### IHTC15-9440/FCL-H-125

*Towards the Microstructural Optimisation of Solid Oxide Fuel Cell Electrodes*

Masashi Kishimoto, Marina Lomberg, Enrique Ruiz-Trejo, Nigel Brandon (Imperial College London, UK)

#### IHTC15-9078/FCL-H-126

*Flow Distribution Uniformity Evaluation in kW-Range Direct Methanol Fuel Cell Stack*

Yuta Nakano, Yuki Morimatsu, Zhen Guo, Masakazu Ohashi, Masataka Mochizuki (Fujikura Ltd., Japan)

## Room I

**Session 11 (I) [13:30 - 15:30]****TPP1 Thermophysical Properties (1)****Co-Chairs : Dawei Tang & Atsumasa Yoshida****IHTC15-8453/TPP-I-111***Method for Predicting Spatial Distribution of Formation Thermophysical Properties from Temperature Logs*

Wen-Long Cheng, Yong-Le Nian, Yong-Hua Huang, Cheng-Mei Zhang (University of Science and Technology of China, China)

**IHTC15-9572/TPP-I-112***Analysis of Improved Lumped Models for Estimating the Thermal Conductivity Augmentation in Composite Materials*

Debora Moreira, Mariana Cristina Telles, Luiz Carlos Nunes, Leandro Sphaier (Universidade Federal Fluminense, Brazil)

**IHTC15-8568/ TPP-I-113***Modeling Thermal Conductivity of Natural Rubber with Carbon Black*

Junping Song, Lianxiang Ma, Yan He (Qingdao University of Science and Technology, China), Wei Li (Zhejiang University, China), Shichune Yao (Carnegie Mellon University, USA)

**IHTC15-8626/TPP-I-114***The Effect of Porous Media Properties on Effective Thermal Conductivity of Tetrahydrofuran Hydrates and Evaluation of Existing Prediction Correlations*

Lei Yang, Jiafei Zhao, Yongchen Song, Weiguo Liu, Yu Liu, Yi Zhang, Dayong Wang, Mingjun Yang, Jiaqi Wang (Dalian University of Technology, China)

**IHTC15-8646/TPP-I-115***Intriguingly High Thermal Conductivity Enhancement of Graphene Nanoplatelets Contained Poly (Methyl Methacrylate) Composites*

Wei Yu, Huaqing Xie (Shanghai Second Polytechnic University, China), Xiaofeng Zhou (Southeast University, China), Yang Li, Lifei Chen (Shanghai Second Polytechnic University, China)

**IHTC15-8688/TPP-I-116***Characterization of Thermal Transport in Carbon Nanotube Yarns*

Jianli Wang (Southeast University, China), Sisi He (Tianjin University, China), Jiajian Bao (Southeast University, China), Xing Zhang (Tsinghua University, China), Juekuan Yang, Yunfei Chen (Southeast University, China)

**Session 12 (I) [16:00 - 17:40]****TPP2 Thermophysical Properties (2)****Co-Chairs : Koji Miyazaki & Christophe Pradere****IHTC15-8806/TPP-I-121***Measurement of Temperature Distribution for the Hydrate Formation and Dissociation in Porous Media*

Mingjun Yang, Yongchen Song, Lanlan Jiang, Shenglong Wang, Yuechao Zhao, Jiafei Zhao (Dalian University of Technology, China)

**IHTC15-9395/TPP-I-122***Experimental Measurement on Spectral Properties of Quartz at High Temperature*

Shun-De Zhang, Qing Ai, Xin-Lin Xia (Harbin Institute of Technology, China)

**IHTC15-9451/TPP-I-123***Raman Spectra Method for Determining Viscosity of Supercritical Fluids*

Qin-yi Li, Xing Zhang (Tsinghua University, China)

**IHTC15-8213/TPP-I-124***Reconstruction of Thermal Boundary Resistance and Intrinsic Thermal Conductivity of SiO<sub>2</sub>-GaN-Sapphire Structure and Temperature Dependence*

Zhaoliang Wang, Yong Ma, G. Yao, X. Tian (China University of Petroleum, China), Dawei Tang (Chinese Academy of Science, China)

**IHTC15-9128/TPP-I-125***Development of a Thermal Measurement Technique for Detection of Localized Filler Distribution within a Polymer Composite*

Dong-Wook Oh (Chosun University), Jang Min Park (Yeungnam University), Ook Joong Kim, Sang Jin Park (Korea Institute of Machinery and Materials, South Korea)

11th, Monday

Room J

## Session 11 (J) [13:30 - 15:30]

### CDS1 Condensation (1)

*Co-Chairs : Davide Del Col & Naoki Ono*

#### IHTC15-8481/CDS-J-111

*A Literature Overview on Condensation Heat Transfer of Ammonia on the Outside of Tubes*  
Klaus Spindler (Universität Stuttgart, Germany)

#### IHTC15-10516/CDS-J-112

*Versatile Models for Condensation of Fluids with Widely Varying Properties from the Micro to Macroscale*

Srinivas Garimella, Brian M. Fronk, Jeffrey A. Milkie, Brendon L. Keinath (Georgia Institute of Technology, USA)

#### IHTC15-9112/CDS-J-113

*A New Condensation Heat Transfer Model Based on the Flow Regime in a Nearly Horizontal Pipe*

Tae-hwan Ahn, Jae-jun Jeong (Pusan National University, South Korea), Kyong-ho Kang (Korea Atomic Energy Research Institute, South Korea), Jong Cheon (Korea Hydro and Nuclear Power co., South Korea), Byong-jo Yun (Pusan National University, South Korea)

#### IHTC15-9536/CDS-J-114

*Numerical Simulation of Heat and Mass Transfer Processes in Air-Cooled Condenser*  
Valerij Artemov, Konstantin Minko, Georgij Yankov (National Research University, Russia)

#### IHTC15-9958/CDS-J-115

*A Numerical Study of Condensation on Asymmetric Microstructures*

Shashank Natesh, Vinod Narayanan (Oregon State University, USA), Sushil Bhavnani (Auburn University, USA)

#### IHTC15-9361/CDS-J-116

*Experimental Studies of Condensation Heat Transfer in an Inclined Microfin Tube*

Adekunle O. Adelaja, Jaco Dirker, Josua P. Meyer (University of Pretoria, South Africa)

## Session 12 (J) [16:00 - 18:00]

### CDS2 Condensation (2)

*Co-Chairs : Akio Miyara & Vinod Narayanan*

#### IHTC15-9363/CDS-J-121

*Experimental Investigation on Pressure Drop and Friction Factor in Tubes at Different Inclination Angles during the Condensation of R134a*

Adekunle O. Adelaja, Daniel R.E. Ewim, Jaco Dirker, Josua P. Meyer (University of Pretoria, South Africa)

#### IHTC15-8645/CDS-J-122

*A New Flow Pattern Based General Correlation for Heat Transfer during Condensation in Horizontal Tubes*

Mirza Shah (Engineering Research & Consultation, USA)

#### IHTC15-8873/CDS-J-123

*Steam Flow Condensation in Semi-Circular and Square Mini-Channels*

Melanie Derby (Kansas State University, USA), Yoav Peles, Michael K. Jensen (Rensselaer Polytechnic Institute, USA)

#### IHTC15-10018/CDS-J-124

*Condensation in Mini and Microchannels: Effect of Diameter, Shape, Inclination and Fluid Properties*

Stefano Bortolin, Davide Del Col (University of Padova, Italy)

#### IHTC15-10015/CDS-J-125

*Condensation Heat Transfer of a Non-Azeotropic Mixture in a Single Minichannel*

Davide Del Col, Marco Azzolin, Stefano Bortolin, Claudio Zilio (University of Padova, Italy)

#### IHTC15-9033/CDS-J-126

*Condensation Heat Transfer Characteristics on A Micro-Structured Surface with Wettability Gradient*

Atsushi Tokunaga (Ube National College of Technology, Japan), Masaki Mizutani, Gyoko Nagayama, Takaharu Tsuruta (Kyushu Institute of Technology, Japan)

## Room K

**Session 11 (K) [13:30 - 15:30]****EES1 Energy Environmental Systems (1)****Co-Chairs : Tor Laneryd & Shinfuku Nomura****IHTC15-8948/EES-K-111***Heat Recovery in Difficult "Polluted Flue Gas Applications" in Waste to Energy Systems*  
Petr Stehlik, Vojtech Turek, Zdenek Jegla, Bohuslav Kilkovsky (Brno University of Technology, Czech Republic)**IHTC15-8662/EES-K-112***Investigation on the Process of CO<sub>2</sub> Diffusion and Mass Transfer in Oil-Saturated Porous Media Using MRI*  
Yuechao Zhao, Yongchen Song, Min Hao (Dalian University of Technology, China)**IHTC15-9294/EES-K-113***Effect of Boundary Conditions and Ventilator Size on the Natural Convection in a Naturally Ventilated Greenhouse*  
Sunita Kruger (University of Johannesburg, South Africa), Leon Pretorius (University of Pretoria, South Africa)**IHTC15-9011/EES-K-114***Multi-Scale Modeling and Approximation Assisted Optimization of Bare Tube Heat Exchangers*  
Daniel Bacellar, Jiazhen Ling, Vikrant Aute, Reinhard Radermacher (University of Maryland, USA), Omar Abdelaziz (Oak Ridge National Laboratory, USA)**IHTC15-9639/EES-K-115***Heat Balance of Anti-Season Ice Cave*  
Liangsuo Shu, Shiping Jin, Suyi Huang, Xin Qian, Xiyun Wang, Kai Tan, Yuming Liang, Jinyi Tan (Huazhong University of Science & Technology, China)**IHTC15-8280/EES-K-116***Energy-Based Assessment of Optimal Operating Parameters for Coupled Biochar and Syngas Production in Stratified Downdraft Gasifiers*  
Giulio Allesina, Simone Pedrazzi, Emma La Cava (University of Modena and Reggio Emilia, Italy), Michele Orlandi (Bioboost S.r.l., Italy), Miriam Hanuskova, Claudio Fontanesi, Paolo Tartarini (University of Modena and Reggio Emilia, Italy)**Session 12 (K) [16:00 - 18:00]****EES2 Energy Environmental Systems (2)****Co-Chairs : Giulio Allesina & Chaobin Dang****IHTC15-9567/EES-K-121***Analysis of Thermo-Hydraulic Couplings in a Heat Pump Water Heating System*  
Guillaume Segond, Stéphane Launay, Lounès Tadrist (Aix-Marseille University, France)**IHTC15-9058/EES-K-122***PIV Measurement of Heat Transfer Deterioration Phenomena*  
Hiroyuki Nakaharai, Akira Yamada, Ryosuke Shigenaga (Mitsubishi Heavy Industries, LTD., Japan)**IHTC15-8895/EES-K-123***The Impact of Thermal Engineering Research on Global Climate Change*  
Patrick Phelan (Arizona State University, USA), Omar Abdelaziz (Oak Ridge National Laboratory, USA), Todd Otanicar (University of Tulsa, USA), Bernadette Phelan (Phelan Research Solutions Inc., USA), Ravi Prasher (Arizona State University, USA), Robert Taylor (University of New South Wales, Australia), Himanshu Tyagi (Indian Institute of Technology Ropar, India)**IHTC15-9246/EES-K-124***CFD Study of Non-Guided Laminar Mixed Convection of a High Prandtl Number Fluid in a Transformer Winding-Like Geometry*  
Tor Laneryd (ABB Corporate Research, Sweden), Jurjen Kraneborg, Yuhe Jiao, Andreas Gustafsson (ABB Transformers, Sweden)**IHTC15-9019/EES-K-125***A Study on the Prediction of Solar Insolation and Its Effects on Building Heating Load*  
Seong-Yeon Yoo, Tae-Ho Kim, Kyu-Hyun Han (Chungnam National University, Korea)**IHTC15-9883/EES-K-126***Domestic Passive Ventilation with Heat Recovery (PVHR): Performance Criteria, Tests and Operational Variations*  
Tom Lipinski (Ventive Ltd., UK), Szu-Hung Lee, Peter RN Childs (Imperial College London, UK)

12th, Tuesday

Room B1

## Session 21 (B1) [9:40 - 11:40]

### **EVP3** Evaporation, Droplet/Spray/Liquid Film (3)

*Co-Chairs : Van Carey & Hiroyasu Ohtake*

#### **IHTC15-8637/EVP-B1-211**

*Heat Transfer Characterization during Transient Boiling*

Nicolas Baudin (Institut de Mécanique des Fluides de Toulouse, France/Institut de Radioprotection et de Sécurité Nucléaire, France), Catherine Colin (Institut de Mécanique des Fluides de Toulouse, France), Pierre Ruyer (Institut de Radioprotection et de Sécurité Nucléaire, France), Julien Sebilliau (Institut de Mécanique des Fluides de Toulouse, France)

#### **IHTC15-8766/EVP-B1-212**

*Propagation Dynamics of Self-Sustained Evaporation Front and Characteristics of Small-Scale Perturbations at the Interface*

Vladimir Zhukov, Aleksandr Pavlenko, Mikhail Moiseev (Kutateladze Institute of Thermophysics, Russia), Denis Kuznetsov (Novosibirsk State University, Russia)

#### **IHTC15-8439/EVP-B1-213**

*Experimental Study of Pulsed and Steady State Confined Subcooled Jet Impingement Boiling*

Sridhar Abishek, Ramesh Narayanaswamy (Curtin University, Australia), Vinod Narayanan (Oregon State University, USA)

#### **IHTC15-8347 EVP-B1-214**

*Flow inside Evaporating Water Sessile Drop: A Numerical Study*

Chafea Bouchenna, Mebrouk Ait Saada, Salah Chikh (Université des Sciences et de la Technologie Houari-Boumediene, Algérie), Lounes Tadrist (Aix-Marseille Université, France)

#### **IHTC15-8693 EVP-B1-215**

*Heat Transfer and Crisis Phenomena Development at Boiling and Evaporation in Falling Liquid Film at Stepwise Heat Generation*

Aleksandr Pavlenko, Anton Surtaev, Irina Starodubtseva (Kutateladze Institute of Thermophysics, Russia)

#### **IHTC15-8652/EVP-B1-216**

*Capillary and Thermal Performance of Advanced Multi-Height Micropost Evaporator Wicks*

Seunggeol Ryu, Wonchul Lee, Youngsuk Nam (Kyung Hee University, Korea)

---

## Session 22 (B1) [14:00 - 16:00]

### **FBL1** Flow Boiling (1)

*Co-Chairs : Masamichi Kohno & Jong-Taek Oh*

#### **IHTC15-9930/FBL-B1-221**

*Experimental Investigations of Flow Boiling Heat Transfer and Flow Behaviors in Microgap Channel*

Osamu Kawanami (University of Hyogo, Japan), Yu Matsuda (Nagoya University, Japan), Yasuhiro Egami (Aichi Institute of Technology, Japan), Itsuro Honda (University of Hyogo, Japan), Hiroki Yamaguchi, Tomohide Niimi (Nagoya University, Japan)

#### **IHTC15-9604 FBL-B1-222**

*An Experimental Investigation of Two-Phase Refrigerant R-410A Flow Distribution in Plate Heat Exchangers*

Chien-Yuh Yang, Yueh-Hung Lin, Guang-Cheng Li (National Central University, Taiwan)

#### **IHTC15-8821/FBL-B1-223**

*Enhancing FC-72 Flow Boiling Heat Transfer through Bubble Pumping from Imbalance Shear Flow Driven Rotating Beads*

Shu-Lei Wang, Tsing-Fa Lin (National Chiao Tung University, Taiwan)

#### **IHTC15-8800/FBL-B1-224**

*The Impact of Fin Deformation on Boiling Heat Transfer and Pressure Drop in Internally Grooved Tubes*

Sunil Mehendale (Michigan Technological University, USA)

#### **IHTC15-8435 FBL-B1-225**

*Evaluation of Correlations for Predicting Heat Transfer during Boiling of Carbon Dioxide Inside Channels*

Mirza Shah (Engineering Research & Consultation, USA)

#### **IHTC15-8351/FBL-B1-226**

*Evaluation of a Method for Predicting Heat Transfer during Boiling of Mixtures in Plain Tubes*

Mirza Shah (Engineering Research & Consultation, USA)

---

Room B2

**Session 23 (B1) [16:30 - 18:30]****FBL2 Flow Boiling (2)****Co-Chairs : Hitoshi Asano & Sunil Mehendale****IHTC15-8792/FBL-B1-231***Pressure Drop and Flow Boiling Heat Transfer of Refrigerant R-134a in a Microchannel Heat Sink*

Vladimir V. Kuznetsov, Alisher S. Shamirzaev (Kutateladze Institute of Thermophysics, Russia)

**IHTC15-9049/FBL-B1-232***Experimental Study of Two Phase Flow Boiling Heat Transfer and Pressure Drop of Water in a Minutube*

Manoharan Aravinthan, Sarit Kumar Das, Arcot R. Balakrishnan (Indian Institute of Technology Madras, India)

**IHTC15-9410/FBL-B1-233***Heat Transfer Coefficient and Pressure Drop Characteristics during R-1234yf Evaporation Inside Horizontal Small Tubes*

Nguyen Ba Chien, Pham Quang Vu, Kwang Il Choi, Jong-Taek Oh (Chonnam National University, Republic of Korea)

**IHTC15-9589/FBL-B1-234***Characteristics of Flow Boiling Heat Transfer in Rectangular Minichannels*

Chitose Tanaka, Chaobin Dang, Eiji Hihara (The University of Tokyo, Japan)

**IHTC15-9122/FBL-B1-235***Flow Boiling Heat Transfer of R1234ze(E) in a 3.4 mm ID Microfin Tube*

Simone Mancin, Andrea Diani, Luisa Rossetto (University of Padova, Italy)

**IHTC15-8705/FBL-B1-236***An Analysis of the Effect of the Footprint Orientation on the Heat Sink Performance during Flow Boiling in Micro-Scale Channels*

Hugo Leonardo Souza Lara Leão, Gherhardt Ribatski (University of São Paulo, Brazil)

**Session 21 (B2) [9:40 - 11:40]****SOL1 Solar Energy (1)****Co-Chairs : Yoichi Murakami & Evelyn Wang****IHTC15-8410/SOL-B2-211***Design and Analysis of a Rooftop Solar Furnace*

Robert Taylor, Moucun Yang (Nanjing University of Technology), Arunima Bandara, Karl Morrison, Awais Ashraf, Evatt Hawkes (The University of New South Wales, Australia)

**IHTC15-8072/SOL-B2-212***Development of Concentrating System of Dye-Sensitized Solar Cell with a Heat Exchanger*

Yong Woo Kim (Pusan National University, South Korea), Young Hyung Kim, Sang Hee Park (Kumoh National Institute of Technology, South Korea)

**IHTC15-9580/SOL-B2-213***Analysis of Regenerative Thermal Storage Geometries for Solar Gas Turbines*

Peter Klein (University of the Witwatersrand, South Africa/Council for Scientific and Industrial Research, South Africa), Thomas Roos (Council for Scientific and Industrial Research, South Africa), John Sheer (University of the Witwatersrand, South Africa)

**IHTC15-9162/SOL-B2-214***Mathematical Modeling of Radiative Heat Transfer Process in High-Temperature Solar Power Plant*

Victor Leonov, Aleksey Bannikov, Igor Zharenov (Bauman Moscow State Technical University, Russia)

**IHTC15-8054/SOL-B2-215***Hybrid Device for CPV Power Generation and Heating*

Dong Il Lee, Seung Wook Baek (Korea Advanced Institute of Science and Technology, Korea)

**IHTC15-8611/SOL-B2-216***Design and Analysis of a Low-Profile, Concentrating Solar Thermal Collector*

Qiyuan Li, Cheng Zheng, Xiaoguang Gu, Albert Woffenden (The University of New South Wales, Australia), Gary Rosengarten (Royal Melbourne Institute of Technology, Australia), Evatt Hawkes (The University of New South Wales, Australia), Moucun Yang (Nanjing University of Technology, China), Robert Taylor (The University of New South Wales, Australia)

12th, Tuesday

## Session 22 (B2) [14:00 - 16:00]

### **SOL2** Solar Energy (2)

*Co-Chairs : Pradip Dutta & Shigeki Hirasawa*

#### **IHTC15-9067/SOL-B2-221**

*A Heat Transfer Model for Concentrating Silicon Solar Cells in a Spectrally Splitting Hybrid Receiver*

Ahmad Mojiri, C. Stanley (Royal Melbourne Institute of Technology, Australia), Elizabeth Thomsen, Vernie Everett, Andrew Blakers (College of Engineering and Computer Science, Australian National University, Australia), Gary Rosengarten (Royal Melbourne Institute of Technology, Australia)

#### **IHTC15-9239/SOL-B2-222**

*An Integrated Thermal Electrical Model for Single Cell Photovoltaic Receivers under Concentration*

Marios Theristis, Tadhg S O'Donovan (Heriot-Watt University, United Kingdom)

#### **IHTC15-9597/SOL-B2-223**

*Investigation of Design Parameters in Planar Solar Thermophotovoltaic Devices*

David Bierman, Andrej Lenert, Evelyn Wang (Massachusetts Institute of Technology, USA)

#### **IHTC15-9490/SOL-B2-224**

*Numerical Simulation of Parabolic Trough Receiver under Non-Uniform and Fluctuant Solar Flux Condition*

Kun Wang, Ya-Ling He, Ze-Dong Cheng, Ming-Jia Li, Wen-Quan Tao (Xi'an Jiaotong University, China)

#### **IHTC15-9290/SOL-B2-225**

*Numerical Simulation of Heat Transfer in a Directly Illuminated Solar Thermal Energy Store*

Ityona Amber, Tadhg S O'Donovan (Heriot Watt University, United Kingdom)

#### **IHTC15-9526/SOL-B2-226**

*Heat Transfer Modeling in Integrated Photoelectrochemical Hydrogen Generators Using Concentrated Irradiation*

Saurabh Tembhurne, Mikael Dumortier, Sophia Haussener (Swiss Federal Institute of Technology in Lausanne, Switzerland)

---

## Session 23 (B2) [16:30 - 18:10]

### **SOL3** Solar Energy (3)

*Co-Chairs : Katsunori Nagano & Robert Taylor*

#### **IHTC15-9014/SOL-B2-231**

*A Numerical Model of Transient Thermal Transport Phenomena in a High-Temperature Solid-Gas Reacting System for CO<sub>2</sub> Capture Applications*

Lindsey Yue, Wojciech Lipinski (The Australian National University, Australia)

#### **IHTC15-8681/SOL-B2-232**

*DSMC Study on the Rarefied Gaseous Heat Transfer in Annulus Heated by Nonuniform Heat Flux*

Xin-Peng Zhao, Zeng-Yao Li, Zhen Tang, Wen-Quan Tao, (Xi'an Jiaotong University, China)

#### **IHTC15-9309/SOL-B2-233**

*Forecast Methods for Direct Normal Irradiance at the Ground Level*

Carlos Coimbra (University of California, San Diego, USA)

#### **IHTC15-9257/SOL-B2-234**

*Simulation Study of Regenerator of Stirling Engine Used for Solar Energy Thermal Power Generation*

Jingfu Wang, Xinxin Zhang, Miao Zeng, Mingxing Jia (Beijing University of Technology, P R China)

#### **IHTC15-9150/SOL-B2-235**

*Heat Transfer Enhancement in a Parabolic Trough Receiver Using Perforated Conical Inserts*

Aggrey Mwesigye (University of Pretoria, South Africa), Tunde Bello-Ochende (University of Cape Town, South Africa), Josua P. Meyer (University of Pretoria, South Africa)

---

## Room C1

**Session 21 (C1) [9:40 - 11:40]****MIN1 Measurement and Instrumentation (1)****Co-Chairs : Nao Ninomiya & Benjamin Remy****IHTC15-8678/MIN-C1-211***An Investigation of Wall Temperature Characteristics to Improve the Evaluation Method for Thermal Fatigue at a T-Junction Pipe*

Koji Miyoshi, Akira Nakamura (Institute of Nuclear Safety System, Incorporated, Japan), Nobuyuki Takenaka (Kobe University, Japan)

**IHTC15-8703/MIN-C1-212***High Speed Observation and Measurement of Surface Temperature and Surface Heat Flux during Impact of a Droplet on Hot Surface*

Suhaimi Ilias (Saga University, Japan/Universiti Malaysia Perlis, Malaysia), Mohammad Nasim Hasan (Bangladesh University of Engineering and Technology, Bangladesh), Yuichi Mitsutake, Masanori Monde (Saga University, Japan)

**IHTC15-8290/MIN-C1-213***New Methodology and Apparatus for the Thermal Characterization of Semi-Crystalline Thermoplastics in Extreme Conditions*

Baptiste Pignon (Université de Nantes, France), Xavier Tardif (Instituts de Recherche Technologique Jules Verne, France), Vincent Sobotka, Nicolas Boyard, Didier Delaunay (Université de Nantes, France)

**IHTC15-8749/MIN-C1-214***The Freestanding Sensor-Based 3w Technique for Thermophysical Properties Characterization*

Lin Qiu, Xinghua Zheng, Peng Yue, Meng Liu, Dawei Tang (Chinese Academy of Sciences, China)

**IHTC15-8725/MIN-C1-215***Method to Analyze the Spatial Current Distribution in an Operating PEFC Based on NMR Measurement Using Small Planar Surface Coils*

Kuniyasu Ogawa, Yasuo Yokouchi (Keio University, Japan), Tomoyuki Haishi (MRTechnology, Inc., Japan), Kohei Ito (Kyushu University, Japan)

**IHTC15-9775/MIN-C1-216***Study of Thermal Characteristics of Power Mosfet Package under Body-Diode and Saturate Test Conditions*

Yafei Luo (Mentor Graphics Japan, Japan), Yasushi Kajita (Nagoya Municipal Industrial Research Institute, Japan), Tomoyuki Hatakeyama, Shinji Nakagawa, Masaru Ishizuka (Toyama Prefectural University, Japan)

**Session 22 (C1) [14:00 - 16:00]****MIN2 Measurement and Instrumentation (2)****Co-Chairs : Kuniyasu Ogawa & Wilko Rohlf****IHTC15-9132/MIN-C1-221***Non Contact Temperature Field Measurement on Non-Uniform Dynamical Scenes: Contribution of Thermoreflectometry*

Remi Gilblas, Thierry Sentenac, Yannick Le Maout (Institut Clément Ader, France), Daniel Hernandez (Processes, Materials and Solar Energy, France)

**IHTC15-9929/MIN-C1-222***Accuracy Verification on 2D Temperature Measurement Method Using CT-Tunable Diode Laser Absorption Spectroscopy*

Takahiro Kamimoto, Yoshihiro Deguchi, Yusuke Kiyota (The University of Tokushima, Japan)

**IHTC15-9934/MIN-C1-223***Simultaneous 2D NH<sub>3</sub> and Temperature Measurement Using CT-Tunable Diode Laser Absorption Spectroscopy*

Yoshihiro Deguchi, Takahiro Kamimoto, Yusuke Kiyota (The University of Tokushima, Japan)

**IHTC15-8853/MIN-C1-224***Cooling of Electronic Components by Steady/Unsteady Air Flow*

David Altura, Alex Liberzon, Neima Brauner (Tel Aviv University, Israel)

**IHTC15-9574/MIN-C1-225***Effect of the Vapor Flow on the Drop Spreading in the Leidenfrost Regime*

Guillaume Castanet, Ophélie Caballina, Alexandre Labergue, Michel Gradeck, Fabrice Lemoine (University of Lorraine, France)

**IHTC15-9918/MIN-C1-226***Cross-Ventilation Measurements in Buildings: Small and Full Scales Experimental Models*

Julien Salort (Université de Lyon, France/Laboratoire de Physique, France), Hervé Pabiou (Université de Lyon, France), Francesca Chillà (Université de Lyon, France/Laboratoire de Physique, France), Christophe Ménézo (Chaire INSA-EDF, France)

12th, Tuesday

Room C2

## Session 23 (C1) [16:30 - 18:30]

### MIN3 Measurement and Instrumentation (3)

Co-Chairs : Nao Ninomiya & Hervé Pabiou

#### IHTC15-8595/MIN-C1-231

*The Effect of Sonication Time on Effective Thermal Conductivity of Glycerol-MgO Based Nanofluids*

Ntumba Tshimanga, Mohsen Sharifpur, Josua P. Meyer (University of Pretoria, South Africa)

#### IHTC15-9800/MIN-C1-232

*Thermal-Hydraulic Experiments with Sodium Chloride Aqueous Solution*

LiFang Jiao, Wei Liu, Taku Nagatake, Kazuyuki Takase, Hiroyuki Yoshida, Fumihisa Nagase (Japan Atomic Energy Agency, Japan)

#### IHTC15-8605/MIN-C1-233

*Combined Three-Dimensional Flow- and Temperature Field Measurements Using Digital Light Field Photography*

Manuel Rietz, Oliver Garbrecht, Wilko Rohlf, Reinhold Kneer (RWTH Aachen University, Germany)

#### IHTC15-8855/MIN-C1-234

*Temperature Imaging of Water Around a Small Heated Sphere Using a Near-Infrared Absorption Technique*

Naoto Kakuta, Kenta Yamada, Ryota Fujioka (Tokyo Metropolitan University, Japan), Katsuya Kondo (Tottori University, Japan), Hidenobu Arimoto (National Institute of Advanced Industrial Science and Technology, Japan), Yukio Yamada (University of Electro-Communications, Japan)

#### IHTC15-8990/MIN-C1-235

*New Estimation Method Based on Integral Transforms for the Thermal Diffusivity Measurement of Anisotropic Materials*

Christophe Rodiet, Mathieu Niezgod, Benjamin Remy, Alain Degiovanni (Université de Lorraine, France)

#### IHTC15-9380/MIN-C1-236

*Visualization and Analysis of Heat and Mass Transfer with Chemical Reactions in Microchannels*

Daisuke Kawashima, Naoto Kakuta (Tokyo Metropolitan University, Japan), Katsuya Kondo (Tottori University, Japan), Hidenobu Arimoto (National Institute of Advanced Industrial Science and Technology, Japan), Yukio Yamada (The University of Electro-Communications, Japan)

## Session 21 (C2) [9:40 - 11:20]

### NMS NEMS/MEMS

Co-Chairs : Ai Ueno & Chun Yang

#### IHTC15-8752/NMS-C2-211

*Development of a Mini-Channel Gas Separator Utilizing Soret Effect*

Naoki Ono, Takahiro Wako, Tomohiro Higurashi (Shibaura Institute of Technology, Japan), Sohei Matsumoto (AIST, Japan)

#### IHTC15-9313/NMS-C2-212

*Fabrication and Visualization of a Micro Pulsating Heat Pipe*

Kai-Shing Yang (Industrial Technology Research Institute, Taiwan), Yu-Chi Cheng (National Kaohsiung University of Applied Sciences, Taiwan), Ming-Shan Jeng, Kuo-Hsiang Chien (Industrial Technology Research Institute, Taiwan), Jin-Cherng Shyu (National Kaohsiung University of Applied Sciences, Taiwan)

#### IHTC15-9625/NMS-C2-213

*The Influence of Surface Electric Charge on Water Freezing*

Jia-Wei Zhou, Xiang-Xiong Zhang, Min Chen (Tsinghua University, China)

#### IHTC15-9130/NMS-C2-214

*Effect of Wall Structures on Nano-Channel Flows*

Haruka Yasuoka, Tomohiko Imae, Masayuki Kaneda, Kazuhiko Suga (Osaka Prefecture University, Japan)

#### IHTC15-9508/NMS-C2-215

*Enhanced Flow Boiling Heat Transfer in Microchannels with Structured Surfaces*

Yangying Zhu, Dion Antao, Kuang-Han Chu (Massachusetts Institute of Technology, USA), Terry Hendricks (California Institute of Technology, USA), Evelyn Wang (Massachusetts Institute of Technology, USA)

**Session 22 (C2) [14:00 - 15:40]****HTE1 Heat Transfer Enhancement (1)****Co-Chairs : Keiko Fujioka & Janusz Szmyd****IHTC15-8240/HTE-C2-221***Heat Transfer in a 90° T-Junction*

Julien Pellé, Olmo Duran Medina, Thien Duy Nguyen, Souad Harmand (TEMPO, France)

**IHTC15-9123/HTE-C2-222***Numerical and Experimental Studies of the Flow and Heat Transfer in Circular Tubes with Straight Frame Rotor Inserts*

Xiaolei Zhu, Ji'an Meng, Hong Zhou, Zhixin Li (Tsinghua University, China)

**IHTC15-9615/HTE-C2-223***A Numerical and Experimental Study on Flow and Heat Transfer Characteristics of Viscoelastic Fluid in a Serpentine Channel*

Kazuya Tatsumi, Wataru Nagasaka, Takuya Matsuo, Kazuyoshi Nakabe (Kyoto Unveristy, Japan)

**IHTC15-9974/HTE-C2-224***Numerical Investigation of Bénard-Marangoni Convection of Paramagnetic Liquid in Annular Layers*

Toshio Tagawa (Tokyo Metropolitan University, Japan)

**IHTC15-9062/HTE-C2-225***Investigation of Heat Exchange and Hydrodynamics Parameters in Annular Channels with Interacting Swirling Flows*

Alexander Zakharenkov, Eduard Boltenko, Alexander Varava, Aleksey Dedov, Alexander Komov (National Research University, Russia)

**Session 23 (C2) [16:30 - 17:50]****HTE2 Heat Transfer Enhancement (2)****Co-Chairs : Masahiro Kawaji & Naoe Sasaki****IHTC15-8825/HTE-C2-231***Numerical Investigation of Fluid Flow and Heat Transfer Characteristics of Partial Length Pin Fins in Vertical Parallel Plate Channel*

Ravi S. Jadhav, Chakravarthy Balaji (IIT Madras, India)

**IHTC15-9372/HTE-C2-232***Thermal Performance of Nanofluids in Microchannel Equipped with a Synthetic Jet Actuator*

Ann Lee, Dezheng Darson Li, Ghar Ek Lau, Guan Heng Yeoh (The University of New South Wales, Australia)

**IHTC15-9259/HTE-C2-233***The Effect of a Crossed Electromagntic Field on Mixed Convection of a Low Pr Fluid in a Vertical Duct*

Praveen Throvagunta, N. L Gajbhiye (Indian Institute of Technology Kanpur, India), Viktor Eswaran (Indian Institute of Technology Hyderabad, Medak, India)

**IHTC15-9950/HTE-C2-234***An Analysis of Paramagnetic Fluid Thermal Convection in a Concentric Annuli under Strong Magnetic Field Gradient*

Witold Wrobel, Elzbieta Fornalik-Wajs, Łukasz Pleskacz (AGH University of Science and Technology, Poland), Sasa Kenjereš (Delft University of Technology, The Netherlands), Janusz S. Szmyd (AGH University of Science and Technology, Poland)

12th, Tuesday

Room D

## Session 21 (D) [9:40 - 11:40]

### ADS Adsorption and Desorption

Co-Chairs : *Shigeru Koyama & Zhong-Xian Yuan*

#### IHTC15-9289/ADS-D-211

*Design and Performance Analysis of an Advanced Thermal Battery for Electric Vehicle Climate Control*

Shankar Narayanan, Xiansen Li, Sungwoo Yang, Ian McKay, Hyunho Kim, Evelyn Wang (MIT, USA)

#### IHTC15-8866/ADS-D-212

*Effects of the Induced Charge on CO<sub>2</sub> Adsorption in Cu-BTC at Different Temperature: A Combined Experimental and Molecular Simulation Study*

Hui Wang, Zhiguo Qu, Wen Zhang, Wenquan Tao (Xi'an Jiaotong University, China)

#### IHTC15-9555/ADS-D-213

*Theoretical and Experimental Studies on Characteristics of Adsorption Performance of Desiccant Rotor Applied to Desiccant Heat Pump*

Shiyu Feng (Nanjing University of Aeronautics and Astronautics), Naoki Nakagawa, Takehiro Koyano, Chaobin Dang, Eiji Hihara (The University of Tokyo, Japan)

#### IHTC15-9051/ADS-D-214

*Inclusion of Non-Isothermal Effects in Modeling Electrochemical Kinetics of Contaminated PEM Fuel Cell Electrodes*

Saiful Hasmady, Kazuyoshi Fushinobu (Tokyo Institute of Technology, Japan)

#### IHTC15-9392/ADS-D-215

*A Measurement Method of Adsorption/Desorption Rate Controlled by Adsorbent Temperature in Moist Air of Atmospheric Pressure*

Takafumi Ouchi, Yoshinori Hamamoto, Hideo Mori (Kyushu University, Japan)

#### IHTC15-9623/ADS-D-216

*Molecular Simulation of CO<sub>2</sub> Sorption on Mesoporous Material Filled with Polyethylenimine*

Jiang Li, Weilong Wang, Jing Ding (Sun Yat-sen University, China)

## Session 22 (D) [14:00 - 16:00]

### TBF Two-phase, Bubble Flow, Water Film

Co-Chairs : *Masafumi Katsuta & Axel Sielaff*

#### IHTC15-8960/TBF-D-221

*Bubble Growth in Microgravity under the Action of Electric Forces: Experiments and Numerical Simulation*

Paolo Di Marco (DESTEC University of Pisa, Italy), Ryo Kurimoto (University of Shiga Prefecture), Giacomo Saccone (DESTEC University of Pisa, Italy), Kosuke Hayashi, Akio Tomiyama (Kobe University, Japan)

#### IHTC15-8906/TBF-D-222

*Study on Liquid Film Thickness of Accelerated Slug Flow in Micro Tubes*

Kenshiro Muramatsu (DENSO CORPORATION, Japan), Youngjik Youn (The University of Tokyo, Japan), Youngbae Han (Hongik University, Korea), Keishi Yokoyama, Yosuke Hasegawa, Naoki Shikazono (The University of Tokyo, Japan)

#### IHTC15-9171/TBF-D-223

*Microscale Convective Heat Transfer with Plug Flow in Microchannels*

Teck Neng Wong, Zhizhao Che (Nanyang Technological University, Singapore), Nam Trung Nguyen (Griffith University, Australia)

#### IHTC15-8857/TBF-D-224

*Measurements of Heat Transfer Coefficients to Cylinders in Shallow Bubble Columns*

Emily W. Tow, John H. Lienhard V (MIT, USA)

#### IHTC15-8573/TBF-D-225

*Experimental Research on Falling Film Flow Characteristic for Horizontal Drop-shaped Tube Bundle in Cold State*

Chao Bai, Lincong Luo, Guanmin Zhang, Maocheng Tian (Shandong University, China), Wei Li (Zhejiang University, China), Yanping Shi (Shanxi Fenxi Heavy Industry Co.,Ltd., China)

#### IHTC15-8671/TBF-D-226

*Study of the Flow and Heat Transfer of Water Film on Hot Air Anti-Icing Airfoil Surface*

Mei Zheng, Wei Dong, Guilin Lei, Jianjun Zhu (Shanghai Jiao Tong University, China)

Room E

**Session 21 (E) [9:40 - 11:40]****INV Inverse Problems****Co-Chairs : Atsuki Komiya & Yuichi Mitsutake****IHTC15-9796/INV-E-211***Parameter Estimation Using Heat Transfer Models with Experimental Data Using a Combined Ann-Bayesian Approach*

Nagarajan Gnanasekaran (National Institute of Technology Surathkal, India), Nithin, C. Balaji (Indian Institute of Technology Madras, India)

**IHTC15-9577/INV-E-212***Recovering the Front Surface Temperature of Metallic and Composite Targets Subject to Localized Heating via Inverse Heat Transfer Modeling*

Yuwen Zhang, JinnKuen Chen, Zaichun Feng (University of Missouri, USA)

**IHTC15-9764/INV-E-213***Research and Development of Heat Flux Sensor for Thermokinetic Processes*

Oleg Alifanov, Sergey Budnik, Aleksey Nenarokomov, Andrey Netelev (Moscow Aviation Institute, Russia)

**IHTC15-9532/INV-E-214***A Non-Intrusive Inverse Problem Technique for the Identification of Contact Failures in Double-Layered Composites*

Luiz Abreu (Federal University of Rio de Janeiro / COPPE, Brazil), Carlos Alves (Technical University of Lisbon, Portugal), Marcelo Colaco (Federal University of Rio de Janeiro / COPPE, Brazil), Helcio R. B. Orlande (Federal University of Rio de Janeiro / COPPE, Brasil)

**IHTC15-9473/INV-E-215***Retrieval of Geometric Structure of Internal Defect in Two-Dimensional Semi-Transparent Media under Laser Irradiation Using the RDS-PSO*

Hong Qi, Zhenzong He, Teng Jia, Biao Zhang, Liming Ruan (Harbin Institute of Technology, China)

**IHTC15-9190/INV-E-216***Estimation of the Heat Transferred to a Fluid in a Minichannel by an Inverse Technique*

Waseem Al Hadad, Y. Rouizi, Y. Jannot, B. Rémy, D. Maillet (University of Lorraine &amp; CNRS, France)

**Session 22 (E) [14:00 - 15:40]****BMA2 Bio and Medical Applications (2)****Co-Chairs : Helcio Orlande & Hiroshi Takamatsu****IHTC15-9304/BMA-E-221***Experimental Study on the Vascular Thermal Response to Visible Laser Pulses*

Dong Li, Bin Chen, Wenjuan Wu, Guo-xiang Wang, Y L He (Xi'an Jiaotong University, China), Zhaoxia Ying (University of Akron, USA)

**IHTC15-8933/BMA-E-222***Observation of Ice-Solute Interaction in Freezing of Trehalose and Albumin Solutions by Using Confocal Raman Microscope Equipped with Directional Solidification Stage*

Hideto Hirahata, Yutaka Nagare (Kyushu University, Japan), Alan Twomey (University of Minnesota, USA), Kosaku Kurata, Takanobu Fukunaga (Kyushu University, Japan), Alptekin Aksan (University of Minnesota, USA), Hiroshi Takamatsu (Kyushu University, Japan)

**IHTC15-9119/BMA-E-223***Voxel-Based Simulation of Air-Conditioning in the Human Nasal Cavity*

Gaku Tanaka, Fuyuto Araki, Shun Shimizu (Chiba University, Japan), Toshihiro Sera (Osaka University, Japan), Hideo Yokota, Kenji Ono (Riken, Japan)

**IHTC15-9542/BMA-E-224***Blinking and Temperature Gradients in Normal Functioning Human Eye*

Amanie Abdelmessih (California Baptist University, USA)

**IHTC15-8277/BMA-E-225***Investigations on Interactions between Heat Exchanger Biofouling and Suspended Matter*

Qianpeng Yang, Lin Shi, Siyuan Chang (Tsinghua University, China)

# General Sessions in Series

12th, Tuesday

Room F

## Session 21 (F) [9:40 - 11:40]

### FCV3 Forced Convention (3)

Co-Chairs : Tomoya Houra & Xin-Rong Zhang

#### IHTC15-8965/FCV-F-211

*Experimental Investigation of the Heat Transfer Process at a Gas-Dynamic Method of Energy Separation*

Andrey Zditovets, Urii Vinogradov (Moscow State University, Russia), Alexander Titov (OJSC Orgenergogaz, Russia)

#### IHTC15-9225/FCV-F-212

*Heat Transfer and Pressure Drop Characteristics in the Annuli of Tube-in-Tube Heat Exchangers (Horizontal Lay-Out)*

Francois P.A Prinsloo, Jaco Dirker, Josua P. Meyer (University of Pretoria, South Africa)

#### IHTC15-9107/FCV-F-213

*Gas-Dynamic Temperature Stratification in a Compressible Low-Prandtl Gas Flow on a Permeable Wall*

Maksim Makarov, Viktor Naumkin (Russian Academy of Sciences, Russia)

#### IHTC15-9469/FCV-F-214

*Flow and Heat Transfer Characteristics of Ammonium Alum Hydrate Slurries with Surfactants as Drag-Reducers and with Polyvinyl Alcohol as Stabilizers*

Ruri Hidema, Hiroshi Suzuki, Takuya Tano, Yoshiyuki Komoda (Kobe University, Japan)

#### IHTC15-9210/FCV-F-215

*Inlet Flow Effects in Microchannels on Single-Phase Heat Transfer Coefficients and Friction Factors*

Darshik V. Garach, Jaco Dirker, Josua P. Meyer (University of Pretoria, South Africa)

#### IHTC15-9250/FCV-F-216

*Heat Transfer Coefficients for Tubes in the Turbulent Single Phase Flow Regime with a Focus on Uncertainty*

Madder Steyn, Josua P. Meyer (University of Pretoria, South Africa)

## Session 22 (F) [14:00 - 15:20]

### FCV4 Forced Convention (4)

Co-Chairs : Sanjeev Chandra & Kenji Yoshida

#### IHTC15-8952/FCV-F-221

*An Analytical Study of the Heat Transfer in a Regular-Shaped Micro-Channel Type Stirling Regenerator*

ZhiGang Li, Dawei Tang (Chinese Academy of Sciences, China), Yoshihiko Haramura (Kanagawa University, Japan), Miao Zeng (Chinese Academy of Sciences, China), Yohei Kato (Kanagawa University, Japan)

#### IHTC15-9280/FCV-F-222

*Effects of Evaporation and Condensation on Apparent Thermal Slip*

Marc Hodes, Lisa Lam, Scott MacLachlan (Tufts University, USA), Ryan Enright (Alcatel-Lucent, Ireland)

#### IHTC15-9409/FCV-F-223

*Characteristics of Thermal Convective Flow of Near-Critical CO<sub>2</sub> Fluid in Microchannels*

Lin Chen, Xin-Rong Zhang (Peking University, China)

#### IHTC15-9745/FCV-F-224

*Experimental Analysis of Gas Forced Convective Heat Transfer in Microtubes under H and T Thermal Boundary Conditions*

Yahui Yang (University of Bologna, Italy), Chungpyo Hong (Kagoshima University, Japan), Gian Luca Morini (University of Bologna, Italy)

Room G

**Session 23 (F) [16:30 - 18:10]****FCV5 Forced Convection (5)***Co-Chairs : Jorge Alvarado & Kazuhiko Suga***IHTC15-8769/FCV-F-231***Volumetric Heat Transfer Determination for Forced Convection of Air through Alumina ( $Al_2O_3$ ) Foam*

Dig Vijay, Pitt Goetze, Rhena Wulf, Ulrich Gross (TU Bergakademie Freiberg, Germany)

**IHTC15-9036/FCV-F-232***High Temperature Metal Foam Heat Exchanger*

Pakeeza Hafeez, Saeid Salavati, Javad Esmeelpannah, Sanjeev Chandra, Javad Mostaghimi, Tom Coyle (University of Toronto, Canada)

**IHTC15-9167/FCV-F-233***Experimental Determination of Convective Heat Transfer Coefficients during Molten Aluminum Purification Using Open Cell Alumina ( $Al_2O_3$ ) Ceramics*

Pitt Goetz, Dig Vijay, Eva Jäeckel, Rhena Wulf, Ulrich Gross, Klaus Eigenfeld (TU Bergakademie Freiberg, Germany)

**IHTC15-9489/FCV-F-234***Hydrothermal-Wave Instability and Resultant Flow Patterns Induced by Thermocapillary Effect in a Half-Zone Liquid Bridge of High Aspect Ratio*

Ichiro Ueno, Hiroki Kawasaki, Takumi Watanabe, Kosuke Motegi, Toshihiro Kaneko (Tokyo University of Science, Japan)

**IHTC15-9852/FCV-F-235***The Effect of Radiative Heat Transfer on Slip Flow through Parallel-Plate Microchannels*

Mostafa Shojaeian (Sabanci University, Turkey), Rahim Zamanian (Amirkabir University of Technology, Iran), Ali Koşar (Sabanci University, Turkey)

**Session 21 (G) [9:40 - 11:20]****HEX2 Heat Exchanger (2)***Co-Chairs : Kyoji Inaoka & Gennady Ziskind***IHTC15-8536/HEX-G-211***Flow and Thermal Performance of Graphite Foam Dimpled Fin Heat Exchangers*

Wamei Lin (Lund university, Sweden), Gongnan Xie (Northwestern Polytechnical University, China), Bengt Sundén (Lund University, Sweden), Qiuwang Wang (Xi'an Jiaotong University, China)

**IHTC15-9007/HEX-G-212***Entropy Generation Minimization Analysis of Passive and Active Magnetocaloric Regenerators*

Paulo Trevizoli, Diego Alcalde, Jader Barbosa (Federal University of Santa Catarina, Brazil)

**IHTC15-8908/HEX-G-213***Heat Transfer and Pressure Drop Performance of Offset Strip Fin with Gap between Adjacent Rows*

Seongwon Hwang, Ji-Hwan Jeong, Jae Jun Jeong (Pusan National University, Republic of Korea)

**IHTC15-8929/HEX-G-214***A Numerical Study on Turbulent Single-Phase Flow and Heat Transfer in Pillow Plates*

Mark Piper, Alexander Zibart, Julian M. Tran, Eugeny Y. Kenig (University of Paderborn, Germany)

**IHTC15-9144/HEX-G-215***Quantitative Estimation of Frost Formation on Plate-Fin Tube Heat Exchanger by Neutron Radiography*

Ryosuke Matsumoto, Tomoya Yoshimura, Hisashi Umekawa, Takeyuki Ami (Kansai University, Japan), Daisuke Ito, Yasushi Saito (Kyoto University, Japan)

12th, Tuesday

## Session 22 (G) [14:00 - 15:20]

### **HEX3** Heat Exchanger (3)

*Co-Chairs : Jalaluddin & Hiroshi Suzuki*

#### **IHTC15-9435/HEX-G-221**

*Enhanced Melting in Geometries Suitable for Thermal Energy Storage*  
Tomer Rozenfeld, Yoram Kozak, Gennady Ziskind (Ben-Gurion University, Israel)

#### **IHTC15-9085/HEX-G-222**

*Fin Efficiency and the Optimisation of X-Shaped Louvered Fins*  
Bernd Ameel, Joris Degroote, Henk Huisseune, Jan Vierendeels, Michel De Paepe (Ghent University, Belgium)

#### **IHTC15-9362/HEX-G-223**

*The Effect of the Circular Cylinder's Insertion Position on Heat Transfer Enhancement in Transition Flow*  
Hui Xu (Jiangsu University, China), Lijuan Wang (Nantong University, Cina), Kyoji Inaoka (Doshisha university, Japan), Guannan Xi (Nantong University, China)

#### **IHTC15-9194/HEX-G-224**

*Study of Heat Pipe Effectiveness Filled with Different Refrigerants*  
Grzegorz Gorecki (Lodz University of Technology, Poland)

---

## Session 23 (G) [16:30 - 18:30]

### **HEX4** Heat Exchanger (4)

*Co-Chairs : Jader Barbosa & Hisashi Umekawa*

#### **IHTC15-9766/HEX-G-231**

*Numerical Simulation of 3D Flow Effect on Heat Transfer from a Tube Bank of Subsea Cooler*  
Nikolay Ivanov, Vladimir Ris, Evgueni M. Smirnov, Nikolay Tschur (St.Petersburg State Polytechnic University, Russia)

#### **IHTC15-9041/HEX-G-232**

*Effect of Fin Specification on Thermal Performance of Fin-Tube Heat Exchanger for Heat Pump under Frosting Condition*  
Jeongkeun Kim, Keumnam Cho (Sungkyunkwan University, Korea)

#### **IHTC15-9644/HEX-G-233**

*CFD Modelling of Flow over in-Line Tube-Banks*  
Hector Iacovides, Brian Launder, Alastair West (University of Manchester, United Kingdom)

#### **IHTC15-9093/HEX-G-234**

*Maximal Velocity Ratio Design Method for Shell-and-Tube Heat Exchangers with Continuous Helical Baffles*  
Jianfeng Yang, Min Zeng, Guidong Chen, Qiuwang Wang (Xi'an Jiaotong University, China)

#### **IHTC15-9791/HEX-G-235**

*Optimization of Lifetime Expectance for Heat Exchangers with Special Requirements*  
Pascal Freko, Ingo Thomas, Reinhold Hoelzl, Axel Lehmacher, Alexander Woitalka (Linde AG, Germany)

#### **IHTC15-9449/HEX-G-236**

*Size Effect of the Flow Path on the Flow and Heat Transfer Characteristics in a Cavity Swept by a Visco-Elastic Fluid*  
Hiroshi Suzuki, Ruri Hidema, Yoshiyuki Komoda (Kobe University, Japan)

---

## Room H

**Session 21 (H) [9:40 - 11:00]****EEC1 Electronic Equipment Cooling (1)***Co-Chairs : Martine Baelmans & Shinji Nakagawa***IHTC15-8910/EEC-H-211***Transient Thermal Behavior of the Microprocessor System - Investigation of Effects by Distributed Thermal Capacitance and Thermal Spreading Resistances*

Koji Nishi (Advanced Micro Devices Japan, Japan), Tomoyuki Hatakeyama, Shinji Nakagawa, Masaru Ishizuka (Toyama Prefectural University, Japan)

**IHTC15-8951/EEC-H-212***An 1-D Model for Species Crossover through the Membrane in All-Vanadium Redox Flow Batteries*

Yuan Lei, Baowen Zhang, Bofeng Bai (Xi'an Jiaotong University, China), Tianshou Zhao (The Hong Kong University of Science and Technology, China)

**IHTC15-8327/EEC-H-213***A Miniature Multiple Vibrating-Fan Cooling System Using Magnetic Force and Piezoelectric Force*

HsienChin Su (Purdue University, USA), Chunlin Liu (National Taiwan University, Taiwan)

**IHTC15-9808/EEC-H-214***Liquid Film Wave Patterns and Dryout in Microgap Channel Annular Flow*

Caleb Holloway, Avram Bar-Cohen, Darin Sharar (University of Maryland, USA)

**Session 22 (H) [14:00 - 15:20]****EEC2 Electronic Equipment Cooling (2)***Co-Chairs : Masaru Ishizuka & Nick Jeffers***IHTC15-9594/EEC-H-221***Conjugate Forced Convection-Conduction Heat Transfer in Channel Flow Using Different Cooling Fluids*

Felipe Baptista Nishida, Yara de Souza Tadano, Thiago Antonini Alves (Federal Technological University of Paraná, Brazil)

**IHTC15-9396/EEC-H-222***Development of In-Plane Thermal Conductivity Measurement Method of Multi-Layer Printed Wiring Boards Called Straight Fin Temperature Fitting Method*

Tetsuro Ogushi (Hiroshima International University, Japan), Kumi Aoki, Takashi Kobayashi, Yuta Niki (Mitsubishi Electric Corporation, Japan), Takuya Hirata (ESPEC Corporation, Japan)

**IHTC15-8546/EEC-H-223***L-Shaped Thermosyphon Loop with Vertical Evaporator for Power Electronics Cooling*

Francesco Agostini, Thomas Gradinger (ABB Corporate Research Center, Switzerland)

**IHTC15-9420/EEC-H-224***Performance Evaluation of Micro-Jet Impingement on Various Dimpled Surfaces*

Sun-Min Kim, Kwang-Yong Kim (Inha University, Korea)

12th, Tuesday

Room I

## Session 23 (H) [16:30 - 17:50]

### EEC3 Electronic Equipment Cooling (3)

Co-Chairs : *Francesco Agostini & Tetsuro Ogushi*

#### IHTC15-9166/EEC-H-231

*The Forced Circulation Cooling System with Rectangular Mini-Channels for the Inverter of Electric Vehicles*

Jiwon Yeo (Kyushu University, Japan), Daisuke Jige (Tokyo University of Marine Science and Technology, Japan), Seiya Yamashita, Shigeru Koyama (Kyushu University, Japan)

#### IHTC15-9936/EEC-H-232

*Practical Measurement System for Very Large Scale Integration Circuits Using Infrared Thermography*

Yuan-Ta Hsieh, Jian-Fu Wu, Chiao-Li Fang, Hann-Huei Tsai, Ying-Zong Juang (National Applied Research Laboratories, Taiwan)

#### IHTC15-9227/EEC-H-233

*Heat Transfer and Fluid Mechanics from a Piezoelectric Fan Operating in Its Second Resonant Frequency Mode*

Nick Jeffers, Jason Stafford, Brian Donnelly (Alcatel-Lucent, Ireland)

#### IHTC15-9115/EEC-H-234

*Convolution Based Steady State Compact Thermal Model for 3D Integrated Circuits: Methodology for Including the Thermal Impact of Die to Die Interconnections*

Federica Lidia Teresa Maggioni, Herman Oprins, Eric Beyne, Ingrid De Wolf (Interuniversity Microelectronics Centre/ Katholieke Universiteit Leuven, Belgium), Martine Baelmans (Katholieke Universiteit Leuven, Belgium)

---

## Session 21 (I) [9:40 - 11:20]

### TPP3 Thermophysical Properties (3)

Co-Chairs : *Stephan Kabelac & Yasuyuki Takata*

#### IHTC15-9050/TPP-I-211

*Tailoring Radiative Property of Two-Dimensional Complex Grating Structures*

Sunwoo Han, Bong Jae Lee (Korea Advanced Institute of Science and Technology, South Korea)

#### IHTC15-9505/TPP-I-212

*Molecular Simulation of Water Sorption and Diffusion Characterization in Cation-Exchanged ZSM-5*

Hongyin Chen, Jing Ding, Weilong Wang (Sun Yat-sen University, China), Xiaolan Wei (South China University of Technology, China), Jianfeng Lu (Sun Yat-Sen University, China)

#### IHTC15-9220/TPP-I-213

*Diffusion of Carbon Dioxide in Decane by MRI Technique*

Hao Min, Yongchen Song, Yuechao Zhao, Yu Liu, Bo Su, Lanlan Jiang, Xinhuan Zhou, Lingyue Tang (Dalian University of Technology, China)

#### IHTC15-9664/TPP-I-214

*Heat Transport Along Polar Nanofilms Due to Surface Phonon-Polaritons*

Jose Ordóñez-Miranda, Laurent Tranchant (École centrale Paris, France), Beomjoon Kim (The University of Tokyo, Japan), Yann Chalopin, Thomas Antoni, Sebastian Volz (École centrale Paris, France)

#### IHTC15-8917/TPP-I-215

*Thermal Conductivity of Silicon Nanofilms Predicted by Combined Phonon Hydrodynamics and Phonon Gas Dynamics*

Yuan Dong, Bing-Yang Cao, Zeng-Yuan Guo (Tsinghua University, China)

---

**Session 22 (I) [14:00 - 16:00]****TPP4 Thermophysical Properties (4)****Co-Chairs : Junnosuke Okajima & Huaqing Xie****IHTC15-8604/TPP-I-221***Investigation into the pH and Electrical Conductivity Enhancement of MgO-Ethylene Glycol Nanofluids*

Saheed Adewale Adio, Mohsen Sharifpur, Josua P. Meyer (University of Pretoria, South Africa)

**IHTC15-8606/TPP-I-222***Combined Influence of Size and Sonication on Constant Shear Viscosity of MgO-Ethylene Glycol Nanofluids*

Saheed Adewale Adio, Mohsen Sharifpur, Josua P. Meyer (University of Pretoria, South Africa)

**IHTC15-9160/TPP-I-223***Evaporation of Nanofluids*

Jan Eggers, Stephan Kabelac (Leibniz University Hannover, Germany)

**IHTC15-8643/TPP-I-224***Frost Formation and Growth on Hydrophilic, Hydrophobic, and Biphilic Surfaces*

Alexander Van Dyke, Amy Betz (Kansas State University, USA)

**IHTC15-8835/TPP-I-225***A Non-Equilibrium Molecular Dynamics Study on Thermal Transport in Functionalized Carbon Nanotube/Polymer Nanocomposites*

Youdi Kuang, Baoling Huang (The Hong Kong University of Science and Technology, China)

**IHTC15-8348/TPP-I-226***Two Different Methods for Determination of Exothermic Reaction Enthalpies from Temperature Measurements in Beechwood Cylinders during Torrefaction*

Andreas Ohliger, Paul-Martin Steffen, Reinhold Kneer (RWTH Aachen University, Germany)

**Session 23 (I) [16:30 - 18:30]****TST Thermal Storage****Co-Chairs : Dominic Groulx & Gaku Tanaka****IHTC15-9169/TST-I-231***Non-Isothermal Kinetics of Zeolite Water Vapor Adsorption into a Packed Bed Lab Scale Thermochemical Reactor*

Mohammadreza Gaeini (Eindhoven University of Technology, The Netherlands), Herbert Zondag (Eindhoven University of Technology, The Netherlands/Energy Research Centre of the Netherlands, The Netherlands), Camilo Rindt (Eindhoven University of Technology, The Netherlands)

**IHTC15-9987/TST-I-232***A Composite Mesoporous Material for an Open Sorption Thermal Energy Storage System*

Hongzhi Liu, Katsunori Nagano, Daichi Sugiyama, Junya Togawa, Makoto Nakamura (Hokkaido University, Japan)

**IHTC15-8881/TST-I-233***Investigation of Heat and Mass Transfer in a Magnesium Hydride Heat Storage Reactor*

Dan Shen, Changying Zhao, Qian Wang (Shanghai Jiao Tong University, China)

**IHTC15-8892/TST-I-234***Heat Transfer in Latent Heat Thermal Energy Storage Device for Automobile Applications*

Duke Po-Chen Shih, Honghi Tran, Masahiro Kawaji (University of Toronto, Canada), Matthew Birkett, John Burgers (Dana Thermal Products, Canada)

**IHTC15-8518/TST-I-235***Experimental and Numerical Investigation of Phase Change Heat Transfer Characteristics in Open-Cell Metal Foam Infiltrated with Eutectic Salt for Solar Energy Storage*

Peng Zhang, Xin Xiao (Shanghai Jiao Tong University, China), Ming Li (Yunnan Normal University, China)

**IHTC15-8753/TST-I-236***Performance Analysis of the Molten-Salt Thermal Storage System Filled by PCM Capsules with Cascaded Melting Temperatures*

Chao Xu (North China Electric Power University, China), Ming Wu (Xi'an Jiaotong University, China), Xing Ju, Xiaoze Du (North China Electric Power University, China), Yaling He (Xi'an Jiaotong University, China), Yuanyuan Li (North China Electric Power University, China)

12th, Tuesday

Room J

## Session 21 (J) [9:40 - 11:20]

### CDS3 Condensation (3)

Co-Chairs : Yutaka Abe & Xuehu Ma

#### IHTC15-9602/CDS-J-211

*In-tube Condensation of Low GWP Mixture Refrigerants R1234ze(E)/R32*  
Akio Miyara (Saga University, Japan), Hasan M. M. Afroz (Dhaka University of Engineering and Technology, Bangladesh), MD. Anowar Hossain (Dhaka University of Engineering and Technology, Bangladesh)

#### IHTC15-9758/CDS-J-212

*Condensation Heat Transfer of R-410A and R-22 in U-Tubes*  
Liang-Han Chien, Cheng-Sheng Liu (National Taipei University of Technology, Taiwan)

#### IHTC15-9887/CDS-J-213

*Study on Computational Method of Filmwise Non-Equilibrium Condensation*  
Tsubasa Ohshima (Hitachizosen Corporation, Japan), Takeo Kajishima (Osaka University, Japan)

#### IHTC15-8532/CDS-J-214

*A New Model for Refrigerant Condensation inside a Brazed Plate Heat Exchanger (BPHE)*  
Giovanni A. Longo, Giulia Righetti, Claudio Zilio (University of Padova, Italy)

#### IHTC15-9416/CDS-J-215

*Nitrogen Liquefaction: A Prototype Plant*  
Mario De Salve (Politecnico di Torino, Italy), Davide Milani (Criotec Impianti S.r.l., Italy), Bruno Panella (Politecnico di Torino, Italy), Guido Roveta (Criotec Impianti S.r.l., Italy)

---

## Session 22 (J) [14:00 - 16:00]

### CDS4 Condensation (4)

Co-Chairs : Nenad Miljkovic & Tetsuaki Takeda

#### IHTC15-9335/CDS-J-221

*The Enhancement of Steam Condensation Heat Transfer on a Horizontal Tube by Addition of Ammonia*  
Bin Dong, Jun Zhao, Shixue Wang, Minghui Ge, Yulong Zhao (Tianjin University, China), Kunfeng Liang (Henan University of Science and Technology, China)

#### IHTC15-9609/CDS-J-222

*Droplet Departure Characteristics for Steam Dropwise Condensation at Low Pressure*  
Xuehu Ma, Rongfu Wen, Zhong Lan, Benli Peng, Wei Xu (Dalian University of Technology, China)

#### IHTC15-9177/CDS-J-223

*Wettability-Driven Water Condensation at the Micron and Submicron Scale*  
Yutaka Yamada, Akira Kusaba, Tatsuya Ikuta, Takashi Nishiyama, Koji Takahashi, Yasuyuki Takata (Kyushu University, Japan)

#### IHTC15-9801/CDS-J-224

*Bulk Condensation of Supersaturated Vapor with Allowance of Temperature Distribution of Droplets*  
Naum Kortsenshteyn (G.M. Krzhizhanovsky Power Engineering Institute, Russia), Arseniy Yastrebov (Moscow Power Engineering Institute, Russia)

#### IHTC15-9895/CDS-J-225

*Study of the Heat Transfer and Flow Characteristic of an Ultra Micro Steam Injector*  
Taichi Koshiji, Yutaka Abe, Akiko Kaneko (University of Tsukuba, Japan), Yutaka Suzuki (WELCON Inc, Japan)

#### IHTC15-8969/CDS-J-226

*Condensation of Water from Saturated Air in a Compact Plate Condenser with Application to Water Balance in Proton Exchange Membrane Fuel Cell Systems*  
Ashley Fly, Rob Thring (Loughborough University, UK)

---

Room K

**Session 23 (J) [16:30 - 18:30]****CDS5 Condensation (5)****Co-Chairs : Takaharu Tsuruta & Arseniy Yastrebov****IHTC15-9002/CDS-J-231***Study of the Vapor Superheat Effect on Heat Transfer in Plate Heat Exchanger Based on Infrared Thermography*

Kifah Sarraf, Stéphane Launay, Lounès Tadrist (Aix-Marseille University, France)

**IHTC15-8896/CDS-J-232***Electric-Field-Enhanced Jumping-Droplet Condensation*

Nenad Miljkovic, Daniel J. Preston (Massachusetts Institute of Technology, USA), Ryan Enright (Bell Labs, USA), Evelyn N. Wang (Massachusetts Institute of Technology, USA)

**IHTC15-9082/CDS-J-233***Study on the Compact Steam Dump Device Development for the Damage Reduction of the Condenser Tube*

HyunSoo Kim, Won-Seok Kim, Jong-Wook Lee (BHI.CO.,LTD., Korea)

**IHTC15-8916/CDS-J-234***Parameter Comparison of Condensation Heat Transfer of R134a Outside Horizontal Low-Finned Tubes*

Ding-cai Zhang (Zhongyuan University of Technology, China), Wen-tao Ji (Xi'an Jiaotong University, China), Jia-di Du, Zhen Zhang, Xiao-wei Fan (Zhongyuan University of Technology, China) Ya-Ling He, Wen-Quan Tao (Xi'an Jiaotong University, China)

**IHTC15-9161/CDS-J-235***Analysis of the Condensate Carryover Phenomenon on Fin and Tube Evaporators*

Emilio Navarro-Peris, Jose Corberan, Jose González-Maciá (Universidad Politécnica València, Spain), Miguel Zamora (Compañía Industrial de Aplicaciones Térmicas, Spain)

**IHTC15-9296/CDS-J-236***Effect of Hydrocarbon Adsorption on the Wetting of Rare Earth Oxides*

Daniel J. Preston, Nenad Miljkovic, Jean Sack (Massachusetts Institute of Technology, USA), Ryan Enright (Bell Labs, USA), John Queency, Evelyn N. Wang (Massachusetts Institute of Technology, USA)

**Session 21 (K) [9:40 - 11:20]****ECS Energy Conversion and Storage****Co-Chairs : Yukihiko Okumura & Yu Wei****IHTC15-9174/ECS-K-211***Study on the Improvement of the Performance of a Novel Adsorption Heat Pump System for Generating High-temperature Steam*

Koichi Nakaso, Shunsuke Kobayashi, Shotaro Eshima, Jun Fukai (Kyushu University, Japan)

**IHTC15-9820/ECS-K-212***Benchmark Numerical Simulations of Solar Thermoelectric Generators*

Shenghui Lei, Ronan Frizzell, Ryan Enright (Bell Labs, USA)

**IHTC15-9326/ECS-K-213***Efficient Utilization of the Electrodes in a Redox Flow Battery by Modifying Flow Field and Electrode Morphology*

Shohji Tsushima, Fumiya Kondo, Sho Sasaki, Shuichiro Hirai (Tokyo Institute of Technology, Japan)

**IHTC15-8552/ECS-K-214***Experimentally Determined Thermal Parameters of an Energy Conversion Device Using a Constraint Least Square Parameter Estimation Method Coupled with an Analytical Thermal Model*

Jonathan Hey (Imperial College London, UK), Adam Malloy (EVO Electric Ltd., UK), Ricardo Martinez-Botas (Imperial College London, UK), Michael Lamperth (EVO Electric Ltd., UK)

**IHTC15-9402/ECS-K-215***Effect of Thermal Conductivity Enhancement of Thermochemical Energy Storage Material on Unused Heat Utilization System*

Yukitaka Kato, Massimiliano Zamengo (Tokyo Institute of Technology, Japan), Keiko Fujioka (Functional Fluids Ltd., Japan)

# General Sessions in Series

12th, Tuesday

## Session 22 (K) [14:00 - 15:20]

### **EEF1** Energy Efficiency (1)

*Co-Chairs : Wolfgang Heidemann & Yukitaka Kato*

#### **IHTC15-8661/EEF-K-221**

*Pilot Test and Model Analysis of Plastic Heat Exchanger for Flue Gas Heat Recovery*

Lin Chen, Xiaoze Du, Jiangtao Liang, Yingying Sun, Lijun Yang, Gang Xu (North China Electric Power University, China)

#### **IHTC15-8390/EEF-K-222**

*Thermo-Electricity Analogy Method for Computing Transient Heat Transfer In a New Reciprocating Finned Piston Compressor*

Mahbod Heidari, Kiarash Gharibdoust, Alfred Rufer, John Richard Thome (École Polytechnique Fédérale de Lausanne, Switzerland)

#### **IHTC15-9767/EEF-K-223**

*Heat Transfer Analysis of Blast Furnace Tuyere through CFD Simulation*

Yan Chen, Bin Wu, Xingjian Chen, Anfani Okosun, Dong Fu (Purdue University Calumet, USA), Thomas R. Hensler, Donald Zuke, Sergey Trenkinshu (ArcelorMittal, USA), Chenn Q. Zhou (Purdue University Calumet, USA)

#### **IHTC15-9020/EEF-K-224**

*Entransy Based Optimization on Data Center Cooling Process and Its Application*

Hao Tian, Zhen Li, Zhiguang He (Tsinghua University, Beijing)

---

## Session 23 (K) [16:30 - 17:50]

### **EEF2** Energy Efficiency (2)

*Co-Chairs : Masafumi Hirota & Chenn Q. Zhou*

#### **IHTC15-8843/EEF-K-231**

*Treated Aluminum as Highly Reflective Facade Materials for Energy-Efficient Buildings*

Takeshi Ihara, Tao Gao, Arild Gustavsen (Norwegian university of science and technology, Norway), Bjørn Petter Jelle (SINTEF Building and Infrastructure, Norway)

#### **IHTC15-9681/EEF-K-232**

*Application of Micro-Channel Heat Exchanger in Refrigerated Display Cabinet*

Chengcheng Tian (China Northwest Architecture Design and Research Institute CO.LTD, China), Hongqi Li (Beijing University of Technology, China)

#### **IHTC15-8632/EEF-K-233**

*Energy Efficient Cooling of Switch Cabinets Using Optimized Internal Settings*

Wolfgang Heidemann, Christian Staub, Klaus Spindler (University of Stuttgart, Germany)

#### **IHTC15-8995/EEF-K-234**

*A Numerical Solution Algorithm for a Heat and Mass Transfer Model of a Desalination System Based on Packed-Bed Humidification and Bubble Column Dehumidification*

Karim Chehayeb (Massachusetts Institute of Technology, USA), Farah Cheaib (American University of Beirut, USA), John Lienhard V (Massachusetts Institute of Technology, USA)

---

## Room B1

**Session 31 (B1) [8:20 - 10:00]****FBL3 Flow Boiling (3)***Co-Chairs : Tomoaki Kunugi & Stephane Launay***IHTC15-9867/FBL-B1-311***A Study on Post-CHF Heat Transfer at Near-Critical Pressure*

Takashi Mawatari, Hideo Mori (Kyushu University, Japan), Keishi Kariya (Saga University, Japan)

**IHTC15-9840/FBL-B1-312***Effect of Heat Transfer Surface Structure on Boiling Heat Transfer and Flow Characteristics in a Horizontal Narrow Channel*

Hitoshi Asano, Junpei Yoshidome, Taisaku Gomyo (Kobe University, Japan)

**IHTC15-9214/FBL-B1-313***Boiling Investigation in the Microchannel with Nano-Particles Coating*

Yuri Kuzma-Kichta (Moscow Power Engineering Institute, Russia), Aleksandr Leontyev (Bauman State Technical University, Russia), Aleksandr Lavrikov, Mikhail Shustov (Moscow Power Engineering Institute, Russia), Koichi Suzuki (Tokyo University of Science-Yamaguchi, Japan)

**IHTC15-9072/FBL-B1-314***Flow Boiling under Microgravity Conditions Comparative Study of Two Experimental Data Sets*

Marine Narcy (Institute of Fluid Mechanics of Toulouse, France), Alexander Scammell (University of Maryland, USA), Catherine Colin (Institute of Fluid Mechanics of Toulouse, France), Jungho Kim (University of Maryland, USA)

**IHTC15-9333/FBL-B1-315***Micro Liquid Film Heat Transfer and Critical Heat Flux of Flow Boiling in Micro-Channels*

Yu Yan Jiang, Tao Wang, Zhicheng Wang, Dawei Tang (Chinese Academy of Sciences, China)

**Session 32 (B1) [10:30 - 12:30]****PBL1 Pool Boiling (1)***Co-Chairs : Catherine Colin & Yoshihiko Haramura***IHTC15-9284/PBL-B1-321***Numerical Simulation of Pool Boiling from Artificial Cavities Using the Phase Field Method*

Aravind Sathyanarayana (Georgia Institute of Technology, USA), Yogendra Joshi (Georgia Institute of Technology, USA)

**IHTC15-8590/PBL-B1-322***Numerical Simulation of Boiling from a Single Reentrant-Cavity*

Jochen Dietl (Technische Universität Darmstadt, Germany), Peter Stephan (Technische Universität Darmstadt, Germany)

**IHTC15-8851/PBL-B1-323***Direct Numerical Simulations of Subcooled Boiling Phenomena Based on Non-Empirical Boiling and Condensation Model*

Yasuo Ose (Yamato System Engineer, Japan), Tomoaki Kunugi (Kyoto University, Japan)

**IHTC15-8911/PBL-B1-324***Numerical Simulation on Bubble Growth Process and Heat Transfer Characteristics with Microlayer Evaporation in Nucleate Boiling for Water*

Zhihao Chen, Yoshio Utaka (Yokohama National University, Japan)

**IHTC15-9631/PBL-B1-325***Effect of Surface Wettability on Subcooled Boiling Heat Transfer*

Yasushi Saito, Daisuke Ito (Kyoto University, Japan)

**IHTC15-8817/PBL-B1-326***Boiling Heat Transfer Theory: To Overcome Historical Deadlock*

Irakli G. Shekrladze (Georgian Technical University, Georgia)

13th, Wednesday

Room B2

## Session 31 (B2) [8:20 - 10:00]

### TPF1 Two-phase, Flow Behavior (1)

Co-Chairs : Satoru Momoki & Mark Spector

#### IHTC15-8981/TPF-B2-311

*Analysis of Two-Phase Flow Behavior in a Sharp Return Bend Using Capacitive Measurements*

Kathleen De Kerpel, Michel De Paepe (Ghent University, Belgium)

#### IHTC15-9810/TPF-B2-312

*Non-Equilibrium Discharging Flow From Safety Valves*

Yoshihiko Kitagawa, Sachiyo Horiki, Masahiro Osakabe (Tokyo University of Marine Science & Technology, Japan)

#### IHTC15-8971/TPF-B2-313

*Visualization of Ammonia Boiling Flow Phenomena Inside Narrow Flat Plates*

Hirofumi Arima, Fumiya Mishima, Kohei Koyama, Yasuyuki Ikegami (Saga University, Japan)

#### IHTC15-8720/TPF-B2-314

*Dynamic Flow Structures in the Wakes of Sliding Bubbles for Convective Heat Transfer Enhancement*

Rudi O'Reilly Meehan (Trinity College Dublin, Ireland), Brian Donnelly (Bell Labs, Ireland), Tim Persoons, Darina Murray (Trinity College Dublin, Ireland)

#### IHTC15-8927/TPF-B2-315

*Structure of Two-Phase Swirl Flow in Various Channels*

Anatoly Yakovlev, Stanislav Tarasevich, Andrey Shishkin (Kazan National Research Technical University, Russia)

---

## Session 32 (B2) [10:30 - 11:50]

### TPF2 Two-phase, Flow Behavior (2)

Co-Chairs : Michel de Paepe & Takehiko Yokomine

#### IHTC15-9876/TPF-B2-321

*Correlation of Transition Boundaries to and from Annular Flow Regime of Ammonia Evaporating Inside a Horizontal Internally Spirally Grooved Tube*

Satoru Momoki (Nagasaki University, Japan), Hirofumi Arima (Saga University, Japan), Yasuto Takashiba, Tomohiko Yamaguchi, Soichi Sasaki (Nagasaki University, Japan)

#### IHTC15-9376/TPF-B2-322

*Effect of Flow Pattern on Critical Heat Flux*

Takeyuki Ami, Goshi Yamashina, Hisashi Umekawa, Mamoru Ozawa (Kansai University, Japan)

#### IHTC15-9005/TPF-B2-323

*A Phenomenological Model of Dryout with Circumferentially Varying Heat Flux*

Jonathan Manning (Imperial College London, UK), Geoffrey F. Hewitt (Imperial College of Science, Technology & Medicine, UK), Simon Walker (Imperial College London, UK)

#### IHTC15-9023/TPF-B2-324

*Study on High-Void Fraction Gas-Liquid Two-Phase Flow in Tube Bundle*

Yoshiyuki Kondo, Ling Cheng, Seiho Utsumi, Takashi Ueno, Ryoichi Kawakami, Kengo Shimamura (Mitsubishi Heavy Industries, Ltd., UK)

---

## Room C1

**Session 31 (C1) [8:20 - 9:40]****IPJ Impinging Jet****Co-Chairs : Krishnamurthy Muralidhar & Niro Nagai****IHTC15-9035/IPJ-C1-311***Heat Transfer Measurements from Concave and Convex Surfaces with a Fully Developed Confined Impinging Slot Jet*

Seong Jung Kim, Yeong Hwan Kim, Hyun Jin Park, Dae Hee Lee (Inje University, Korea), Phillip Ligrani (Saint Louis University, USA)

**IHTC15-8838/IPJ-C1-312***Transient Flow and Thermal Performance of Integrated Deflector under Periodic Supersonic Flame Impingement*

JiaJie Zhang, Zhiguo Qu, RuiPeng Fu, YaLing He (Jiaotong University, China)

**IHTC15-9047/IPJ-C1-313***Experimental and Numerical Investigation of the Flow behind a Sphere Moving Vertically in a Stratified Fluid*

Shinsaku Akiyama, Shota Nakamura, Shinya Okino, Hideshi Hanazaki (Kyoto University, Japan)

**IHTC15-9385/IPJ-C1-314***Heat transfer Enhancement for Row of Impinging Jets in Cross-Flow with Some Baffle Attachments*

Rattanakorn Pansang, Makatar Wae-hayee, Passakorn Vessakosol, Chayut Nuntadusit (Prince of Songkla University, Thailand)

**Session 32 (C1) [10:30 - 12:30]****RNE Renewable Energy****Co-Chairs : Carlos Coimbra & Koji Matsubara****IHTC15-8834/RNE-C1-321***Numerical Assessment and Optimization of Wind Farm on Complex Terrain*

MengXuan Song, BingHeng Wu, Kai Chen, ZhongYang He, Xing Zhang (Tsinghua University, China)

**IHTC15-9869/RNE-C1-322***Numerical Modelling of Combined Natural Convection and Surface Radiation Heat Transfer in Cavity Receiver with Plate Fins*

Lloyd C. Ngo (University of Pretoria, South Africa), Tunde Bello-Ochende (University of Cape Town, South Africa), Josua P. Meyer (University of Pretoria, South Africa)

**IHTC15-8963/RNE-C1-323***Prediction of the First Pyrolysis Product and Yield in Biomass Gasifier*

Yukihiko Okumura (Maizuru National College of Technology, Japan), Takuya Okada, Ken Okazaki (Tokyo Institute of Technology, Japan)

**IHTC15-9817/RNE-C1-324***A Numerical Study on Bed Temperature and Gasifying Agent Effects on the Sugarcane Bagasse Gasification Process*

Gabriel Verissimo, Jean de Pinho, Albino Leiroz, Manuel Ermani Cruz (Federal University of Rio de Janeiro, Brazil)

**IHTC15-8989/RNE-C1-325***Optimal Sizing of Heat Exchangers for Organic Rankine Cycles (ORC) Based on Thermo-Economics*

Steven Lecompte, Martijn van den Broek, Michel De Paepe (Ghent University, Belgium)

**IHTC15-9916/RNE-C1-326***Analytical Solution of Nanofluid Volumetric Receiver*

Seung-Hyun Lee, Hyun Jin Kim, Yong-Jun Park, Kyu Han Kim, Seok Pil Jang (Korea Aerospace University, Korea)

13th, Wednesday

Room C2

## Session 31 (C2) [8:20 - 10:20]

### **HTE3** Heat Transfer Enhancement (3)

*Co-Chairs : Yutaka Shibata & Teck Neng Wong*

#### **IHTC15-8750/HTE-C2-311**

*A Numerical Study of Fluid and Heat Transfer Performance of Heat Exchangers with Novel Short-Circuit Prevention Helical Baffles*

Wenjing Du, Hongfu Wang, Gongming Xin, Shusheng Zhang, Lin Cheng (Shandong University, China)

#### **IHTC15-9424/HTE-C2-312**

*Numerical Study of Flow and Heat Transfer Characteristics of Different Distributed Corrugated Tube Bundles*

Wei Shao, Bing-xi Li, Hao Wu, Ya-ning Zhang, Zhi Xu (Harbin Institute of Technology, China)

#### **IHTC15-8727/HTE-C2-313**

*Mathematical Derivation on Heat Transfer Improvement of the Air-Cooled Condenser Cell in a Power Plant*

Hui Zhang, Haocheng Zhou, Yujin Yue, Lijun Yang, Xiaozhe Du, Yongping Yang (North China Electric Power University, China)

#### **IHTC15-9931/HTE-C2-314**

*Analysis on Optimal Configuration of Air-Foil Shaped Printed Circuit Heat Exchanger in Supercritical Carbon Dioxide Power Cycle*

Sung Ho Yoon (POSTECH, Republic of Korea, KINAC, Republic of Korea), Jin Gyu Kwon, Tae Ho Kim, Hyun Sun Park (POSTECH, Republic of Korea), Moo Hwan Kim (POSTECH, Republic of Korea, KINS, Republic of Korea)

#### **IHTC15-8719/HTE-C2-315**

*New Correlations for Heat Transfer and Pressure Drop for Serrated and Solid Fin Tube Bundles*

Anna Holfeld, Erling Næss (Norwegian University of Science and Technology, Norway)

#### **IHTC15-8867/HTE-C2-316**

*Model-Based Optimization of Three-Dimensional Complex Structure for Heat Transfer Enhancement in Single-Phase Flows*

Yosuke Hasegawa, Naoki Shikazono (The University of Tokyo, Japan)

---

## Session 32 (C2) [10:30 - 12:30]

### **HTE4** Heat Transfer Enhancement (4)

*Co-Chairs : Yosuke Hasegawa & Guannan Xi*

#### **IHTC15-9180/HTE-C2-321**

*Thermal-Hydraulic Performance of a Printed Circuit Heat Exchanger in a CO<sub>2</sub>-H<sub>2</sub>O Heat Exchange Process under Different Mass Flow Rates*

Xiangyang Xu, Ting Ma, Lei Li, Min Zeng, Qiuwang Wang (Xi'an Jiaotong University, China), Yitong Chen (University of Nevada, USA)

#### **IHTC15-9262/HTE-C2-322**

*Heat Transfer Characteristics in Forced Convection through a Rectangular Channel with V-Shaped Rib Roughened Surfaces*

Damiano Fustinoni, Pasqualino Gramazio, Luigi Colombo, Alfonso Niro (Politecnico di Milano, Italy)

#### **IHTC15-8718/HTE-C2-323**

*Influence of the Fin Type and Base Tube Diameter of Serrated and Solid-Fin Tubes on the Heat Transfer and Pressure Drop Performance*

Anna Holfeld, Erling Næss (Norwegian University of Science and Technology, Norway)

#### **IHTC15-8827/HTE-C2-324**

*Heat Transfer Enhancement in Heat Exchanger with Dimpled/ Protruded Surface*

Tsz Kit Tang, Ann Lee (the University of New South Wales, Australia), Guan Heng Yeoh (the University of New South Wales, Australia, Australian Nuclear Science and Technology Organisation, Australia)

#### **IHTC15-9864/HTE-C2-325**

*Pool Boiling of Hydrocarbon Mixture in Kettle-Reboiler with Low-Finned Tubes*

Elise Estiot, Carsten Richardt (Linde AG - Engineering Division, Germany)

#### **IHTC15-9299/HTE-C2-326**

*In-Tube Convective Heat Transfer Characteristics of CO<sub>2</sub>-Hydrate Mixture*

Hanvit Park, Rin Yun (Hanbat National University, South Korea)

---

## Room F

**Session 31 (F) [8:20 - 10:00]****FCV6 Forced Convection (6)***Co-Chairs : Yasuo Hattori & Marc Hodes***IHTC15-8378/FCV-F-311***Influence of Local Flow Acceleration on the Heat Transfer of Submerged and Free-Surface Jet Impingement*

Wilko Rohlfs, Claas Ehrenpreis, Herman.D. Haustein, Oliver Garbrecht, Reinhold Kneer (RWTH Aachen University, Germany)

**IHTC15-9295/FCV-F-312***Thermo-Hydrodynamic Characteristics of Magneto-thermal Wind Created in a Tube in Gravitational and Nongravitational Fields*

Taku Okitsu, Masato Akamatsu (Yamagata University, Japan), Masayuki Kaneda (Osaka Prefecture University, Japan)

**IHTC15-8548/FCV-F-313***Heat and Mass Transfer in a Single-Channel Plate Membrane Contactor with a Combined Counter/Cross-Flow Arrangement*

Simin Huang, Minlin Yang, Frank G.F. Qin, Yongjun Xu, Yuanzhi Zuo, Xiaoxi Yang (Dongguan University of Technology, China)

**IHTC15-8711/FCV-F-314***Development of an Empirical Model for Convective Evaporation of Sessile Droplets of Volatile Fluids*

Florian Carle, David Brutin (Aix-Marseille University, France)

**IHTC15-8736/FCV-F-315***Behavior and Optimization of Spray Humidification inside Air-Cooled Condenser of Power Generating Unit*

Liehui Xiao, Xinming Xi, Xiaoze Du, Lijun Yang (North China Electric Power University, China)

**Session 32 (F) [10:30 - 12:30]****FCV7 Forced Convection (7)***Co-Chairs : Keishi Kariya & Reinhold Kneer***IHTC15-8418/FCV-F-321***A Uniform Temperature Heat Sink for Cooling of High Concentrator Photo-Voltaic Systems*  
Gad Hetsroni (Israel Institute of Technology, Israel), Avram Bar-Cohen (University of Maryland, USA)**IHTC15-8684/FCV-F-322***Numerical Study of Conjugate Heat Transfer of Supercritical Kerosene Flow in Rectangular Cooling Channel*

Fengquan Zhong, Guoxin Dang, Yunfei Xing, Lihong Chen, Xinyu Chang (Chinese Academy of Sciences, China)

**IHTC15-9266/FCV-F-323***Determination of Convective Heat Transfer for Subsonic Flows over Heated Asymmetric Airfoil NACA 4412*

Yusuf Dag, Stephen Akwaboa, Patrick Mensah (Southern University and A&amp;M College, USA)

**IHTC15-8461/FCV-F-324***Convective Heat Transfer Characteristics of Low Concentrations CuO-Water Nanofluid in the Turbulent Flow Regime Based on Artificial Intelligent Models*

Mehdi Mehrabi, Mohsen Sharifpur, Josua P. Meyer (University of Pretoria, South Africa)

**IHTC15-9814/FCV-F-325***Heat Transfer Processes in Film Casting of Compressible Polymers*

Juan Ramos (Universidad de Malaga, Spain)

**IHTC15-9154/FCV-F-326***Convection-Radiation Interaction in Eccentric Annulus Using the Coupled Lattice Boltzmann and Meshless Method*

Kang Luo, Zhi-hong Cao, Hong-Liang Yi, He-Ping Tan (Harbin Institute of Technology, China)

13th, Wednesday

Room G

## Session 31 (G) [8:20 - 10:00]

### **MFP** Materials and Foods Processing

*Co-Chairs : Yanguang Shan & Takao Yoshinaga*

#### **IHTC15-8844/MFP-G-311**

*The Contact Heat Transfer in Rotary Drums in Dependence on the Particle Size Ratio*  
Aainaa Izyan Nafsun, Fabian Herz, Eckehard Specht (Otto von Guericke University Magdeburg, Germany), Viktor Scherer, Siegmart Wirtz, Hendrik Komossa (Ruhr University Bochum, Germany)

#### **IHTC15-9321/MFP-G-312**

*Fundamental Study on Agglomeration Control of Metallic Nano-Particles by Thermal Treatment*  
Takushi Saito, Tatsuya Kawaguchi, Isao Satoh (Tokyo Institute of Technology, Japan)

#### **IHTC15-8383/MFP-G-313**

*Three-Dimensional Simulation of Phosphor Dispensing Process in Light Emitting Diode Packaging by Lattice Boltzmann Method*  
Lan Li, Huai Zheng, Chao Yuan, Xingjian Yu, Xiaobing Luo (Huazhong University of Science and Technology, China)

#### **IHTC15-8715/MFP-G-314**

*Numerical Investigation of Cooling in the Continuous Fiber Glass Drawing Process*  
Quentin Chouffart (University of Liège, Belgium), Philippe Simon (3B - The Fibreglass Company, Belgium), Vincent E. Terrapon (University of Liège, Belgium)

#### **IHTC15-8601/MFP-G-315**

*Optimization of the Chemical Vapor Deposition Process for Gallium Nitride*  
Pradeep George (New York University, UAE), Jiandong Meng, Yogesh Jaluria (Rutgers University, USA)

---

## Session 32 (G) [10:30 - 11:50]

### **ACR** Air Conditioning and Refrigeration

*Co-Chairs : Eiji Hihara & Jinjia Wei*

#### **IHTC15-8563/ACR-G-321**

*Study on Heat Transfer Characteristics of Active Magnetic Regenerator in Magnetic Refrigeration System*  
Min Soo Kim, Keon Kuk, Ilju Mun (Samsung Electronics Co., Ltd., Korea)

#### **IHTC15-8940/ACR-G-322**

*Experimental Study of Ground Source Heat Pumps That Use the Direct Expansion Method*  
Tetsuaki Takeda, Daiki Yokoyama, Akio Ohashi, Syuhei Ishiguro, Shumpei Funatani, Koichi Ichimiya (University of Yamanashi, Japan)

#### **IHTC15-9310/ACR-G-323**

*Prediction Modeling of Automobile Dynamic Thermal Load*  
Jianghong Wu (South China University of Technology, China), Hang Song (University of Southern California, USA), Chaopeng Liu (South China University of Technology, China)

#### **IHTC15-9534/ACR-G-324**

*Development of All Aluminum Microchannel Heat Exchanger for Air-Conditioner*  
Hirokazu Fujino, Toshimitsu Kamada, Satoshi Inoue (Daikin Industries, LTD., Japan)

---

## Room H

**Session 31 (H) [8:20 - 10:20]****NSM1 Numerical Simulation (1)***Co-Chairs : Liang Gong & Mamoru Tanahashi***IHTC15-9037/NSM-H-311***Heat and Mass Transfer Modelling of an Industrial Autoclave to Minimise Steam Consumption*

Wei L. Lau, John A. Reizes, Victoria Timchenko, Sami Kara, Bernard J. Kornfeld (University of New South Wales, Australia)

**IHTC15-8447/NSM-H-312***Heat Transfer Enhancement in a Tube Filled with a Porous Medium: Influence of the Thermal Conductivity of the Porous Medium*

Tingzhen Ming, Yong X. Tao (University of North Texas, USA)

**IHTC15-9182/NSM-H-313***Molecular Simulation of the Dynamic Process of Water Vapour Absorption into Aqueous LiBr Solution with or without Alcohol Surfactants*

Hongtao Gao (University of Nottingham, UK, Dalian Maritime University, China), Beibei Zhu, Yuying Yan (Dalian Maritime University, China)

**IHTC15-9196/NSM-H-314***Comparative Study on Simulation of Convective  $Al_2O_3$ -Water and  $ZrO_2$ -Water Nanofluid by Using ANSYS-FLUENT*

Mostafa Mahdavi, Mohsen Sharifpur, Josua P. Meyer (University of Pretoria, South Africa)

**IHTC15-8760/NSM-H-315***Effect of Material Thermal-Physical Parameters on Weld Pool and Residual Stress Peak Value*

LiGe Tong, Lei Li (University of Science &amp; Technology Beijing, China), Fang Bai (China Petroleum Pipeline College, China), Shaowu Yin, Li Wang (University of Science &amp; Technology Beijing, China)

**IHTC15-9069/NSM-H-316***Comparison of Preconditioned Density-Based Algorithm with Pressure-Velocity Correction Algorithm for Incompressible Convection*

Chun Shen (Harbin Institute of Technology, China), Fengxian Sun (Harbin Engineering University, China), Xinlin Xia (Harbin Institute of Technology, China)

**Session 32 (H) [10:30 - 12:30]****NSM2 Numerical Simulation (2)***Co-Chairs : Takeo Kajishima & Yong X. Tao***IHTC15-9811/NSM-H-321***Towards High-Performance Thermal Flow Solvers Based on the Link-Wise Artificial Compressibility Method*

Christian Obrecht, Frédéric Kuznik, Gilles Rusaouën, Jean-Jacques Roux (CETHIL UMR 5008, France)

**IHTC15-8812/NSM-H-322***Asymmetric Transition for High Froude Number Plane Fountains in Linearly Stratified Fluids*

Mohammad Ilias Inam (James Cook University, Australia), Wenxian Lin (James Cook University, Australia), Yunnan Normal University, China), Steven W. Armfield (The University of Sydney, Australia), Yinghe He (James Cook University, Australia)

**IHTC15-9729/NSM-H-323***Unified Integral Transforms in Single Domain Formulation for Internal Flow Three-Dimensional Conjugated Problems*

Diego C. Knupp (State University of Rio de Janeiro, Brazil), Carolina Palma Naveira-Cotta, Renato M. Cotta (Federal University of Rio de Janeiro, Brazil)

**IHTC15-9521/NSM-H-324***Assessment of Three Coalescence and Breakage Kernel Models on Predicting Complex Bubbly Flow*

Xinyue Duan, Liang Gong (China University of petroleum, China)

**IHTC15-8783/NSM-H-325***Numerical Investigation on Conjugated Heat Transfer of Conduction in Wall and Mixed Convection in Horizontal Square Tube with Molten Salts*

Chao Wang, Yu-Ting Wu, Cong Chen, Bin Liu, Chong-Fang Ma (Beijing University of Technology, China)

**IHTC15-9371/NSM-H-326***Comparison of Turbulence Models in Simulating a Cruciform Impinging Jet on a Flat Wall*

Florin Bode (Technical University of Cluj-Napoca, Romania, Technical University of Civil Engineering in Bucharest, Romania), Kodjovi Sodjavi, Amina Meslem (University of La Rochelle, France), Ilinca Nastase (Technical University of Civil Engineering Bucharest, Romania)

13th, Wednesday

Room I

## Session 31 (I) [8:20 - 10:20]

### **PMD1** Porous Media (1)

*Co-Chairs : Michel Quintard & Suguru Uemura*

#### **IHTC15-8405/PMD-I-311**

*Thermal Conductivity of Ceramic Sponges at Temperatures up to 1000 °C*  
Benjamin Dietrich, Thomas Fishedick, Martin Wallenstein, Matthias Kind (Institute of Thermal Process Engineering, Germany)

#### **IHTC15-8278/PMD-I-312**

*One Dimensional Thermal Analysis of Solar Air Receiver Using Silicon Carbide Ceramic Foam*  
Fengwu Bai (Chinese Academy of Sciences, China)

#### **IHTC15-8530/PMD-I-313**

*Temperature Evolution of Evacuated Tube Adsorption Bed Heated by Solar Radiation*  
Chun-Xu Du, Zhong-Xian Yuan, Xiao-Huang Hou, Feng Xin, Dong-Dong Gao, Yong-Chang Chen (Beijing University of Technology, China)

#### **IHTC15-8893/PMD-I-314**

*Heat and Mass Transfer Model of a Packed-Bed Reactor for Solar Thermochemical CO<sub>2</sub> Capture*  
Leanne Reich (The University of Minnesota, USA), Roman Bader (The Australian National University, Australia), Terrence Simon (The University of Minnesota, USA), Wojciech Lipinski (The Australian National University, Australia)

#### **IHTC15-8657/PMD-I-315**

*Evaluation of Gas Production Behavior from Hydrate-Bearing Sediments with Different Thermal Properties by Depressurization*  
Yongchen Song, Zihao Zhu, Jiafei Zhao, Chuanxiao Cheng, Di Liu, Lei Yang, Jiaqi Wang (Dalian university of Technology, China)

#### **IHTC15-9191/PMD-I-316**

*Identification of the Radiative Properties of  $\alpha$ -SiC Foams Realistically Designed with a Numerical Generator*  
Simon Guevelou, Benoit Rousseau, Gilberto Domingues (L'Université Nantes Angers Le Mans, France), Jerome Vicente (Institut Universitaire des Systèmes Thermiques Industriels, France), Cyril Caliot, Gilles Flamant (Laboratoire des Procédés, Matériaux et Energie Solaire, France)

## Session 32 (I) [10:30 - 12:30]

### **PMD2** Porous Media (2)

*Co-Chairs : Takemi Chikahisa & Benjamin Dietrich*

#### **IHTC15-8575/PMD-I-321**

*A Rigorous Derivation and its Applications of Volume Averaged Transport Equations for Heat Transfer in Nanofluid Saturated Metal Foams*  
Fumika Sakai (Nihon Sekkei Kogyo Co., Ltd., Japan), Wenhao Li (Shizuoka University, Japan), Akira Nakayama (Shizuoka University, Japan, Wuhan Polytechnic University, China)

#### **IHTC15-8782/PMD-I-322**

*Effective Thermal Conductivity of Metal Foams: Experiments and Analysis*  
Peng Yue (Chinese Academy of Sciences, China, University of Chinese Academy of Sciences, China), Lin Qiu, Xinghua Zheng, Dawei Tang (Chinese Academy of Sciences, China)

#### **IHTC15-8831/PMD-I-323**

*Evaluation of the Thermal Hydraulic Performance of Round Tube Metal Foam Heat Exchangers for HVAC Applications*  
Henk Huisseune, Sven De Schampheleire, Bernd Aemeel, Michel De Paepe (Ghent University, Belgium)

#### **IHTC15-8865/PMD-I-324**

*Comparison of Aluminium Foam Finned Heat Sinks and Effect of Painting and Orientation in Buoyancy-Driven Convection*  
Sven De Schampheleire, Kathleen De Kerpel, Gerben Kennof, Pieter Pirmez, Henk Huisseune, Michel De Paepe (Ghent University, Belgium)

#### **IHTC15-9734/PMD-I-325**

*Influence of Strut Shape and Porosities on Geometrical Properties and Effective Thermal Conductivity of Kelvin Like Anisotropic Metal Foams*  
Prashant Kumar, Frederic Topin (Aix-Marseille University, France)

#### **IHTC15-9841/PMD-I-326**

*An Improved Capillary Bundle Model by Using Tortuosity and Parameters Extracted from Pore Network Model*  
Xinhuan Zhou, Lanlan Jiang, Lingyu Chen, Yu Liu, Yongchen Song, Meiheryai Mutailipu (Dalian University of Technology, China)

## Room J

**Session 31 (J) [8:20 - 10:20]****RAD1 Radiation (1)****Co-Chairs : Vaillon Rodolphe & Jun Yamada****IHTC15-8207/RAD-J-311***Effect of Processing Temperature on Radiative Properties of Polypropylene and Heat Transfer in the Pure and Glassfibre Reinforced Polymer*

Donia Hakoume (The University of Nantes, France), Leonid Dombrovsky (Joint Institute for High Temperatures, Russia), Didier Delaunay, Benoit Rousseau (The University of Nantes, France)

**IHTC15-8214/RAD-J-312***Radiative Heat Transfer Modeling in Supersonic Gas Flow with Suspended Particles to a Blunt Body*

Leonid Dombrovsky (Joint Institute for High Temperatures, Russia), Dmitry Reviznikov (Moscow Aviation Institute, Russia)

**IHTC15-9012/RAD-J-313***Prediction of the Resonance Condition of Metamaterial Emitters and Absorbers Using LC Circuit Model*

Atsushi Sakurai (Niigata University, Japan, Georgia Institute of Technology, USA), Bo Zhao, Zhuomin Zhang (Georgia Institute of Technology, USA)

**IHTC15-9222/RAD-J-314***The Micro-Macro Model for Transient Radiative Transfer Simulations*

Maxime Roger (Université de Lyon, France), Nicolas Crouseilles (INRIA-Rennes Bretagne-Atlantique, France, Université de Rennes, France), Pedro J. Coelho (University of Lisbon, Portugal)

**IHTC15-9382/RAD-J-315***Numerical Study of the Effects of Surface Micro-Roughness on the Optical Constants of Aluminum Determined by Spectroscopic Ellipsometry*

Wenjie Zhang, Jiayue Yang, Linhua Liu (Harbin Institute of Technology, China)

**IHTC15-8268/RAD-J-316***Absorption of Short-Pulsed Laser Radiation in Superficial Human Tissues: Transient vs Quasi-Steady Radiative Transfer*

Jaona Randrianalisoa (Université de Reims Champagne Ardenne, France), Leonid Dombrovsky (Joint Institute for High Temperatures, Russia), Wojciech Lipinski (The Australian National University, Australia), Victoria Timchenko (The University of New South Wales, Australia)

**Session 32 (J) [10:30 - 12:30]****RAD2 Radiation (2)****Co-Chairs : Pedro Coelho & Katsunori Hanamura****IHTC15-8771/RAD-J-321***Radiation Enhancement by Metal Film on Micro Cavities in Resin*

Tsuyoshi Totani (Hokkaido University, Japan, JST PRESTO, Japan), Toshio Irokawa (Hokkaido University, Japan), Minoru Iwata (Kyushu Institute of Technology, Japan), Masashi Wakita, Harunori Nagata (Hokkaido University, Japan)

**IHTC15-8871/RAD-J-322***Study of Amorphous Silicon Gratings with Disorder for Solar Energy Absorbers*

Xing Fang, Changying Zhao, Hua Bao (Shanghai Jiao Tong University, China)

**IHTC15-9636/RAD-J-323***Thermal Radiation Characteristics in Sub-Micron Region for MEMS Space Radiator*

Ai Ueno, Yuji Suzuki (The University of Tokyo, Japan)

**IHTC15-9384/RAD-J-324***First-Principles Study on Electronic Band Structure and Optical Constants of Synthesized  $Si_3Al(As_xP_{1-x})$  Alloys*

Jiayue Yang, Linhua Liu, Jianyu Tan (Harbin Institute of Technology, China)

**IHTC15-9188/RAD-J-325***Reducing Thermal Radiation Between Parallel Plates in the Far-to-Near Field Transition Regime*

Yoichiro Tsurimaki (Université de Lyon, France), Pierre-Olivier Chapuis, Rodolphe Vaillon (Université de Lyon, France), Junnosuke Okajima, Atsuki Komiya, Shigenao Maruyama (Tohoku University, Japan)

**IHTC15-8521/RAD-J-326***A Direct Numerical Simulation for Influence of Roughness on Near-Field Radiative Heat Transfer between Two Films*

Yong Chen (Nanjing University of Science and Technology, China), Yimin Xuan (Nanjing University of Aeronautics and Astronautics, China)

13th, Wednesday

Room K

## Session 31 (K) [8:20 - 10:20]

**PLS** Plasma

**Co-Chairs : Yoshinori Itaya & Yuying Yan**

### **IHTC15-9138/PLS-K-311**

*3D Numerical Simulation of Buoyancy Driven Flow in a Cubical Enclosure with Different Wall Conductivities*

Narendra Gajbhiye, Praveen Throvgunta, Vinayak Eswaran (Indian Institute of Technology, India)

### **IHTC15-9408/PLS-K-312**

*Integrated Modeling of Transport Phenomena in Keyhole Welding with Plasma Arc*

Yan Li, Yanhui Feng, Yafei Li, Xinxin Zhang (University of Science and Technology Beijing, China), Chuansong Wu (Shandong University, China)

### **IHTC15-8815/PLS-K-313**

*Thermoelectric Properties of ZnNiO/Polyparaphenylene Hybrids Prepared by Spark Plasma Sintering*

Zihua Wu, Huaqing Xie, Lianghua Gan, Jun Liu (Shanghai Second Polytechnic University, P.R.China)

### **IHTC15-9541/PLS-K-314**

*Application of an Integrated CFD Model to Aluminum Nanoparticle Production*

Silvania Lopes (The von Karman Institute for Fluid Dynamics, Belgium), Pierre Proulx (University of Sherbrooke, Canada), Jean-Baptiste Gouriet, Patrick Rambaud (The von Karman Institute for Fluid Dynamics, Belgium)

### **IHTC15-9897/PLS-K-315**

*A Comparison of Methane Hydrate Decomposition Using Radio Frequency Plasma and Microwave Plasma Methods*

Ismail Rahim (Ehime University, Japan, Makassar State University, Indonesia), Shinfuku Nomura, Shinobu Mukasa, Hiromichi Toyota (Ehime University, Japan)

### **IHTC15-9415/PLS-K-316**

*Two Successive Thermal Inverse Problems Solved for Plasma Facing Components inside JET Tokamak: Estimation of Surface Heat Flux and Thermal Resistance of a Surface Carbon Layer*

Jonathan Gaspar (CEA, France), Fabrice Rigollet, Jean-Laurent Gardarein, Christophe Le Niliot (Aix-Marseille University, France), Yann Corre (CEA, France)

## Session 32 (K) [10:30 - 12:30]

**TEL** Thermoelectric Devices

**Co-Chairs : Shenghui Lei & Kazuaki Yazawa**

### **IHTC15-9360/TEL-K-321**

*Thermoelectric Properties of Polymer-Semiconductor-Polymer Molecular Junction*  
Yuanyuan Wang, Huaqing Xie (Shanghai Second Polytechnic University, China)

### **IHTC15-8966/TEL-K-322**

*Evaporation of a Water Droplet Deposited on a Nano-Patterned Transparent Film Fabricated by UV Nanoimprint*

Noriyuki Unno, Motoharu Asano, Shin-ichi Satake, Jun Taniguchi (Tokyo University of Science, Japan)

### **IHTC15-9096/TEL-K-323**

*Thermal Transport Properties of PEDOT-PSS Thin Films*

Harutoshi Hagino (Kyushu Institute of Technology, Japan), Masahiro Hokazono, Hiroaki Anno, Naoki Toshima (Tokyo University of Science, Yamaguchi, Japan), Koji Miyazaki (Kyushu Institute of Technology, Japan)

### **IHTC15-9996/TEL-K-324**

*Experimental Investigations on the Performance of a Thermoelectric Device with an Integrated Heat Exchanger and Flow Channels*

Matthew Barry, Kenechi Agbim, B. V. Krishna Reddy, Minking K. Chyu (University of Pittsburgh, USA)

### **IHTC15-8789/TEL-K-325**

*Design Optimization of Automobile Exhaust Thermoelectric Generator for Waste Heat Recovery*

Zhiqiang Niu, Qianshan Li, Wangbo He, Yongzhan Huo, Kui Jiao (Tianjin University, China)

### **IHTC15-8931/TEL-K-326**

*The Optimization of Thermoelectric Module Size in a Waste Heat Power Generation System*  
Wei He, Shixue Wang, Chi Lu, Yanzhe Li, Xing Zhang (Tianjin University, China)

## Room B1

**Session 41 (B1) [8:20 - 10:00]****PBL2 Pool Boiling (2)****Co-Chairs : Yasushi Saito & Peter Stephan****IHTC15-9265/PBL-B1-411***Highly Subcooled Water Boiling: Some New Details of the Process*  
Konstantin Khodakov, Yury Zeigarnik (Joint Institute for High Temperatures, Russia)**IHTC15-9568/PBL-B1-412***Study on Nucleate Boiling Heat Transfer by Measuring Instantaneous Surface Temperature Distribution by Infrared Radiation Camera*  
Yasuo Koizumi, Kazuki Takahashi (Shinshu University, Japan)**IHTC15-9914/PBL-B1-413***Pore-Scale Experimental Study of Boiling in Porous Media*  
Paul Sapin, Paul Duru (Université de Toulouse, France), Florian Fichot (Institut de Radioprotection et de Sûreté Nucléaire, France), Marc Prat, Michel Quintard (Université de Toulouse, France, CNRS, France)**IHTC15-9772/PBL-B1-414***Boiling Behaviors on a Vertical Surface in Saturated Pool Boiling at High Pressures*  
Hiroto Sakashita (Hokkaido University, Japan)**IHTC15-9048/PBL-B1-415***Local Heat Removal by Liquid Film on the Expansion of Dry Area on a Superheated Copper Wall*  
Yoshihiko Haramura (Kanagawa University, Japan)**Session 42 (B1) [10:30 - 12:10]****PBL3 Pool Boiling (3)****Co-Chairs : Liwu Fan & Hiroto Sakashita****IHTC15-8680/PBL-B1-421***Characteristic Behaviors of Boiling Bubble Initiation Under High Pressure Conditions*  
Seiichi Yokobori, Keisuke Yasumi (Tokyo City University, Japan), Sayaka Akiyama (Toshiba Corporation, Japan)**IHTC15-8795/PBL-B1-422***The Influence of Single Bubble Growth and Bubble Coalescence on Boiling Heat Transfer*  
Axel Sielaff, Peter Stephan (Technische Universität Darmstadt, Germany)**IHTC15-9102/PBL-B1-423***Nucleation Incipience on a Heated Surface: Effect of Pressure Oscillations*  
Laetitia Leal (Ecole Polytechnique de Montreal, Canada), Pascal Lavieille, Marc Miscevic (Université de Toulouse, France, CNRS, France), Frédéric Topin, Lounès Tadrst (Aix-Marseille Université, France)**IHTC15-9404/PBL-B1-424***Experimental Study of Transport Phenomena at the Onset of Nucleate Boiling Using a Boilingmeter*  
Mohammed Zamoum (Université M'hamed Bougara, Algérie, Aix-Marseille Université, France), Benoît Dubrac, Flora Goepper (Lorraine University, France), Lounès Tadrst (Aix-Marseille Université, France), Hervé Combeau (Lorraine University, France), Mohand Kessal (Université M'hamed Bougara, Algérie)**IHTC15-9320/PBL-B1-425***Effects of Pool Subcooling on Coalescence Heat Transfer and Bubble Dynamics*  
Jingliang Bi, David M. Christopher (Tsinghua University, China), Xipeng Lin (Chinese Academy of Sciences, China), Xuefang Li (Tsinghua University, China)

14th, Thursday

Room B2

## Session 41 (B2) [8:20 - 9:40]

### TPN1 Two-phase, Numerical Simulation (1)

*Co-Chairs : Jun Cai & Seiichi Yokobori*

#### IHTC15-8721/TPN-B2-411

*Population Balance Modeling for Air-Water Bubbly Flow in a Vertical U-Bend*

Hongye Zhu, Xingtuan Yang, Yichuan Huang (Tsinghua University, China), Jiyuan Tu (Tsinghua University, China, RMIT University, Australia), Shengyao Jiang (Tsinghua University, China)

#### IHTC15-9780/TPN-B2-412

*Computational Studies of LNG Evaporation and Heat Diffusion through a LNG Cargo Tank Membrane*

Jang Hyun Lee (INHA University, Korea), Yoon Jo Kim (Washington State University Vancouver, USA), Seyun Hwang (INHA University, Korea)

#### IHTC15-8564/TPN-B2-413

*Computational Fluid Dynamics Evaluation of the Multi-Nozzle Oil-Jet Lubrication for Rolling Bearings*

Wei Wu, Jibin Hu, Shihua Yuan, Xueyuan Li (Beijing Institute of Technology, China)

#### IHTC15-9543/TPN-B2-414

*Numerical Simulation of Liquid-Gas Two-Phase Flow with Large Density Difference in Multi-Layered Sintered Wick by the Lattice Boltzmann Method*

Tomohiko Yamaguchi (Nagasaki University, Japan), Qian Wan, Yuying Yan, Jiaju Hong (University of Nottingham, UK)

---

## Session 42 (B2) [10:30 - 12:10]

### TPN2 Two-phase, Numerical Simulation (2)

*Co-Chairs : Hirofumi Arima & Yoon Jo Kim*

#### IHTC15-9798/TPN-B2-421

*Numerical Simulation of Condensing and Evaporating Annular Flows in Microchannels with Laminar and Turbulent Liquid Films*

Nicolas Antonsen, John R. Thome (Ecole Polytechnique Fédérale de Lausanne, Switzerland)

#### IHTC15-8670/TPN-B2-422

*Numerical Study of Water Droplet Parameters in Icing Tunnel Test*

Wei Dong, Jianjun Zhu, Mei Zheng, Rui Wang (Shanghai Jiao Tong University, China)

#### IHTC15-9133/TPN-B2-423

*Numerical Simulation of Reactive Multiphase Flows in Porous Media Using Lattice Boltzmann Method*

Fang Xin, Xunfeng Li, Min Xu, Xiulan Huai (Chinese Academy of Sciences, China), Zhendong Cui (Chinese Academy of Sciences, China, University of Chinese Academy of Sciences, China)

#### IHTC15-9595/TPN-B2-424

*Modelling of Fundamental Transfer Processes in Crude-Oil Fouling*

Junfeng Yang, Omar Matar, Geoffery Hewitt, Wentian Zheng, Parth Manchanda (Imperial College London, United Kingdom)

#### IHTC15-8692/TPN-B2-425

*Numerical and Experimental Study of Slug Flow Dynamics in Inclined Pipes with Granular Layer*

Dmitry Khramtsov, Dmitry Nekrasov, Boris Pokusaev (Moscow State University of Mechanical Engineering, Russia)

---

## Room C1

**Session 41 (C1) [8:20 - 10:20]****TDY1 Thermodynamics (1)****Co-Chairs : Yoshimichi Hagiwara & Heinz Herwig****IHTC15-9370/TDY-C1-411***A Simulation Study into the Thermodynamic Properties of Water-Alcohol Mixtures*

James Cannon (The University of Tokyo, Japan), Tohru Kawaguchi, Eiichi Okuno (DENSO CORPORATION), Junichiro Shiomi (The University of Tokyo, Japan)

**IHTC15-8636/TDY-C1-412***Prediction of Anisotropic Crystal-Melt Interfacial Free Energy of Sugar Alcohols through Molecular Simulations*

Huaichen Zhang, Silvia Nedeia, Camilo C. M. Rindt, Herbert A. Zondag, David M. J. Smeulders (Eindhoven University of Technology, The Netherlands)

**IHTC15-8833/TDY-C1-413***Influence of Form and Thermal Properties of Granular Layer to Subcooled Liquid Boiling Dynamics in Impulse Heat Generation in the Wall*

Nikolay Zakharov, Sergey Karlov, Boris Pokusaev (Moscow State University of Mechanical Engineering, Russian Federation)

**IHTC15-8230/TDY-C1-414***High Resolution Heat Transfer Measurements at the Three Phase Contact Line of a Moving Single Meniscus*

Sebastian Fischer, Stefan Batzdorf, Tatiana Gambaryan-Roisman, Peter Stephan (Technische Universität Darmstadt, Germany)

**IHTC15-8349/TDY-C1-415***Numerical Determination of Autothermal Operation Limits for Beechwood Torrefaction Processes as a Function of Different Operating Parameters*

Andreas Ohliger, Reinhold Kneer (RWTH Aachen University, Germany)

**IHTC15-8515/TDY-C1-416***Notes on Singular Heat Radiation*

Reuven Segev (Ben-Gurion University of the Negev, Israel), Joe Goddard (University of California, USA)

**Session 42 (C1) [10:30 - 12:30]****TDY2 Thermodynamics (2)****Co-Chairs : Tatiana Gambaryan-Roisman & Tomohiko Yamaguchi****IHTC15-8482/TDY-C1-421***Loss Coefficients for Compressible Flows in Conduit Components under Different Thermal Boundary Conditions*

Bastian Schmandt, Heinz Herwig (Hamburg University of Technology, Germany)

**IHTC15-8583/TDY-C1-422***Energy Separation of Gases with Prandtl Numbers Unequal to Unity*

Alexander I. Leont'ev, Igor I. Vigdorovich (Lomonosov Moscow State University, Russia)

**IHTC15-9158/TDY-C1-423***Chimney-Enhanced Natural Convection in Honeycombs*

Xiao Hu Yang, Jia Xi Bai, Hong Bin Yan, Tian Jian Lu (Xi'an Jiaotong University, China), Tongbeum Kim (University of the Witwatersrand, South Africa)

**IHTC15-9184/TDY-C1-424***Calculating and Assessing Complex Convective Heat Transfer Problems: The CFD-SLA Approach*

Christoph Redecker, Heinz Herwig (Hamburg University of Technology, Germany)

**IHTC15-9847/TDY-C1-425***Effect of the Fin Height on Unsteady Flows and Heat Transfer in a Differentially Heated Cavity*

Jia Ma, Feng Xu (Beijing Jiaotong University, China)

**IHTC15-9966/TDY-C1-426***Numerical Study on Cooling Performance for Multi-Holes Steam Jet in the Internal Channel of a Hollow Turbine Blade*

Liang Xu, Shuai Zhang, Wei Wang, Jianmin Gao, Tiejun Gao (Xi'an Jiaotong University, China)

14th, Thursday

Room C2

## Session 41 (C2) [8:20 - 10:20]

### **HTE5** Heat Transfer Enhancement (5)

*Co-Chairs : Yanhua Diao & Kazuyoshi Nakabe*

#### **IHTC15-9080/HTE-C2-411**

*Heat Transfer Performance of a Channel Flow with Aluminum Fiber Layers (Comparison with Aluminum Porous Foams)*

Keita Imai, Mami Yamamoto (Doshisha University, Japan), Masaaki Sakagami (Taisei Kogyo Co. Ltd., Japan), Mamoru Senda, Kyoji Inaoka (Doshisha University, Japan)

#### **IHTC15-10554/HTE-C2-412**

*Heat Transfer near Injection Hole by Shock and Boundary Layer Interaction in the Supersonic Flowfield*

Namkyu Lee, Jiwoon Song, Ji-Yeul Bae (Yonsei University, Korea), Yoon Goo Kang, Heecheol Ham, Ju Chan Bae (Agency for Defense Development, Korea), Hyung-Hee Cho (Yonsei University, Korea)

#### **IHTC15-8562/HTE-C2-413**

*Non-Similar Heat Transfer Characteristics Associated with Nanofluid Forced Convection Cooling and Heating*

Wenhao Li (Shizuoka University, Japan), Akira Nakayama (Shizuoka University, Japan), Wuhan Polytechnic University, China)

#### **IHTC15-8571/HTE-C2-414**

*Heat Transfer Optimization for Reducing Thermal and Flow Resistance*

Wei Liu, Hui Jia, Zhichun Liu, Jinguo Yang (Huazhong University of Science and Technology, China)

#### **IHTC15-8689/HTE-C2-415**

*Thermal Fluid Flow Transport Characteristics in Pipe Flow Using Graphene-Oxide-Nanofluid*

Shuichi Torii, Hajime Yoshino (Kumamoto University, Japan)

#### **IHTC15-8801/HTE-C2-416**

*Heat Transfer Enhancement in Tangential Injection Induced Swirl Flows*

Gopinath R. Warrier, Derrick Lloyd (University of California, USA), Lin Yang (Xi'an Jiaotong University, China), Yuanchen Hu, Vijay K. Dhir, Yongh S. Ju (University of California, USA)

## Session 42 (C2) [10:30 - 12:30]

### **HTE6** Heat Transfer Enhancement (5)

*Co-Chairs : Naoki Shikazono & Gopinath Warrier*

#### **IHTC15-9825/HTE-C2-421**

*Evaluation of Herringbone Wavy Fin Based Heat Exchanger for Heat Transfer Enhancement in Automobile Exhaust Energy Harvesting Systems*

Jayati Athavale, Jaideep Pandit, Srinath Ekkad, Scott Huxtable (Virginia Tech University, USA)

#### **IHTC15-9969/HTE-C2-422**

*Natural Convection in an Open-Ended Channel under Staggered Thermal Boundary Conditions. Application to the Control of the Free Cooling in Photovoltaic Doubleskin Facades*

Christophe Ménézo, Stéphanie Giroux-Julien (CNRS-INSA-Univ, France), Victoria Timchenko (The University of New South Wales, Australia), Marco Fossa (University of Genova, Italy)

#### **IHTC15-8747/HTE-C2-423**

*Thermal and Hydraulic Characteristics of  $SCO_2$  in a Horizontal Tube at High Reynolds Number*

Katsuyoshi Tanimizu, Reza Sadr, Devesh Ranjan (Texas A&M University, USA)

#### **IHTC15-8554/HTE-C2-424**

*Dynamic and Heat Transfer of Lobed Impinging Jets*

Denis Brouilliot, David Lo Jacono (Université de Toulouse, France)

#### **IHTC15-8864/HTE-C2-425**

*An Experimental Study of Heat Transfer in the Turn Region of a U-Bend Channel with Various Ribs*

Chenglong Wang, Lei Wang, Bengt Sundén (Lund University, Sweden)

#### **IHTC15-8904/HTE-C2-426**

*Enhancement of Heat Transfer Performance by Using Sawtooth Fin Structure in the Multiport Microchannel Flat Tube*

Ji Zhang, Yanhua Diao, Yaohua Zhao, Yanni Zhang (Beijing University of Technology, China)

## Room E

**Session 41 (E) [8:20 - 10:00]****CPM1 Computational Methods (1)****Co-Chairs : Fang Liu & Takahiro Tsukahara****IHTC15-9034/CPM-E-411**

*A Two-Dimensional Numerical Method for Incompressible Flow Problem Based on SIMPLER Algorithm and Quadtree Grid with Collocated Arrangement*  
Wei You, Zengyao Li, Wenquan Tao (Xi'an Jiaotong University, China)

**IHTC15-9302/CPM-E-412**

*Different Approaches to FVM Method Fluid Flow and Heat Transfer Simulation Inside Thermosyphon*  
Marcin Lecki, Grzegorz Gorecki (Lodz University of Technology, Poland)

**IHTC15-9342/CPM-E-413**

*An HP-Adaptive Predictor-Corrector Split Projection Method for Turbulent Compressible Flow*  
Xiuling Wang (Purdue University, USA), David B. Carrington (Los Alamos National Laboratory, USA), Darrell W. Pepper (University of Nevada Las Vegas, USA)

**IHTC15-9525/CPM-E-414**

*Thermal Hydraulic Modeling of Shell and Tube Heat Exchangers*  
Jose Teixeira (Universidade do Minho, Portugal), Antonio Oliveira (University of Sheffield, UK), Senhorinha Teixeira (Universidade do Minho, Portugal)

**IHTC15-9337/CPM-E-415**

*Dispersion of High Pressure Underexpanded Helium Jets into the Atmosphere*  
Xuefang Li, David Christopher (Tsinghua University, China)

---

**Session 42 (E) [10:30 - 12:30]****CPM2 Computational Methods (2)****Co-Chairs : Shin-ichi Satake & Senhorinha Teixeira****IHTC15-9797/CPM-E-421**

*Lattice Boltzmann Simulations for Anisotropic Crystal Growth of a Binary Mixture*  
Amina Younsi, Alain Cartalade (CEA-Saclay, France), Michel Quintard (Université de Toulouse, France)

**IHTC15-8580/CPM-E-422**

*Numerical Investigation of Heat Transfer in a Forced Flow of He II*  
Cyprien Soulaire, Michel Quintard (Universite de Toulouse, France), Hervé Allain (CERN, Switzerland), Bertrand Baudouy (CEA-Saclay, France), Rob van Weelderden (CERN, Switzerland)

**IHTC15-10035/CPM-E-423**

*Hilbert Spectral Analysis of Oscillating Forced Convection in Curved Ducts*  
Fang Liu (Advanced Energy Efficiency LLC, USA)

**IHTC15-8982/CPM-E-424**

*1D and 3D Numerical Simulation of the Reactor Cavity Cooling System of a Very High Temperature Reactor*  
C. G. du Toit, Pieter Rousseau (North-West University, South Africa), Jisu Jun, Jae-Man Noh (Korea Atomic Energy Research Institute, Republic of Korea)

**IHTC15-9662/CPM-E-425**

*Regimes of Heating and Compression in Magneto-Inertial Fusion*  
Victor V. Kuzenov, Sergei V. Ryzhkov (Bauman Moscow State Technical University, Russia)

**IHTC15-9724/CPM-E-426**

*Oscillatory Instability of Natural Convection of Air in a Laterally Heated Cubic Box*  
Alexander Gelfgat (Tel-Aviv University, Israel)

---

14th, Thursday

Room F

## Session 41 (F) [8:20 - 10:20]

### NCV1 Natural Convection (1)

Co-Chairs : David Naylor & Toshio Tagawa

#### IHTC15-8947/NCV-F-411

*Transition in a Natural Convection Boundary Layer*

Yongling Zhao, Chengwang Lei, John Patterson (The University of Sydney, Australia)

#### IHTC15-9339/NCV-F-412

*Study on Free Convection Heat Transfer in Finned Tube Array*

Ryoji Katsuki, Chikako Iwaki, Tsutomu Shioyama, Tadamichi Yanazawa (Toshiba corporation, Japan)

#### IHTC15-9527/NCV-F-413

*Analysis of Heatfunction Boundary Conditions on Invariance of Heat Flow in Square Enclosures with Various Thermal Boundary Conditions*

Pratibha Biswal, Tanmay Basak (Indian Institute of Technology Madras, India)

#### IHTC15-9258/NCV-F-414

*Natural Convection around a Pulsating Line Heat Source*

Mojtaba Jarrahi (LIMSI-CNRS, France, University of Paris-Sud, France), Marie-Christine Duluc (LIMSI-CNRS, France, CNAM, France), Yann Fraigneau, Gérard Defresne (LIMSI-CNRS, France, University of Paris-Sud, France)

#### IHTC15-8776/NCV-F-415

*Confinement-Induced Enhancements of Heat-Transfer Efficiency and Thermal Plume Coherency in Turbulent Thermal Convection*

Ke-Qing Xia, Matthias Kaczorowski, Shi-Di Huang, Kai-Leong Chong (The Chinese University of Hong Kong, China)

#### IHTC15-10004/NCV-F-416

*Interaction of Rayleigh - Benard Convection and Oscillatory Flows*

Murat K. Aktas, Semih Cetindag (TOBB University of Economics and Technology, Turkey)

---

## Session 42 (F) [10:30 - 12:30]

### NCV2 Natural Convection (2)

Co-Chairs : Masato Akamatsu & Marie-Christine Duluc

#### IHTC15-8506/NCV-F-421

*Experimental and Analytical Investigation on Thermal Stratification under Natural Circulation Cooling*

Shigeo Kodama (Nuclear Engineering Co. Ltd), Isao Kataoka, Kenji Yoshida, Takafumi Suga, Kizuku Michii, Takashi Fujisaki (Osaka University, Japan)

#### IHTC15-8239/NCV-F-422

*Interferometric Study of the Effect of Insect Screens on Free Convection at a Window Glazing*

Daniel Zalcmán, Seyed Sepehr Mohaddes Ferooshani, David Naylor (Ryerson University, Canada)

#### IHTC15-8531/NCV-F-423

*Conjugate Natural Convection in a Porous Three-Dimensional Enclosure with a Heat Source: A Comparison Study of Different Models*

Mikhail Sheremet (Tomsk State University, Russia, Tomsk Polytechnic University, Russia), Tatyana Trifonova (Tomsk State University, Russia)

#### IHTC15-8499/NCV-F-424

*Natural Convective Heat Transfer from an Inclined Isothermal Square Flat Element Mounted in a Flat Adiabatic Surrounding Surface*

Patrick H. Oosthuizen (Queens University, ON Canada)

#### IHTC15-9319/NCV-F-425

*Interaction Effects between Surface Radiation and Sub-atmosphere Natural Convection in Multi-Heat Sources Enclosures*

Han Wang, Chuang Sun, Xin-Lin Xia, He-Ping Tan (Harbin Institute of Technology, China)

#### IHTC15-8292/NCV-F-426

*Effect of Direct Liquid Cooling on Light Emitting Diode Local Hot Spots: Natural Convection Immersion Cooling*

Enes Tamdogan, Mehmet Arik (Ozyegin University, Turkey)

---

## Room G

**Session 41 (G) [8:20 - 10:20]****GTB Gas Turbine****Co-Chairs : Yutaka Oda & Liang Xu****IHTC15-9600/GTB-G-411***Effect of Swirled Leakage Flow on Endwall Film-Cooling*

Matthew Stinson, Richard Goldstein, Terrence Simon (University of Minnesota, USA), Shu Fujimoto, Chiyuki Nakamata (IHI Corporation, Japan)

**IHTC15-8914/GTB-G-412***Effects of Surface Geometry and Blowing Ratio on Film Cooling Performance at Airfoil Trailing Edge Investigated by Using Large Eddy Simulation*

Akira Murata, Ena Mori, Kaoru Iwamoto (Tokyo University of Agriculture and Technology, Japan)

**IHTC15-8457/GTB-G-413***Effects of Ingestion on the Flow and Heat Transfer in a Rotor-Stator System*

Le Wang, Mike Wilson (University of Bath, UK)

**IHTC15-9249/GTB-G-414***Experimental and Numerical Study of Flow Structure and Liner Wall Temperature in Reverse Flow Combustor*

Xuan Gao, Fei Duan (Nanyang Technological University, Singapore), Sengchuan Lim, Mee Sin Yip (DSO national laboratories, Singapore)

**IHTC15-9553/GTB-G-415***Blade and Vane Leading Edge Fillet on Endwall Cooling in Linear Turbine Cascades*

Gazi Mahmood, Sumanta Acharya (Louisiana State University, USA)

**IHTC15-9584/GTB-G-416***Experimental and Computational Film Cooling with Backward Injection for Cylindrical and Fan-Shaped Holes*

Shiou-Jiuan Li, Andrew Chen (Texas A&amp;M University, USA), Wei-Hsiang Wang (National Chiao Tung University, Taiwan), Je-Chin Han (Texas A&amp;M University, USA)

**Session 42 (G) [10:30 - 12:30]****NMM1 Nano/Micro Scale Measurement and Simulation (1)****Co-Chairs : Xiaobing Luo & Junichiro Shiomi****IHTC15-9485/NMM-G-421***Single-Walled Carbon Nanotubes for Heterojunction Solar Cells*

Kehang Cui, Takaaki Chiba, Shohei Chiashi (The University of Tokyo, Japan), Esko Kauppinen (Aalto University, Finland), Shigeo Maruyama (The University of Tokyo, Japan)

**IHTC15-8569/NMM-G-422***Thermal Performance of a Propilen Glycol/Alumina Nanofluid under Internal Developing Laminar Flow*

Pablo Fariñas Alvariño, José María Sáiz Jabardo, Javier García del Valle (A Coruña University, Spain), Ana Soto (Santiago University, Chile)

**IHTC15-9607/NMM-G-423***Thermal Conductivity Measurement of Bare Carbon Nanotube Films Using the Photoacoustic Technique*

Thomas L. Bougher, Cristal J. Vasquez, Baratunde A. Cola (Georgia Institute of Technology, USA)

**IHTC15-9063/NMM-G-424***Growth and Applications of Horizontally Aligned Single-Walled Carbon Nanotubes*

Shohei Chiashi, Taiki Inoue, Keigo Otsuka, Daisuke Hasegawa, Shigeo Maruyama (The University of Tokyo, Japan)

**IHTC15-9642/NMM-G-425***Monitoring Heat Conduction in Nanostructures with Embedded Planar Defects*

Haixue Han (Ecole Centrale Paris, France), Yuriy Kosevich (Ecole Centrale Paris, France, Moscow Academia of Sciences, Russia), Sebastian Volz (Ecole Centrale Paris, France)

**IHTC15-9618/NMM-G-426***Electrokinetic Focusing of Colloidal Particles by Joule Heating Induced Temperature Gradient in a Convergent-Divergent Microfluidic Structure*

Zhengwei Ge, Chun Yang (Nanyang Technological University, Singapore)

14th, Thursday

Room H

## Session 41 (H) [8:20 - 10:00]

### CND1 Conduction (1)

**Co-Chairs : Gota Kikugawa & Subhash Mishra**

#### **IHTC15-9735/CND-H-411**

*Understanding of Non-Fourier Conduction Based on Thermon Gas Model*  
Xiaodong Shan, Moran Wang (Tsinghua University, China)

#### **IHTC15-8466/CND-H-412**

*Accuracy of the First Eigenvalue of Heat Conduction Problems Calculated Through Tables and Explicit Approximate Expressions*  
Sergio Dalmas (Federal Technological University of Paraná, Brazil), Luiz Fernando Milanez (University of Campinas, Brazil)

#### **IHTC15-9021/CND-H-413**

*Thermomass-Based General Law for Ballistic-Diffusive Heat Conduction in Nanostructures*  
Bing-Yang Cao, Yu-Chao Hua (Tsinghua University, China)

#### **IHTC15-9207/CND-H-414**

*Topology Optimisation for the Volume-to-Surface Problem in a Three-Dimensional Cubic Domain Using Conduction Cooling*  
Francois H. Burger, Jaco Dirker, Josua P. Meyer (University of Pretoria, South Africa)

#### **IHTC15-9920/CND-H-415**

*An Application of the Generalized Least Squares Method to the Analysis of the Heat Transfer Process with Supplementary Data*  
Anna Sciazko (AGH University of Science and Technology, Poland, Shibaura Institute of Technology, Japan), Yosuke Komatsu, Shinji Kimijima (Shibaura Institute of Technology, Japan), Zygmunt Sz. Kolenda, Janusz S. Szymd (AGH University of Science and Technology, Poland)

---

## Session 42 (H) [10:30 - 12:10]

### CND2 Conduction (2)

**Co-Chairs : Luiz Fernando Milanez & Takayoshi Takano**

#### **IHTC15-8973/CND-H-421**

*Efficient Coupling Procedures in Steady and Unsteady Thermal Analysis*  
Marc. P. Errera (ONERA, France)

#### **IHTC15-9090/CND-H-422**

*Analysis of Heat Transfer in a 2-D Cylindrical Porous Medium*  
Subhash C. Mishra, Snehasish Panigrahy (Indian Institute of Technology Guwahati, India)

#### **IHTC15-9932/CND-H-423**

*Prediction of Effective Thermal Conductivity of Sintered Porous Media with the Discrete Element Method*  
Xiao-Long Ouyang, Rui-Na Xu, Le Zhang, Bo Zhou, Pei-Xue Jiang (Tsinghua University, China)

#### **IHTC15-9501/CND-H-424**

*Study of Thermal Conductivity in Nanoporous Thin Film and Nanocomposites*  
Bo Fu, Cheng Bi, Guihua Tang (Xi'an Jiaotong University, China)

#### **IHTC15-9506/CND-H-425**

*Improving Solidification Structure of Paraffin-Based Nanofluid by Surfactant and Ultrasound*  
Lisi Jia, Ying Chen, Shijun Lei, Songping Mo, Zhuowei Liu, Xuefeng Shao (Guangdong University of Technology, China)

---

## Room I

**Session 41 (I) [8:20 - 10:00]****PMD3 Porous Media (3)****Co-Chairs : Rachid Bennacer & Akira Nakayama****IHTC15-8706/PMD-I-411***Numerical Investigation of Fluid Flow and Heat Transfer in Periodic Porous Lattice-Flame Materials*

Swaminathan G. Krishnan, Karthik K. Bodla, Justin A. Weibel, Suresh V. Garimella (Purdue University, USA)

**IHTC15-8987/PMD-I-412***An Optimization Study of Heat Transfer Enhancement Due to Jet Impingement over Porous Heat Sinks Using Lattice Boltzmann Method*

Sampath Kumar Chinige, Nikhilesh Ghanta, Arvind Pattamatta (Indian Institute of Technology Madras, India)

**IHTC15-9590/PMD-I-413***Influence on Stress Jump Coefficient of Porous Structure and Flow Conditions*

Baoming Chen, Fang Liu, Guoqing Zhang, Zhi Liu (Shandong Jianzhu University, China)

**IHTC15-9303/PMD-I-414***Analytical Prediction of the Transition Point to Weak Turbulent Convection in a Porous Layer Subject to Feedback Control*

Peter Vadasz (Northern Arizona University, USA)

**IHTC15-9742/PMD-I-415***Experimental and Numerical Investigations of Supersonic Transpiration Cooling through Sintered Porous Flat Plates*

Zheng Huang (Tsinghua University, China), Yanbin Xiong (Tsinghua University, China, Beijing Institute of Astronautical System Engineering, China), Yin Hai Zhu, Peixue Jiang (Tsinghua University, China)

**Session 42 (I) [10:30 - 12:30]****PMD4 Porous Media (4)****Co-Chairs : Takuto Araki & Justin Weibel****IHTC15-8811/PMD-I-421***A Porous Media Approach for Analyzing a Spiral-Wound Reverse Osmosis Desalination Module*

Yoshihiko Sano, Akihiko Horibe, Naoto Haruki (Okayama University, Japan), Akira Nakayama (Shizuoka University, Japan, Wuhan Polytechnic University, China)

**IHTC15-9774/PMD-I-422***Convective to Diffusive Contribution of Mass Transfer in Porous Building Materials through Peclet Number Evaluation*

Kamilia Abahri (LMT- Cachan, France), Rafik Belarbi (LaSIE, La Rochelle University, France), Rachid Bennacer (LMT- Cachan, France), Bin Liu (Tianjin University of Commerce, China)

**IHTC15-9248/PMD-I-423***Discussion on Conditions of Local Thermal Non-Equilibrium Effect in Porous Media*

Hujin Xu, Liang Gong, Shanbo Huang (China University of Petroleum, East China)

**IHTC15-9347/PMD-I-424***Effect of Temperature and Porosity Change on Numerical Analysis of CO<sub>2</sub> Absorption Behavior in Porous Solid Sorbent by Using the Unreacted-Core Model*

Shuhong Xu, Takahiro Tanaka, Takao Nakagaki (Waseda University, Japan)

**IHTC15-9116/PMD-I-425***Structural Optimization of Porous Flow Fields to Improve Water Management Ability of PEFC*

Kengo Suzuki, Daiki Sato, Yutaka Tabe, Takemi Chikahisa (Hokkaido University, Japan)

**IHTC15-9438/PMD-I-426***Tortuosity in Porous Anode Electrode of Solid Oxide Fuel Cells Estimated from Saturation Currents and a Mass Transport Model in Comparison with a Real Micro-Structure*

Grzegorz Brus (AGH University of Science and Technology, Poland, Kyoto University, Japan), Kosuke Miyawaki, Hiroshi Iwai, Motohiro Saito, Hideo Yoshida (Kyoto University, Japan)

14th, Thursday

Room J

## Session 41 (J) [8:20 - 10:00]

### **RAD3** Radiation (3)

*Co-Chairs : Leonid Dombrovsky & Atsushi Sakurai*

#### **IHTC15-9563/RAD-J-411**

*Effects of Molecular Gas Radiation on Rayleigh-Bénard Convection in a 3D Cubical Cavity*  
Laurent Soucasse, Philippe Rivière, Anouar Soufiani (Laboratoire EM2C, France, École Centrale Paris, France)

#### **IHTC15-9357/RAD-J-412**

*Numerical Study on Solar Reflection Performance of Cool Painting and the Optimization*  
Shinichi Kinoshita, Satoshi Nishimura, Atsumasa Yoshida (Osaka Prefecture University, Japan)

#### **IHTC15-8315/RAD-J-413**

*Effect of Fractal Parameters on Absorption Coefficient of Soot Aggregates in the Electrostatic Limit*  
Prasanna Swaminathan, Philippe Rivière, Anouar Soufiani (Laboratoire EM2C, France, École Centrale Paris, France)

#### **IHTC15-9143/RAD-J-414**

*Implementation of the SUN Model for Radiation Heat Transfer in Packed Pebble Bed Gas Cooled Reactors*  
Pieter G. Rousseau, Charl G. du Toit, Stefan van der Walt (North-West University, South Africa)

#### **IHTC15-9478/RAD-J-415**

*The Influence of Carbon Fiber Composite Material Structures on the Spectral Attenuation Properties of Thermal Radiation*  
Ming Xie, Qing Ai, Xiaochen Xie, Liu Yang, Heping Tan (Harbin Institute of Technology, China)

---

## Session 42 (J) [10:30 - 12:30]

### **RAD4** Radiation (4)

*Co-Chairs : Linhua Liu & Toshiro Makino*

#### **IHTC15-9822/RAD-J-421**

*Heat Transfer in Vacuum Thermal Insulation of Space Vehicles: An Experimental Estimate vs Theoretical Prediction*  
Aleksy V. Nenarokomov (Moscow Aviation Institute, Russia), Leonid A. Dombrovsky (Joint Institute for High Temperatures, Russia), Irina V. Krainova, Oleg M. Alifanov, Sergey A. Budnik (Moscow Aviation Institute, Russia)

#### **IHTC15-8683/RAD-J-422**

*Effect of Structure and Transfer Function on Artificial Neural Networks Used in Radiation Thermometry for Steel*  
Chang-Da (Alex) Wen, Po-Chin Fu (National Cheng Kung University, Taiwan)

#### **IHTC15-9545/RAD-J-423**

*Enhancement of Ray Tracing Method for Radiative Heat Transfer: Application to EUI Space Instrument*  
Lionel Jacques (Université de Liège, Belgium, Centre Spatial de Liège, Belgium), Luc Masset, Gaetan Kerschen (Université de Liège, Belgium)

#### **IHTC15-9531/RAD-J-424**

*Effect of Fractal-Like Aggregation on Radiative Properties and Specific Growth Rate of Chlorella*  
Zhen-zong He, Hong Qi, Qin Chen, Ya-tao Ren, Li-ming Ruan (Harbin Institute of Technology, China)

#### **IHTC15-9126/RAD-J-425**

*Measurement of Radiative Properties of Scattering and Absorbing Layered Media*  
Takahiro Kono, Jun Yamada (Shibaura Institute of Technology, Japan)

#### **IHTC15-8901/RAD-J-426**

*Measurement and Prediction of Absorbed Irradiating Energy Distribution in Narrow Channel of Desiccant Rotor*  
Jie Li, Yoshinori Hamamoto, Hideo Mori (Kyushu University, Japan)

---

## Room K

**Session 41 (K) [8:20 - 10:00]****HPP1 Heat Pipe (1)****Co-Chairs : Niro Nagai & Ji Yulong****IHTC15-8985/HPP-K-411***Flow Visualisation in a Transparent Thermosyphon: Influence of Internal Pressure*

Kate Smith (Trinity College, Ireland), Roger Kempers (Trinity College, Ireland, Alcatel-Lucent, Ireland), Anthony Robinson, Samuel Siedel (Trinity College, Ireland)

**IHTC15-9031/HPP-K-412***Super-Thin Heat Pipe in Smartphone Application*

Thanh-Long Phan, Mohammad Shahed Ahamed, Thang Nguyen, Masataka Mochizuki, Yuji Saito (Fujikura Ltd., Japan), Sadanari Mochizuki (Tokyo University of Agriculture and Technology, Japan)

**IHTC15-8842/HPP-K-413***Boiling Heat Transfer Enhancement of Double-Tube Heat Pipe for High Power Devices*

Taro Kato, Masafumi Katsuta, Kazuhiro Sugaya, Ryutarō Hotta (Waseda University, Japan)

**IHTC15-9124/HPP-K-414***Heat Pipe Applications in Cooling Nuclear Fuel*

Randeep Singh, Masataka Mochizuki, Thang Nguyen, Yuji Saito (Fujikura Ltd, Japan)

**IHTC15-9619/HPP-K-415***Dynamics of Evaporation in a Single, Straight-Tube Pulsating Heat Pipe*

Kunito Okuyama, Takahiro Ichikawa, Shoji Mori (Yokohama National University, Japan)

**Session 42 (K) [10:30 - 12:30]****HPP2 Heat Pipe (2)****Co-Chairs : Marco Marengo & Hajime Onishi****IHTC15-9141/HPP-K-421***Investigation of Gravity Heat Pipe with Internal Helical Microfins in Different Sections*

Gongming Xin, Chong Zhang, Wenjing Du, Yan Chen, Lin Cheng (Shandong University, China)

**IHTC15-9125/HPP-K-422***Effect of Inclination Angle onto Heat Transport Characteristics of Bubble-Actuated Circulating Heat Pipe (Bach) Covering High-Temperature Region*

Yingying Ji, Niro Nagai (University of Fukui, Japan), Kohei Takano (Mitsubishi Motors Corporation, Japan)

**IHTC15-9076/HPP-K-423***Oscillation-Induced Heat Transportation in a Curved Heat Transportation Pipe*

Seiichiro Yuguchi, Hideyuki Kusaka, Kosuke Shiratori, Gaku Tanaka (Chiba University, Japan)

**IHTC15-9442/HPP-K-424***An Investigation of Operating Limit for Oscillating Heat Pipes*

Yulong Ji, Chao Chang, Gen Li (Dalian Maritime University, China), Hongbin Ma (University of Missouri, USA)

**IHTC15-9476/HPP-K-425***Experimental Investigation of Ultrasonic Effect on a Nanofluid Oscillating Heat Pipe*

Nannan Zhao, Benwei Fu (Dalian Maritime University, China), Hongbin Ma (University of Missouri, USA)

**IHTC15-9208/HPP-K-426***Effects of Tube Diameter on Internal Flow Patterns and Heat Transport Performance of Parallel-Tube Heat Transport Device*

Kazusa Abiko, Akira Murata, Hiroshi Saito, Kaoru Iwamoto (Tokyo University of Agriculture and Technology, Japan)

# General Sessions in Series

15th, Friday

Room B1

## Session 51 (B1) [8:40 - 10:40]

### PBL4 Pool Boiling (4)

*Co-Chairs : Yasuo Koizumi & Gherhardt Ribatski*

#### IHTC15-9471/PBL-B1-511

*Interfacial Instability on Vapor Bubble Exposed to Subcooled Pool*

Ichiro Ueno, Takahito Saiki, Tomohiro Osawa, Jun Ando, Toshihiro Kaneko (Tokyo University of Science, Japan), Chungpyo Hong (Kagoshima University, Japan)

#### IHTC15-9659/PBL-B1-512

*A Comparison Study of State-of-the-Art Experimental and Numerical Simulation Results Associated with Nucleate Boiling of a Single Bubble*

Satbyoul Jung (Kyung Hee University, Korea), Yasuo Ose (Yamato System Engineer Co.,Ltd., Japan), Hyungdae Kim (Kyung Hee University, Korea), Tomoaki Kunugi (Kyoto University, Japan)

#### IHTC15-8854/PBL-B1-513

*Enhanced Boiling Heat Transfer on Super-Hydrophilic Surface with Porous Copper Layer*

Pengfei Xu, Qiang Li (Nanjing University of Science and Technology, China), Yimin Xuan (Nanjing University of Aeronautics and Astronautics, China, Nanjing University of Science and Technology, China)

#### IHTC15-9224/PBL-B1-514

*Enhancement of Heat Transfer at Transition and Film Boiling of Nitrogen on Spheres with Dimples and Low Conductivity Coating*

Vladmir Zhukov (Institute of High Temperature, Russia), Yury Kuzma-Kichta (MPEI, Russia), Viktor Lenkov (Institute of High Temperature, Russia), Alexander Lavrikov, Mikhail Shustov (MPEI, Russia)

#### IHTC15-8941/PBL-B1-515

*Improvement of Nucleate Boiling Heat Transfer Characteristics by Using Immiscible Mixtures*

Shota Kita, Shunsuke Onishi, Yuta Fukuyama, Haruhiko Ohta (Kyushu University, Japan)

#### IHTC15-8619/PBL-B1-516

*Pool Boiling Heat Transfer Enhancement by  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>/FC-72 Nanofluids on a Smooth Surface*

Xin Kong, Jinjia Wei, Jie Ding, Yonghai Zhang (Xi'an Jiaotong University, China)

## Session 52 (B1) [12:50 - 14:50]

### PBL5 Pool Boiling (5)

*Co-Chairs : Catherine Colin & Mamoru Ozawa*

#### IHTC15-8441/PBL-B1-521

*Stability and Mode Transition of Boiling on a Flat Surface*

Jianfeng Lu, Jing Ding (Sun Yat-Sen University, China)

#### IHTC15-9511/PBL-B1-522

*Boiling Heat Transfer Characteristics and Film Boiling Collapse Temperature through the Two-Dimensional Temperature Field Measurement*

Hiroyasu Ohtake, Koji Hasegawa (Kogakuin University, Japan)

#### IHTC15-10081/PBL-B1-523

*Effects of Porous SiC Deposition and High Thermal Conductive Graphene Layer on Critical Heat Flux*

Han Seo, In Cheol Bang (Ulsan National Institute of Science and Technology, Korea)

#### IHTC15-8856/PBL-B1-524

*Boiling on an Isolated Nucleation Site Close to CHF Conditions*

Olivier Kannengieser (Toulouse University - IMFT, France), Wladimir Bergez, Catherine Colin (Toulouse University, France, CNRS, IMFT, France)

#### IHTC15-9423/PBL-B1-525

*Effect of Kelvin-Helmholtz Instability on CHF for Thin Flat Plate Heater*

Jae Young Lee, Wooram Lee (Handong Global University, Korea)

#### IHTC15-9592/PBL-B1-526

*Crisis in Pool Boiling: Alternative to Hydrodynamic Approach*

Victor. V. Yagov (National Research University "Moscow Power Engineering Institute", Russia)

Room B2

**Session 53 (B1) [15:10 - 17:10]****PBL6 Pool Boiling (6)****Co-Chairs : In Cheol Bang & Koichi Suzuki****IHTC15-8964/PBL-B1-531***Enhanced Transient Pool Boiling of Water on Nanoscale Textured Superhydrophilic Surfaces*  
Li-Wu Fan, Jia-Qi Li, Dan-Yang Li, Liang Zhang, Zi-Tao Yu, Ya-Cai Hu (Zhejiang University, China)**IHTC15-9632/PBL-B1-532***Enhancement of Nucleate Pool Boiling Heat Transfer Using Water on Titanium Oxide and Silicon Oxide Surface*  
Sudev Das, Swapan Bhaumik (National Institute of Technology Agartala, India)**IHTC15-9551/PBL-B1-533***Modeling of Boiling Heat Transfer from Microstructured Surfaces*  
Alexander Ustinov (Advanced Energy Technologies GmbH, Germany), Jovan Mitrovic (University of East Sarajevo, Bosnia and Herzegovina)**IHTC15-9004/PBL-B1-534***Study of the Combined Effects of Liquid Properties and Surface Micropatterning on Pool Boiling Heat Transfer*  
Emanuele Teodori, Ana Moita, Antonio Moreira (University of Lisbon, Portugal)**IHTC15-9044/PBL-B1-535***An Experimental Study of Carbon Nanotube Coatings for Pool Boiling Heat Transfer Enhancement*  
Jin Yao Ho, Kai Choong Leong, Charles Yang, Indro Pranoto (Nanyang Technological University, Republic of Singapore)**IHTC15-8805/PBL-B1-536***Influence of Gap Size on Boiling and Condensation Co-Existing Phase Change Heat Transfer in Small Confined Space*  
Guangmeng Zhang, Zhongliang Liu (Key Laboratory of Heat Transfer and Energy Conversion, China), Li Wang, Lingyan Huang (Beijing Institute of Space Launch Technology)**Session 51 (B2) [8:40 - 10:20]****TPS Two-phase, Spray/Droplet****Co-Chairs : Masahiro Osakabe & Francisco Vera-Garcia****IHTC15-8860/TPS-B2-511***Kinetic Modelling of Diesel Fuel Droplet Heating and Evaporation: Effects of Inelastic Collisions and Three Components*  
Sergei Sazhin (University of Brighton, UK), Irina Shishkova (Moscow Power Engineering Institute, Russia, University of Brighton, UK)**IHTC15-9815/TPS-B2-512***Evaporation of Bi-Component Droplets in a Highly Turbulent Channel Flow*  
Adrien Jean, Rudy Bazile, Bernard Ferret (Université de Toulouse, France)**IHTC15-9328/TPS-B2-513***Numerical Simulation of Heat Transfer and Gas Dynamics in Warm Spray*  
Yanguang Shan, Feifei Gong, Cuihong Shen, Ling Li, Mei Lu (University of Shanghai for Science and Technology, China)**IHTC15-8593/TPS-B2-514***The Effect of Pulses Frequency on Flow and Heat Transfer Due to Intermittent Impinging Mist Jets*  
Maksim Pakhomov, Viktor I. Terekhov (Russian Academy of Sciences, Russia)**IHTC15-9060/TPS-B2-515***Experimental Study on Heat Transfer Characteristics of High-Velocity Circular Jet Impingement Boiling on the Nano-Characteristic Stagnation Zone*  
Yuanyang Li, Yanjun Chen, Zhenhua Liu (Shanghai Jiaotong University, China)

15th, Friday

## Session 52 (B2) [12:50 - 14:50]

### **TPM1** Two-phase/Multiphase Flow (1)

*Co-Chairs : Takeyuki Ami & Chien-Yuh Yang*

#### **IHTC15-8955/TPM-B2-521**

*R1234yf Heat Transfer Coefficient during Condensation in a Mini-Channel Multiport Tube*  
Alejandro Lopez-Belchi, José Ramón García-Cascales, Francisco Vera-García, Fernando Illán-Gómez (Technical University of Cartagena, Spain)

#### **IHTC15-8561/TPM-B2-522**

*Flow Condensation Heat Transfer on Engineered Surfaces*  
Chun-Wei Yao, Jorge Alvarado (Texas A&M University, USA), Charles Marsh (ERDC – Construction Engineering Research Laboratory, USA, University of Illinois at Urbana-Champaign, USA), Barclay Jones (University of Illinois at Urbana-Champaign, USA), Michael Collins (ERDC – Construction Engineering Research Laboratory, USA, University of Illinois at Urbana-Champaign, USA)

#### **IHTC15-10072/TPM-B2-523**

*Gallium Melting in a Rectangular Box*  
Ori Ben-David, Avi Levy, Boris Mikhailovich, Asaf Azulay (Ben-Gurion University of the Negev, Israel)

#### **IHTC15-8609/TPM-B2-524**

*Turbulent Mass Transfer Model to Predict Wax Deposition in Multiphase Flow in Pipelines*  
Fabio Brum (Pontificia Universidade Católica do Rio de Janeiro, Brazil), Sidney Stuckenbruck (Olympus Software Científico e Engenharia, Brazil), Angela Nieckele (Pontificia Universidade Católica do Rio de Janeiro, Brazil)

#### **IHTC15-9066/TPM-B2-525**

*Numerical Study of Slug Flow Heat Transfer in Microchannels*  
Thilaksiri Bandara, Sherman C. P. Cheung, Gary Rosengarten (RMIT University, Australia)

#### **IHTC15-9192/TPM-B2-526**

*Irreversibility Analysis of an Evaporator for Use in a Micro-Refrigeration Cycle*  
Göker Türkakar, Tuba Okutucu-Özyurt (Middle East Technical University, Turkey)

---

## Session 53 (B2) [15:10 - 16:30]

### **TPM2** Two-phase/Multiphase Flow (2)

*Co-Chairs : Hosei Nagano & Sergei Sazhin*

#### **IHTC15-8793/TPM-B2-531**

*Regimes of Nonisothermal Scavenging of Soluble Gaseous Pollutants by Rain in the Atmosphere with Non-Uniform Concentration and Temperature Distributions*  
Tov Elperin, Andrew Fominykh, Boris Krasovitev (Ben-Gurion University of the Negev, Israel)

#### **IHTC15-8935/TPM-B2-532**

*Experimental Study on the Temperature and Pressure Distribution of Steam Jet in Subcooled Water Flow in a Restricted Channel*  
Xiao Zong, Tao Li, Xiao-Ping Yang, Wei Han, Ji-Ping Liu, Jun-Jie Yan (Xi'an Jiaotong University, China)

#### **IHTC15-9113/TPM-B2-533**

*Numerical Investigation of Adiabatic Growth and Detachment of Gas/Vapor Bubbles Injected from a Submerged Orifice at Various Surface Inclinations*  
Anastasios Georgoulas, Marco Marengo (University of Bergamo, Italy)

#### **IHTC15-9456/TPM-B2-534**

*Melting, Solidification and Coalescence of Metallic Particles Invoked by Laser Heating*  
Ram Dayal, Tatiana Gambaryan-Roisman (Technische Universität Darmstadt, Germany)

---

## Room C1

**Session 51 (C1) [8:40 - 10:40]****TDY3 Thermodynamics (3)****Co-Chairs : Sebastian Fischer & Yasuyuki Miyamoto****IHTC15-9827/TDY-C1-511***Heat Transfer in Supersonic Flow over Blunt Body with Resonator of Hartmann Whistle Type*  
Natalia Palchekovskaya (Central Aerohydrodynamic Institute, Russia)**IHTC15-9243/TDY-C1-512***Non-Equilibrium Electron Gas Thermodynamic Cycle with Nano Features*  
Kazuaki Yazawa, Ali Shakouri (Purdue University, USA)**IHTC15-8937/TDY-C1-513***The Applied Condition of Lumped Parameter Method for Finite Mass Transfer Duration*  
Jianping Cao, Cong Liu, Yinping Zhang (Tsinghua University, China)**IHTC15-9373/TDY-C1-514***A Study of Macroscopic Physical Meaning of Entropy*  
Jing Wu (Huazhong University of Science & Technology, China)**IHTC15-9414/TDY-C1-515***Implementation of Entransy Analysis for Heat Transfer Optimization and System Design*  
Menghe Sun, Xin-Rong Zhang (Peking University, China)**IHTC15-8483/TDY-C1-516***Internal Symmetries, Fundamental Invariants and Convective Heat Transfer from a Rotating Disc*  
Christian Helbig, Stefan aus der Wiesche (Muenster University of Applied Sciences, Germany), Igor V. Shevchuk (University of Stuttgart, Germany)**Session 52 (C1) [12:50 - 14:30]****CNV1 Convection (1)****Co-Chairs : Soufiani Anouar & Kenichi Kobayashi****IHTC15-9942/CNV-C1-521***Heat Transfer Performance of Finless Heat Exchanger Using Airfoil-Shaped Tubes with Extended Leading or Trailing Edge Section*  
Hajime Onishi, Akihiro Yamamoto, Yukio Tada, Akira Takimoto (Kanazawa University, Japan)**IHTC15-9230/CNV-C1-522***Modified Endwall Fluid Flow in a Dimpled Pin Fin Array for Heat Transfer Enhancement*  
Stephan Roux, Gazi Mahmood, Josua P. Meyer (University of Pretoria, South Africa)**IHTC15-8698/CNV-C1-523***Heat Transfer and Pressure Drop of Serrated Finned Tube Banks in Forced Convection*  
Akira Yamada, Hiroyuki Nakaharai, Seiji Goto, Manabu Oda (Mitsubishi Heavy Industries, Japan)**IHTC15-8338/CNV-C1-524***The Influence of Surface Roughness on Heat Transfer in the Transitional Flow Regime*  
Marilize Everts, Samantha Ayres, Francois Mulock Houwer, Calvin Vanderwagen, Nicola M. Kotze, Josua P. Meyer (University of Pretoria, South Africa)**IHTC15-9092/CNV-C1-525***High-Order Numerical Implementation of Surface Radiation for the Coupling with Natural Convection in an Air-Filled Square Cavity*  
Ronnie Knikker, Shihe Xin (INSA-Lyon, France), Ren Dai (University of Shanghai for Science and Technology, China)

# General Sessions in Series

15th, Friday

Room C2

## Session 53 (C1) [15:10 - 16:30]

### CNV2 Convection (2)

*Co-Chairs : Koichi Ichimiya & Hervé Pabiou*

#### IHTC15-9209/CNV-C1-531

*Turbulent Thermal Convection in an Enclosure with Differently Inclined Horizontal Wall: A LES study*

Saša Kenjereš (Delft University of Technology, The Netherlands)

#### IHTC15-9593/CNV-C1-532

*Modeling the Thermal Environment in an Operating Room*

Senhorinha Teixeira, Nelson Rodrigues, Alberto Miguel, Ricardo Oliveira, José Teixeira (University of Minho, Portugal), João Baptista (University of Porto, Portugal)

#### IHTC15-8429/CNV-C1-533

*Fluid Flow and Heat Transfer in Microchannel Heat Sinks with Zigzag Longitudinal Fins*

Ganbat Davaa, Odgerel Jambal (Yuge National College of Maritime Technology, Japan), Yogesh Jaluria (Rutgers, The State University of New Jersey, USA)

#### IHTC15-9355/CNV-C1-534

*Study on Period Flow and Heat Transfer Characteristics for Backward-Facing Step in Transition Flow*

Minbo Zhong (Jiangsu University, China, Nantong University, China), Shuai Zou (Nantong University, China), Yinnan Yuan (Jiangshu University, China, Nantong University, China), Guannan Xi (Nantong University, China)

---

## Session 51 (C2) [8:40 - 10:40]

### HTE7 Heat Transfer Enhancement (7)

*Co-Chairs : Wei Liu & Shuichi Torii*

#### IHTC15-8491/HTE-C2-511

*Entransy Balance Equation for Heat Transfer with Phase Change*

Wenhua Wang, Xuetao Cheng, Xingang Liang (Tsinghua University, China)

#### IHTC15-9231/ HTE-C2-512

*Heat Transfer Measurements in a Swirl Chamber Using the Transient Liquid Crystal Technique*

Christoph Biegger, Bernhard Weigand (University of Stuttgart, Germany)

#### IHTC15-8669/HTE-C2-513

*Impingement Cooling with Spent Flow in the Blade Leading Edge Using Double Swirl Chambers*

Gang Lin, Karsten Kusterer (B&B-AGEMA GmbH, Germany), Dieter Bohn (RWTH Aachen University, Germany), Takao Sugimoto, Ryoza Tanaka, Masahide Kazari (Kawasaki Heavy Industries, LTD., Japan)

#### IHTC15-9965/HTE-C2-514

*Experimental Study and Prediction of Film Cooling Effectiveness for a Guide Vane in Heavy Gas Turbine*

Wei Wang, Jianmin Gao, Liang Xu, Xiaojun Shi (Xi'an Jiaotong University, China)

#### IHTC15-8319/HTE-C2-515

*An Investigation into Momentum and Temperature Fields of a Meso-Scale Slot Synthetic Jet for a Small Jet-to-Surface Spacing*

Omidreza Ghaffari (Ozyegin University, Turkey), Baris Dogruoz (Cisco Systems Inc., USA), Mehmet Arik (Ozyegin University, Turkey)

#### IHTC15-8667/HTE-C2-516

*Transient Heat Transfer for a Twisted Plate in Forced Convection Flow of Helium Gas*

Qiusheng Liu, Zhou Zhao, Katsuya Fukuda (Kobe University, Japan)

---

**Session 52 (C2) [12:50 - 14:30]****HTE8 Heat Transfer Enhancement (8)****Co-Chairs : Kazuya Tatsumi & Victoria Timchenko****IHTC15-8426/HTE-C2-521***Heat Transfer Analysis of Aluminum Honeycomb Panels Incorporating Microencapsulated PCM*

Chi-ming Lai (National Cheng-Kung University, Taiwan), Shuichi Hokoi (Kyoto University, Japan)

**IHTC15-9952/HTE-C2-522***Vortex Heat Transfer Enhancement in Dimpled Channels*

Alexander I. Leontiev (Bauman Technical University, Russia), Sergey Isaev (Saint-Petersburg State University of Civil Aviation, Russia), Nikolai Kornev (University of Rostock, Germany), Yaroslav Chudnovsky (Gas Technology Institute, USA), Egon Hassel (University of Rostock, Germany)

**IHTC15-8765/HTE-C2-523***A Numerical-Experimental Study of Heat Transfer Enhancement Using Unconfined Steady and Pulsating Turbulent Air Jet Impingement*

Sajad Alimohammadi, Tim Persoons, Darina B. Murray (Trinity College, Ireland)

**IHTC15-8983/HTE-C2-524***Applying Phase Separation of a Solvent System with a Lower Critical Solution Temperature for Enhancement of Cooling Rates by Forced and Free Convection*

Amos Ullmann, Itay Lipstein, Neima Brauner (Tel Aviv University, Israel)

**IHTC15-9271/HTE-C2-525***Unravelling Convective Heat Transfer in the Rotated Arc Mixer*

Michel Speetjens, Özge Baskan (Eindhoven University of Technology, The Netherlands), Guy Metcalfe (Commonwealth Scientific and Industrial Research Organisation, Australia), Herman Clercx (Eindhoven University of Technology, The Netherlands)

**Session 53 (C2) [15:10 - 17:10]****HTE9 Heat Transfer Enhancement (9)****Co-Chairs : Tatsuya Kawaguchi & Amos Ullmann****IHTC15-9839/HTE-C2-531***Effect of Surface Orientation on the Rewetting Phenomena during Jet Impingement Cooling*

Agrawal Chitranjan (Maharana Pratap University of Agriculture and Technology, India), Ravi Kumar, Akhilesh Gupta (Indian Institute of Technology Roorkee, India), Barun Chatterjee (Bhabha Atomic Research Centre, India)

**IHTC15-9448/HTE-C2-532***Carbon Nanotubes as Thermal Interface Material Enhanced with Liquid Metal Alloy*

Yulong Ji, Gen Li, Chao Chang, Yuqing Sun (Dalian Maritime University, China), Hongbin Ma (University of Missouri, USA)

**IHTC15-8700/HTE-C2-533***Application of Heat Transfer Technology with Phase Change Inhibited to Integrated Heat Deriving and Radiating Systems*

Suvit Lee (Zhejiang Jiayi Optoelectronic Equipment Manufacturing Co.Ltd., China), Bangxian Wu (Chinese Academy of Sciences, China)

**IHTC15-9148/HTE-C2-534***Geometric Optimisation of Multi-Layered Microchannel Heat Sink with Different Flow Arrangements*

Olayinka O. Adewumi (University of Pretoria, South Africa), Tunde Bello-Ochende (University of Cape Town, South Africa), Josua P. Meyer (University of Pretoria, South Africa)

**IHTC15-8244/HTE-C2-535***Microscopic Mechanism of Cavitation Enhanced Heat Transfer: A Modeling Study*

Bin Liu (Chinese Academy of Sciences, China, University of the Chinese Academy of Sciences, China), Jun Cai, Xiulan Huai (Chinese Academy Sciences, China)

**IHTC15-8900/HTE-C2-536***Influence of Several Parameters on Heat Storage and Release Enhancement Behavior of Latent Heat Storage Paraffin with Aluminum Fiber Materials*

Naoto Haruki, Akihiko Horibe, Yoshihiko Sano, Kohei Hachiya (Okayama University, Japan)

15th, Friday

Room D

## Session 51 (D) [8:40 - 10:20]

### MCV Mixed Convection

Co-Chairs : Tsuyoshi Kawanami & Jose Teixeira

#### IHTC15-9081/MCV-D-511

*Mixed Convection Heat Transfer in a Pressurizing Confined-Jet Flow Field*

Melissa Heath, Peter Woodfield, Wayne Hall (Griffith University, Australia), Masanori Monde (Saga University, Japan)

#### IHTC15-9524/MCV-D-512

*Numerical Study on Entropy Generation for Mixed Convection in Square Enclosures for Isothermally and Non-Isothermally Hot Bottom Wall*

Monisha Roy, Tanmay Basak, Satyajit Roy (Indian Institute of Technology Madras, India)

#### IHTC15-9297/MCV-D-513

*Experimental Investigation on Mixed Convection in Horizontal Channels Heated Below and Partially Filled with Aluminium Foam*

Bernardo Buonomo, Oronzio Manca, Lorenzo Marinelli, Sergio Nardini (Seconda Università degli Studi di Napoli, Italy)

#### IHTC15-8059/MCV-D-514

*Experimental Investigation of Mixed Convection Heat Transfer from Heated Vertical Rectangular Fin Array*

Jayanti Shete, Narayan Sane, S. Pavithran (Vishwakarma Institute of Technology, India)

#### IHTC15-9165/MCV-D-515

*Energy Conservative Dissipative Particle Dynamics Simulation of Mixed Convection in Complex Geometries with Moving Surface*

Zhi-Hong Cao, Kang Luo, Hong-Liang Yi, He-Ping Tan (Harbin Institute of Technology, China)

Room F

## Session 51 (F) [8:40 - 10:40]

### NCV3 Natural Convection (3)

Co-Chairs : Pratibha Biswal & Isao Kataoka

#### IHTC15-8565/NCV-F-511

*Large-Eddy Simulations of Plumes with and without Turbulent Diffusion Flames*

Hitoshi Suto, Yasuo Hattori (Central Research Institute of Electric Power Industry, Japan)

#### IHTC15-9046/NCV-F-512

*Three-Dimensional Computational Study of Natural Convection in a Non-Uniformly Heated Vertical Open-Ended Channel*

Oxana A. Tkachenko, Svetlana Tkachenko, Victoria Timchenko, John A. Reizes (The University of New South Wales, Australia), Guan Heng Yeoh (The University of New South Wales, Australian Nuclear Science and Technology Organisation, Australia), Graham de Vahl Davis (The University of New South Wales, Australia)

#### IHTC15-9291/NCV-F-513

*Comparative Study of Numerical Simulations of a 2D Buoyancy-Driven Flow in a Vertical Channel Asymmetrically Heated with or without External Domain*

Charles Garnier, Anne Sergent, Yann Fraigneau, Patrick Le Quere (LIMSI UPR CNRS 3251, France)

#### IHTC15-8624/NCV-F-514

*A Numerical Study of g-Jitter Effects in Cubic-Cavity Convection in Low Gravity*

Keisuke Tatasumoto (Doshisha University, Japan), Hirochika Tanigawa (Maizuru National College of Technology, Japan), Katsuya Hirata (Doshisha University, Japan)

#### IHTC15-9053/NCV-F-515

*Natural Convection in an Inclined Differentially Heated Square Cavity*

Steven Armfield, Michael Kirkpatrick, Nicholas Williamson (Sydney University, Australia), Wenxian Lin (James Cook University, Australia)

#### IHTC15-9747/NCV-F-516

*Natural Convection in an Open Vertical Channel with Heated Walls at high Rayleigh Number*

Christophe Daverat, Yiqin Li (Institut National des Sciences Appliquées, France), Hervé Pabiou (Centre National de la Recherche Scientifique, France), Christophe Ménézo, Shihe Xin (Institut National des Sciences Appliquées, France)

**Session 52 (F) [12:50 - 14:50]****OPT Optimal Control/Theory****Co-Chairs : Tomoyuki Hatakeyama & Zhen Li****IHTC15-9477/OPT-F-521***Heat Conduction Optimization of Anisotropic Composite Material Using Simulated Annealing Algorithm*

Chao Yuan, Lan Li, Xiaobing Luo (Huazhong University of Science and Technology, China)

**IHTC15-9670/OPT-F-522***Adjoint-Based Optimum Thermal Control of Pulsed Laser Diodes*

Kenichi Morimoto, Yuji Suzuki (The University of Tokyo, Japan)

**IHTC15-8602/OPT-F-523***Virtual Distribution and Mixing Entransy Analysis Method*

Xiaodong Qian, Zhen Li, Zhixin Li, Zhiguang He (Tsinghua University, China)

**IHTC15-9018/OPT-F-524***Multi-Objective Optimization of Vortex Generators Position and Angles in Fin-Tube Compact Heat Exchanger at Low Reynolds Number Using Neural Network and Genetic Algorithm*

Leandro Salviano, Daniel Dezan, Jurandir Yanagihara (University of São Paulo, Brasil)

**IHTC15-8411/OPT-F-525***Study on Model Predictive Control to Minimize Temperature Change at Multi Positions in Vertical Plate with Varying Heat Generation*

Shigeki Hirasawa, Tsuyoshi Kawanami, Katsuaki Shirai (Kobe University, Japan)

**IHTC15-9168/OPT-F-526***Numerical Topology Optimization of Heat Sinks*

Tijs Van Oevelen, Martine Baelmans (KU Leuven, Belgium)

**Session 53 (F) [15:10 - 17:10]****NMT New Materials****Co-Chairs : Shigeo Maruyama & Sebastian Volz****IHTC15-8664/NMT-F-531***Enhanced Thermal Conductivity of Epoxy Composites with Hybrid Carbon-Based Functional Materials and Nano-Copper Particles*

Ping Zhang, Qiang Li, Yimin Xuan (Nanjing University of Science and Technology, China)

**IHTC15-9153/NMT-F-532***Radiative Properties of a Nanofluid Mixture*

Jan Eggers, Stephan Kabelac (Leibniz University Hannover, Germany)

**IHTC15-8890/NMT-F-533***Thermal and Electromagnetic Modeling of a Multi-Layer PCs Thermal Protection Structure for Laser Ablation*

Hao-Chun Zhang, Yang Zhao, Hai-Yan Yu, Chen-Hui Qiu, Yao Li (Harbin Institute of Technology, China)

**IHTC15-9390/NMT-F-534***The Experimental Investigation of Modified Surface Effect on Microbial Fouling Characteristics*

Zhiming Xu (Northeast Dianli University, China), Zuodong Liu (North China Electric Power University, China), L. Wu (Northeast Dian Li University, China), Yilong Zhang (North China Electric Power University, China), Z. Zhang (Northeast Dianli University, China)

**IHTC15-9823/NMT-F-535***Experimental Analysis of High Weber Number Drop Impact onto Super-Hydrophobic and Hydrophobic Surfaces*

Fabio Villa (University of Bergamo, Italy), Carlo Antonini (Eidgenössische Technische Hochschule, Switzerland), Ilia Roisman (Technical University of Darmstadt, Germany), Marco Marengo (University of Bergamo, Italy)

**IHTC15-9482/NMT-F-536***Superhydrophobicity or Icephobicity for an Effective Icing Mitigation Strategy?*

Carlo Antonini (Eidgenössische Technische Hochschule, Switzerland), Alidad Amirfazli (York University, Canada), Marco Marengo (University of Bergamo, Italy)

15th, Friday

Room G

## Session 51 (G) [8:40 - 10:20]

### **NMM2** Nano/Micro Scale Measurement and Simulation (2)

*Co-Chairs : Hirofumi Daiguji & Konstantinos Termentzidis*

#### **IHTC15-8732/NMM-G-511**

*The Effect of Inner Surface Roughness and Heating on Friction Factor in Horizontal Mini-Tubes*

Lap Mou Tam (University of Macau, Institute for the Development and Quality, China), Hou Kuan Tam (University of Macau, China), Afshin J. Ghajar (Oklahoma State University, Stillwater, USA), Wa San Ng, Choi Keng Wu (University of Macau, Institute for the Development and Quality, China)

#### **IHTC15-8543/NMM-G-512**

*Temperature Dependent Thermal Transport across the Interfaces between CNT Array and Adjacent Layers*

Zhaoliang Wang, Yong Ma, J. G. Liang (China University of Petroleum, China), D. W. Tang (Chinese Academy of Science Beijing, China)

#### **IHTC15-9503/NMM-G-513**

*Behaviors of Gas Flow in Tree-Shaped Microchannel Networks*

Zilong Deng (Southeast University, China), Yongping Chen (Yangzhou University, China), Chengbin Zhang (Southeast University, China)

#### **IHTC15-9453/NMM-G-514**

*Numerical Study of Ethanol Reforming in Micro-Channels*

Somasree Roychowdhury, Sarit Kumar Das, Thirumalachari Sundararajan (Indian Institute of Technology Madras, India)

#### **IHTC15-8946/NMM-G-515**

*The Flow Resistance and Heat Transfer Characteristics of Micro Pin-Fins with Different Cross-Section Shapes*

Zhigang Liu, Ning Guan, Chengwu Zhang, Guilin Jiang (Energy Research Institute of Shandong Academy of Sciences, China)

---

## Session 52 (G) [12:50 - 14:50]

### **NMM3** Nano/Micro Scale Measurement and Simulation (3)

*Co-Chairs : Weigang Ma & Koji Takahashi*

#### **IHTC15-9459/NMM-G-521**

*Investigation of Thermal Resistance and Heat Conduction at  $\alpha$ -Quartz-Liquid Alkane Interfaces Using Nonequilibrium Molecular Dynamics Simulations*

Hari Krishna Chilukoti, Gota Kikugawa (Tohoku University, Japan), Masahiko Shibahara (Osaka University, Japan), Taku Ohara (Tohoku University, Japan)

#### **IHTC15-9136/NMM-G-522**

*Gas Molecular Momentum Exchange Characteristics in Nanopores*

Qixin Liu, Zhiyong Chai (Chongqing University of Science and Technology, China)

#### **IHTC15-9429/NMM-G-523**

*Evaporation Dynamics of Microdroplets*

Mitsuhiro Matsumoto, Junichi Tatsumi, Masaya Hosoda (Kyoto University, Japan)

#### **IHTC15-9391/NMM-G-524**

*Heat Transfer across a Confined Thin Film with Structural or Mass Disorder: A Molecular Dynamics Study*

Cheng Shao, Hua Bao (Shanghai Jiao Tong University, China)

#### **IHTC15-9000/NMM-G-525**

*Kinetic Study of  $\text{Li}_2\text{SO}_4 \cdot \text{H}_2\text{O}$  Dehydration Using Microscopy and Modeling*

Shuiquan Lan, Herbert Zondag, Camilo Rindt (Eindhoven University of Technology, The Netherlands)

#### **IHTC15-9418/NMM-G-526**

*MD Simulation on Cryogenic Sublimation Dynamics of Dry Ice Nanoparticles*

Yi-min Chen, Lin Chen, Xin-Rong Zhang (Peking University, China)

---

**Session 53 (G) [15:10 - 16:50]****MMM4 Nano/Micro Scale Measurement and Simulation (4)****Co-Chairs : Shigenao Maruyama & Masahiko Shibahara****IHTC15-9922/NMM-G-531***Adsorption/Desorption and Transport of Water in Two-Dimensional Hexagonal Mesoporous Silica*

Hirofumi Daiguji, Kyohei Yamashita, Hideki Yanagihara (The University of Tokyo, Japan), Akira Endo (National Institute of Advanced Industrial Science and Technology, Japan)

**IHTC15-9179/NMM-G-532***Series Study on the Thermal Transport Properties of Nanofilm by Applying Transient Thermoreflectance Method*

Weigang Ma, Xing Zhang (Tsinghua University, China), Keisuke Kubo, Masamichi Kohno, Yasuyuki Takata, Tatsuya Ikuta, Koji Takahashi (Kyushu University, Japan)

**IHTC15-8343/NMM-G-533***Thermal Conductivity of Amorphous/Crystalline Silicon Nanowires and Superlattices*

Konstantinos Termentzidis (LEMMA, France), Etienne Blandre (INSA de Lyon, France), Arthur France-Lanord (Commissariat à l'Energie Atomique et aux Energies Alternatives, Saclay, France.), Valentin Jean (University of Lorraine, France), Samy Merabia, Tristan Albaret (University of Lyon, France), David Lacroix (University of Lorraine, France)

**IHTC15-8885/NMM-G-534***Synthesis and Thermal Conductivity of Monodisperse Hollow Silica Nanospheres*

Tao Gao (Norwegian University of Science and Technology, Norway), Bjørn Petter Jelle (SINTEF Building and Infrastructure, Norway), Linn Ingunn Sandberg, Arild Gustavsen (Norwegian University of Science and Technology, Norway)

**IHTC15-8366/NMM-G-535***Monte Carlo Simulations of the Thermal Properties of Silicon and Germanium Mesoporous Nanostructures*

Valentin Jean, Sebastien Fumeron, Konstantinos Termentzidis, David Lacroix (Université de Lorraine, France)

**Session 51 (H) [8:40 - 10:40]****CND3 Conduction (3)****Co-Chairs : Denis Maillet & Hajime Nakamura****IHTC15-8419/CND-H-511***Determination of Thermal Contact Resistance Coefficients through Thermo-Mechanical Simulation*

Yona Frekers, Sarah Vieler, Simon van Buren, Marc Deppermann, Reinhold Kneer (RWTH Aachen University, Germany)

**IHTC15-9330/CND-H-512***High Thermal Conductivity Performance of Compressed Graphene Sheet Layers*

Yuan-Xiang Fu, Xiao-Ming Wang, Dong-Chuan Mo, Shu-Shen Lu (Sun Yat-sen University, China)

**IHTC15-8596/CND-H-513***Study of Thermal Conductance in a Strip-Roll System*

Jean-Marie Buchlin, M. Delsipée, Ph. Planquart (Von Karman Institute for Fluid Dynamics, Belgium), M. Renard (DREVER Int. SA, Belgium)

**IHTC15-8758/CND-H-514***The Influence of Deposited Metal Material Parameters on the Heat Transfer Process and Fluid Dynamics in the Welding Pool*

Lige Tong, Jingchen Gu, Shaowu Yin, Li Wang (University of Science &amp; Technology Beijing, China), Shiwu Bai (Pipeline Research Institute of China National Petroleum Corporation, China)

**IHTC15-8887/CND-H-515***Two-Region Fin Model Adjacent Temperature Profile Interactions*

Louis Desgrosseilliers, Dominic Groulx, Mary Anne White (Dalhousie University, Canada)

**IHTC15-8444/CND-H-516***Thermal Protection Design for Flight Data Recorders*

Ruhul Amin Rana, Ri Li (University of British Columbia, Canada)

# General Sessions in Series

15th, Friday

## Session 52 (H) [12:50 - 14:50]

### **CND4** Conduction (4)

*Co-Chairs : Dominic Groulx & Shinji Kimijima*

#### **IHTC15-9137/CND-H-521**

*Experimental Investigation on Unsteady Conjugate Heat Transfer Caused by Flow Turbulence*

Hajime Nakamura, Naoki Shiibara, Shunsuke Yamada (National Defense Academy, Japan)

#### **IHTC15-9556/CND-H-522**

*Conjugate Cooling of Protruding Heaters in a One Side Closed Duct by Impinging Flow*

Ismael de Marchi Neto (Technological Federal University of Paraná, Brasil), Carlos Altemani (University of Campinas, Brasil)

#### **IHTC15-9383/CND-H-523**

*Thermal Management Characteristics of Lithium-Ion Batteries According to the Arrangement*

Hee Won Lee, Jong Hyeon Son, Il Seouk Park (Kyungpook National University, Korea)

#### **IHTC15-9253/CND-H-524**

*Heat Transfer Analysis in Human Skin Subjected to Flash Fire: Investigation of Dual Phase Lag Phenomenon*

Uday Raj, Prabal Talukdar, Apurba Das, Alagiru Samy (Department of Textile Technology, IIT Delhi, India)

#### **IHTC15-9444/CND-H-525**

*Numerical Simulation on Coupling of Heat Conduction and Curing of Polymer Composite with Finite Volume Method*

Yan Yu, Pingjian Ming, Yafei Jiao, Xinyu Zhang (Harbin Engineering University, China)

#### **IHTC15-8813/CND-H-526**

*The Mean Free Path of Gas Molecules in Confined Nano-Porous Structures*

Gaosheng Wei, Lixin Wang, Xiaoze Du, Yongping Yang (North China Electric Power University, China)

---

## Session 53 (H) [15:10 - 16:50]

### **FLM** Film

*Co-Chairs : Katsunori Hanamura & Atsuki Komiya*

#### **IHTC15-9254/FLM-H-531**

*Thin Film Evaporation in Microchannel Membrane for Solar Vapor Generation*

Ammar A. Alshegri, TieJun Zhang (Masdar Institute of Science and Technology, UAE)

#### **IHTC15-8899/FLM-H-532**

*Measurement of Liquid Film Thickness Formed between Colliding Twin Bubbles during Coalescence Process*

Takayuki Morokuma, Yoshio Utaka (Yokohama National University, Japan)

#### **IHTC15-9537/FLM-H-533**

*Evaporation, Dynamics and Crisis Phenomena in Thin Liquid Films Sheared by Gas in a Narrow Channel*

Oleg Kabov, Dmitry Zaitsev, Yulia Kabova, Vyacheslav Cheverda (Kutateladze Institute of Thermophysics Siberian Branch of Russian Academy of Sciences, Russia)

#### **IHTC15-9565/FLM-H-534**

*Modeling of Nanoporous Membranes for High Flux Thin Film Evaporation*

Zhengmao Lu, Shankar Narayanan, Daniel Hanks (Massachusetts Institute of Technology, USA), Rishi Raj (Indian Institute of Technology Patna, India), Rong Xiao (Exxon Mobile, USA), Dion Antao, Evelyn N. Wang (Massachusetts Institute of Technology, USA)

#### **IHTC15-9671/FLM-H-535**

*Marangoni Effect in Heated Falling Liquid Film on a Vertically Confined Plate*

Fang-Fang Zhang, Yu-Dong Ding, Xun Zhu, Hong Wang, Qiang Liao, Gan Song (Chongqing University, China)

---

## Room I

**Session 51 (I) [8:40 - 10:20]****PMD5 Porous Media (5)****Co-Chairs : Peixue Jiang & Ken Okazaki****IHTC15-9617/PMD-I-511***Influence of Porous Cathode Microstructure on Overpotential Characteristics of Solid Oxide Fuel Cells*

Kota Miyoshi, Hiroshi Iwai (Kyoto University, Japan), Masashi Kishimoto (Imperial College, London), Wataru Matsumoto, Motohiro Saito, Hideo Yoshida (Kyoto University, Japan)

**IHTC15-8665/PMD-I-512***Numerical Investigation of the Flow and Temperature Uniformity in the Reactor Core of a Pebble Bed HTGR Using Porous Media Method*

Xiawei Li, Qi Min, Xinxin Wu (Tsinghua University, China), Shixian Liu (Nuclear and Radiation Safety Center, China)

**IHTC15-8763/PMD-I-513***An Investigation of Anisotropic Structure of Wood-Derived Char Using X-Ray CT and Effect of Particle Aspect Ratio on its Gasification Reactivity*

Teeranai Pattanotai, Ryota Nakano, Hirotatsu Watanabe, Ken Okazaki (Tokyo Institute of Technology, Japan)

**IHTC15-9837/PMD-I-514***Surface Charge Effects on Reactive Transports in Microporous Media*

Li Zhang, Moran Wang (Tsinghua University, China)

**IHTC15-9073/PMD-I-515***Thermal Entrance Effects in a Thermoacoustic Stacked Screen Regenerator*

Simon Bühler (University of Twente, Netherlands), Douglas Wilcox (Chart Industries-Qdrive, USA), Joris Oosterhuis, Theo van der Meer (University of Twente, Netherlands)

**Session 52 (I) [12:50 - 14:30]****PMD6 Porous Media (6)****Co-Chairs : Naoto Haruki & Peter Vadasz****IHTC15-8742/PMD-I-521***A Mathematical Model for a Boiling Process of Food Stuff Based on the Porous Media Theory*

Takao Yoshinaga (Osaka University, Japan), Tomoko Hara (Kobe Yamate College, Japan)

**IHTC15-9730/PMD-I-522***Direct-Inverse Analysis of Heat Transfer in Micro-Models of Porous Media*

Carolina Palma Naveira-Cotta (Federal University of Rio de Janeiro, Brazil)

**IHTC15-8848/PMD-I-523***Modelling Heat and Mass Transfer in Porous Material during Pyrolysis Using Operator Splitting and Dimensionless Analysis*

Julien Maes, Ann Muggeridge, Matthew Jackson (Imperial College London, UK), Michel Quintard (Institut de Mecanique des Fluides de Toulouse, France), Alexandre Lapene (Total, S. A., France)

**IHTC15-9108/PMD-I-524***Towards a General Spatial Averaging Procedure for Multi-Scale Flow Modeling in Heat Transfer Devices with Repetitive Fin Structures*

Geert Buckinx, Martine Baelmans (KULeuven, Belgium)

**IHTC15-9217/PMD-I-525***Simulation of Multiphase Flow and Heat Transfer in Porous Media Using Lattice Boltzmann Method*

Dongdong Wang, Jun Shen, Zhichun Liu, Wei Liu (Huazhong University of Science and Technology, China)

15th, Friday

Room J

## Session 53 (I) [15:10 - 16:30]

### **PMD7** Porous Media (7)

*Co-Chairs : Gen Inoue & Theo van der Meer*

#### **IHTC15-9359/PMD-I-531**

*CO<sub>2</sub> Trapping Phenomena in Porous Media of Geological Storage by Lattice Boltzmann Method*

Suguru Uemura, Atsuto Noda, Shohji Tsushima, Shuichiro Hirai (Tokyo Institute of Technology, Japan)

#### **IHTC15-8734/PMD-I-532**

*Numerical Study of Physical Characteristic of Porous Media Containing Methane Hydrate Using Pore Network Model*

Jiagi Wang, Yongchen Song, Jiafei Zhao, Di Liu, Lei Yang, Zihao Zhu, Xiaoqing Chen (Dalian University of Technology, China)

#### **IHTC15-9025/PMD-I-533**

*Numerical Modeling of Three Dimensional Heat Transfer and Fluid Flow through Interrupted Plates Using Unit Cell Scale*

Chao Zhang, Terrence Simon, Perry Li, James Van de Ven (University of Minnesota, USA)

#### **IHTC15-9937/PMD-I-534**

*Performance of a Drainage Trench Employed as Ground Heat Exchanger*

Michele Bottarelli (Università di Ferrara, Italy), Hikari Fujii (Akita University, Japan), Vittorio Di Federico (Università di Bologna, Italy)

---

## Session 51 (J) [8:40 - 10:20]

### **SAT** Spray and Atomization

*Co-Chairs : Shuhei Inoue & Paolo E. Santangelo*

#### **IHTC15-8859/SAT-J-511**

*Experimental and Theoretical Study on the Thermal Characteristics of Flashing Spray Cooling Using R404a*

Zhi-Fu Zhou, Bin Chen (Xi'an Jiaotong University, China), Guo-Xiang Wang (University of Akron, USA)

#### **IHTC15-9805/SAT-J-512**

*Experimental Study on Heat Transfer Characteristics of Spray Cooling*

Ni Liu (University of Shanghai for Science and Technology, China), Jingde Zhao (Donghua University, China)

#### **IHTC15-9821/SAT-J-513**

*Experimental Investigation of Enhanced Spray Cooling on Nano- and Hybrid Micro/Nano-Structured Surfaces*

Jiannan Chen, Zhen Zhang, Peixue Jiang (Tsinghua University, China)

#### **IHTC15-9481/SAT-J-514**

*Thermal Behaviors of Droplet-Substrate in Thermal Spray New Applications*

Guanghua Wei (Shanghai Jiao Tong University, China), Lili Zheng (Tsinghua University, China), Changying Zhao (Shanghai Jiao Tong University, China), Sanjay Sampath (Stony Brook University, USA)

#### **IHTC15-8977/SAT-J-515**

*The Effect of Liquid Mass Flow Rate on Heat Transfer for an Air-Water Atomizing Mist Jet*

Cian Quinn, Darina Murray, Tim Persoons (Trinity College Dublin, Ireland)

---

**Session 52 (J) [12:50 - 14:50]****CMB1 Combustion (1)****Co-Chairs : Yoshihiro Deguchi & Yoshitaka Fukuyama****IHTC15-8589/CMB-J-521***Effects of Local Flame Displacement Velocity on Turbulent Burning Velocity for Stoichiometric Hydrogen-Oxygen-Dilution Gas Mixtures*

Masaya Nakahara, Fumiaki Abe, Kenichi Tokunaga (Ehime University, Japan)

**IHTC15-9097/CMB-J-522***Hydrogen Combustion in the Turbulent Boundary Layer on a Permeable Surface*

Vladimir Lukashov, Vladimir Terekhov (Institute of Thermophysics SB RAS, Russia)

**IHTC15-8744/CMB-J-523***Effect of Ambient Pressure on Soot Formation in Oxy-Fuel Spray Jet Flame*

Tomoaki Kitano, Jun Nishio, Ryoichi Kurose, Satoru Komori (Kyoto University, Japan)

**IHTC15-9464/CMB-J-524***Role of CO<sub>2</sub> in the Soot Formation and Reduction Mechanisms in CH<sub>4</sub> Flat Flame Doped with Toluene under O<sub>2</sub>/CO<sub>2</sub> Environments*

Hirotatsu Watanabe, Shunsuke Sugai, Ken Okazaki (Tokyo Institute of Technology, Japan)

**IHTC15-9830/CMB-J-525***Relaxation Phenomena in Reaction-Diffusion Processes*

Juan Ramos (Universidad de Malaga, Spain)

**IHTC15-9466/CMB-J-526***Alternating Currents Enhanced PAHs Formation in Nonpremixed Jet Flames*

Yuan Xiong, Minsuk Cha, Sukho Chung (King Abdullah University of Science and Technology, Saudi Arabia)

**Session 53 (J) [15:10 - 17:10]****CMB2 Combustion (2)****Co-Chairs : Juan Ramos & Hirotatsu Watanabe****IHTC15-9164/CMB-J-531***A Numerical Study on the Combustion and Heat Transfer Characteristics of a Spark Ignited Engine Applying Heat Insulation Coatings to the Combustion Chamber Wall Surface*

Akira Kikusato, Jin Kusaka, Yasuhiro Daisho (Waseda University, Japan)

**IHTC15-9980/CMB-J-532***On Heat Transfer in the Stabilization Zone of an Attached Methane Flame in Air Coflow*

Sylvain Lamige, Cédric Galizzi, Manuel Kühni (Centre de Thermique de Lyon, France), Kevin M. Lyons (North Carolina State University, USA), Frédéric André, Dany Escudié (Centre de Thermique de Lyon, France)

**IHTC15-9417/CMB-J-533***CFD Analysis of Stationary Fire Whirls and Moving Fire Whirls Crossing Over Barriers in Urban Fires*

Koyu Satoh, Naian Liu, Xiaodong Xie, Wei Gao (University of Science and Technology, China)

**IHTC15-9387/CMB-J-534***The Importance of Detail Reaction Mechanisms for Temperature Field Predictions of Compartment Fires*

Chun Yuen, Guan Heng Yeoh (University of New South Wales, Australia), Richard Kwok Kit Yuen (City University of Hong Kong, Hong Kong), Victoria Timchenko (University of New South Wales, Australia)

**IHTC15-9238/CMB-J-535***Experimental and Numerical Study of a Cooled Rocket Combustion Chamber*

Luc-Henry Dorey, Philippe Grenard, Lionel Matuszewski, Laurent Selle (Office National d'Etudes et de Recherches Aérospatiales, France)

**IHTC15-8615/CMB-J-536***Research on Combustion Process in a Novel Microcombustor with Block Inserts*

Wenming Yang, Dongyue Jiang, Kian Jon Chua, Kian Yong Chua (National University of Singapore, Singapore)

15th, Friday

Room K

## Session 51 (K) [8:40 - 10:40]

### TMG1 Thermal Management (1)

**Co-Chairs : Leong Kai Choong & Toshio Tomimura**

#### **IHTC15-8847/TMG-K-511**

*Thermal Performance of a Multi-Channel Heat Exchanger-Reactor*  
Xiaofeng Guo, Yilin Fan, Lingai Luo (Université de Nantes, France)

#### **IHTC15-8938/TMG-K-512**

*Startup Characteristic of Loop Heat Pipes for Alpha Magnetic Spectrometer Cryocoolers*  
Naihua Wang, Zheng Cui, Feng Luo, Lin Cheng (Shandong University, China)

#### **IHTC15-9354/TMG-K-513**

*Preliminary Experimental Study of Start-Up Behavior in Nitrated Gravity Heat Pipe*  
Yuting Wu, Qiang Meng (Beijing University of Technology, China), Yaxuan Xiong (Beijing University of Civil Engineering and Architecture, China), Shanwei Liu, Wujun Cui, Chongfang Ma (Beijing University of Technology, China), Deying Li (Beijing University of Civil Engineering and Architecture, China)

#### **IHTC15-9120/TMG-K-514**

*Fuel Cell Co-Generation System with Loop Heat Pipe Based Thermal Control*  
Randeep Singh, Masataka Mochizuki, Yuji Saito, Thang Nguyen, Zhen Guo, Masakazu Ohashi, Tien Nguyen, Ehsan B. Haghighi, Vijit Wuttijumrong (Fujikura Ltd, Japan)

#### **IHTC15-9656/TMG-K-515**

*An Experimental Analysis of an Open Loop Pulsating Heat Pipe Operating with a Dielectric Working Fluid for Embedded Power Electronic Applications*  
Daniel Kearney, Omar Suleman (ABB Corporate Research, Switzerland), Justin Griffin (Aerogel Technologies, USA)

#### **IHTC15-9178/TMG-K-516**

*Experimental and Theoretical Study of Steady Non-Fourier Heat Conduction in Free-Standing Gold Nanofilm*  
Hai-Dong Wang (Kyushu University), Xing Zhang, Zeng-Yuan Guo (Tsinghua University, China)

---

## Session 52 (K) [12:50 - 14:50]

### TMG2 Thermal Management (2)

**Co-Chairs : Isao Satoh & Jessica Shi**

#### **IHTC15-8553/TMG-K-521**

*Effect of Electrode Configuration on the Heat Transfer Performance of a Concentrated Heat Source*  
Chien-Jen Chen, Ing Youn Chen (National Yunlin University of Science and Technology, Taiwan), Chi-Chuan Wang (National Chiao Tung University, Taiwan)

#### **IHTC15-8807/TMG-K-522**

*Thermal Contact Resistance of Gamma-Irradiated Metallic Foil and Carbon Nanotube Thermal Interface Materials*  
Robert A. Sayer (Sandia National Laboratories, USA), Stephen L. Hodson (Purdue University, USA), Timothy P. Koehler, Scot E. Swanson (Sandia National Laboratories, USA), Timothy S. Fisher (Purdue University, USA)

#### **IHTC15-8824/TMG-K-523**

*Experimental Investigation of Thermal Performance of Phase Change Material Based Composite Heat Sink with Discrete Heat Sources*  
Srikanth Rangarajan, Chakravarthy Balaji (IIT MADRAS, India)

#### **IHTC15-9032/TMG-K-524**

*Study on Heat Transfer Characteristics of Miniature/Micro Pins*  
Naoko Matsumoto, Toshio Tomimura, Yasushi Koito (Kumamoto University, Japan)

#### **IHTC15-9071/TMG-K-525**

*Analysis of Space Environmental and ISS Parameters on the Thermal Behavior of AMS*  
Zheng Cui, Kun Wang, Naihua Wang, Jiwei Song, Qie Sun, Lin Cheng (Shandong University, China)

#### **IHTC15-9461/TMG-K-526**

*Characterization of Valveless Piezoelectrically-Actuated Micropumps with Novel Diffuser Elements*  
Leicester Ehrlich, Jeff Punch (University of Limerick, Ireland), Nicholas Jeffers, Jason Stafford (Alcatel-Lucent, Ireland)

---

**Session 53 (K) [15:10 - 16:50]****TMG3 Thermal Management (3)**

*Co-Chairs : Kenichi Morimoto & Robert Sayer*

**IHTC15-8886/TMG-K-531**

*Solar PV Passive Temperature Control Using Phase Change Materials*

Dominic Groulx (Dalhousie University, Canada), Pascal Henry Biwolé (Université de Nice Sophia-Antipolis, France)

**IHTC15-9200/TMG-K-532**

*Photonic Structures Based Thermal Rectification: Toward Tunable Radiative Thermal Rectifiers*

Elyes Nefzaoui, Younes Ezzahri, Karl Joulain, Jeremie Drevillon (Institut Pprime, France)

**IHTC15-9251/TMG-K-533**

*The Design & Characterization of a Miniature Shape Memory Alloy Valve for Passive Thermal Management*

Alistair Waddell, Jeff Punch (University of Limerick, Ireland), Jason Stafford, Nick Jeffers (Alcatel-Lucent Bell Labs, Ireland)

**IHTC15-8913/TMG-K-534**

*Numerical Investigation of Thermal Management for Kilowatt Vanadium Redox Flow Batteries*

Baowen Zhang, Yuan Lei, Bofeng Bai (Xi'an Jiaotong University, China), Tianshou Zhao (The Hong Kong University of Science & Technology, China)

**IHTC15-9311/TMG-K-535**

*An Entropy Dissipation-Based Method for Optimal Control of Variable Water Volume Heat Exchanger Networks*

Qun Chen, Yi-Fei Wang (Tsinghua University, China)

---

# General Sessions in Parallel

11th, Monday

Session 11 (13:30 - 15:30)

	Room B1	Room B2	Room C1	Room C2	Room D	Room E
	<b>EVP1 : Evaporation, Droplet/Spray/Liquid Film (1)</b> Y. Hamamoto & Y. Nam	<b>TPA : Two-Phase, Application</b> C. Baltis & A. Murata	<b>FCV1 : Forced Convection (1)</b> K. Hirata & P. H. Oosthuizen	<b>TTR1 : Turbulent Transport (1)</b> S. Kenjereš & M. Senda		<b>BMA1 : Bio and Medical Applications (1)</b> B. Chen & Y. Yamada
13:30	<b>8581/EVP-B1-111</b> Vapor Flow Effect on Falling Film Evaporation of R134a Outside Horizontal Tube Bundle, W. Ji, C. Zhao, Y. He, G. Xi, W. Tao	<b>9100/TPA-B2-111</b> Experimental Investigation on a Closed Loop Pulsating Heat Pipe in Hyper-Gravity Conditions, M. Marni, M. Manzoni, L. Araneo, S. Filippeschi, M. Marengo	<b>9221/FCV-C1-111</b> Numerical Study of Heat Transfer Characteristics for Different Solar Flux Distributions on Linear Fresnel Collector Absorber Tubes in Laminar Flow, I.F. Okafor, J. Dirker, J.P. Meyer	<b>8762/TTR-C2-111</b> Dynamic and Thermal Characteristics of the Mixing of Two Separated Flows with Different Scales, A. D'yachenko, V. Terekhov, Y. Smulsky, N. Yarygina		<b>8489/BMA-E-111</b> A Study on the Temperature Profile and Thermal Damage in Human Skin Tissue, I. Im, S. Youn, D. Ko
13:50	<b>9374/EVP-B1-112</b> Effect of Initial Temperature of a Hot Steel Plate on Thermal Performance of Impinging Jets during Quenching Processes, T. Kim, K. Do, D. Oh, J. Lee, J. Park	<b>9899/TPA-B2-112</b> Effects of Filling Ratio and Input Heat Flux on the Thermal Performance and Flow Pattern of a Pulsating Heat Pipe, J. Lee, S. Kim	<b>8781/FCV-C1-112</b> Nonlinear Characteristics of Periodically Fully Developed Flow in Cross-Flow Tube Bundle, Q. Yong, M. Yang, Z. Wang, J. Chen, D. Su, Y. Zhang	<b>9325/TTR-C2-112</b> Effects of a Stepwise Change in Thermal Boundary Conditions on Heat Transfer Characteristics in a Turbulent Boundary Layer Developing on a Flat Plate, T. Houra, Y. Nagano, M. Tagawa		<b>9884/BMA-E-112</b> Estimation of Blood Perfusion Rate and Its Temperature Dependency in Human Abdominal Area under Heating Condition, J. Okajima, T. Okabe, T. Sugiura, A. Komiya, T. Seki, S. Maruyama
1410	<b>9732/EVP-B1-113</b> Influence of Dynamic Wettability on Evaporation Kinetics of Microscopic Sessile Droplets, R. Raj, E. N. Wang	<b>9281/TPA-B2-113</b> Measurement of Kinetic and Enthalpy of Chemical Reaction in Biphasic Millifluidic Droplet Flow by InfraRed Thermography, R. Marta, P. Christophe, T. Jean, H. Cindy, B.J. Christophe	<b>9307/FCV-C1-113</b> Hybrid Solution for Convection Heat Transfer of Swirling Flows in Cylindrical Cavity with Rotating Top, C.C.S. Cruz, L.M. Pereira, E. Macêdo, J.N.N. Quaresma	<b>9647/TTR-C2-113</b> Control of Momentum and Heat Transport in a Heated Axisymmetric Jet by Means of Vortex Generators, K. Miura, K. Nagata, Y. Sakai, O. Terashima, Y. Ito		<b>9715/BMA-E-113</b> Tumor Ablation with Near-Infrared Radiation Using Localized Injection of Nanoparticles, A. Paul, N.K. Bandaru, A. Narasimhan, S.K. Das
14:30	<b>9961/EVP-B1-114</b> The Effect of Humidity in Ambient Gas on HTWs in Volatile Drops, Y. Fukatani, M. Kohno, Y. Takata, K. Sefiane, J. Kim	<b>9228/TPA-B2-114</b> Geometric Structure of Segmented Flow Networks, J. Stafford, N. Jeffers	<b>9702/FCV-C1-114</b> Heat Transfer on Sharp and Blunted Flat Plate at Three-Dimensional Shock-Wave /Boundary-Layer Interaction, V. Borovoy, I. Egorov, N. Palchekovskaya	<b>10000/TTR-C2-114</b> Verification and Validation of Three Different CFD Codes in Simulating Mixed Convection Flows Using Two Advanced Eddy-Viscosity Models, A. Keshmiri		<b>8772/BMA-E-114</b> State Estimation Problem in Hyperthermia Treatment of Tumors Loaded with Nanoparticles, B. Lamien, H.R.B. Orlande, G.E. Eliçabe, A.J. Maurente
14:50	<b>9504/EVP-B1-115</b> Drop Spreading and Evaporation on a Heated Substrate under Variable Gravity Conditions, O. Kabov, D. Zaitsev, E. Gatapova, A. Semenov, E. Bykovskaya, E. Karnauhova, V. Ajaev, D. Feoktistov, G. Kuznetsov	<b>9893/TPA-B2-115</b> Analytical Investigation of Oblique Shock Waves in Two-Phase Flow with Different Sound Speeds, Y. Kawamura, M. Nakagawa	<b>9252/FCV-C1-115</b> Numerical Study of Critical Fire Merging Distances in Square Arrayed Multiple Fires, K. Satoh, N. Liu, X. Xie, W. Gao	<b>8699/TTR-C2-115</b> Effect of Shark Skin Textures on Entropy Generation for Turbulent Channel Flow and Heat Transfer Problems, Y. Jin, H. Herwig		<b>9350/BMA-E-115</b> 3-D Investigation of Thermal-structure Analysis in a Kidney during Cold Perfusion, K. Zhu, Y. Wang, F. Liang, Y. Zhang
15:10	<b>9523/EVP-B1-116</b> Heat Transfer and Interaction of Suspended Droplets and Locally Heated Liquid Layer, O. Kabov, A. Fedorets, I. Marchuk			<b>9892/TTR-C2-116</b> Drag Reduction of Thermally Stratified Flow in a Horizontal Pipe, K. Kobayashi, S. Nakajima, Y. Kimura		<b>9624/BMA-E-116</b> Colloidal Magnetic Clusters for Hyperthermia Heating, R. Fu, Y. Yan

## Session 11 (13:30 - 15:30)

11th, Monday

	Room F	Room G	Room H	Room I	Room J	Room K
	<b>MTR1 : Mass Transfer and Drying (1)</b> M. Quintard & K. Takeishi	<b>PPE : Photon, Phonon and Electron Transport</b> P. Ben-Abdallah & M. Matsumoto	<b>MLT : Molecular Transport</b> Y. Chen & T. Ohara	<b>TPP1 : Thermophysical Properties (1)</b> D. Tang & A. Yoshida	<b>CDS1 : Condensation (1)</b> D. Del Col & N. Ono	<b>EES1 : Energy Environmental Systems (1)</b> T. Laneryd & S. Nomura
13:30	<b>8582/MTR-F-111</b> <i>Surface Tension-Driven Flows within Drying Paint Films,</i> N. Saranjam, S. Chandra, J. Mostaghimi, H. Fan, J. Simmer	<b>8551/PPE-G-111</b> <i>The Effect of Distributions of Nanoparticles on Thermal Conductivity of Nanocomposites,</i> J. Zhang, B. Shi, Y. Xuan	<b>8513/MLT-H-111</b> <i>Molecular Dynamics Study on Influences of Surface Structural Characteristics on Thermal Energy Transport over Liquid-Solid Interfaces,</i> M. Shibahara, R. Toda, S. Murakami, T. Ohara	<b>8453/TPP-I-111</b> <i>Method for Predicting Spatial Distribution of Formation Thermophysical Properties from Temperature Logs,</i> W. Cheng, Y. Nian, Y. Huang, C. Zhang	<b>8481/CDS-J-111</b> <i>A Literature Overview on Condensation Heat Transfer of Ammonia on the Outside of Tubes,</i> K. Spindler	<b>8948/EES-K-111</b> <i>Heat Recovery in Difficult "Polluted Flue Gas Applications" in Waste to Energy Systems,</i> P. Stehlik, V. Turek, Z. Jegla, B. Kilkovsky
13:50	<b>9024/MTR-F-112</b> <i>Application of Entransy in Match Property of Liquid Desiccant Dehumidification,</i> L. Zhang, X. Liu, Y. Jiang	<b>8641/PPE-G-112</b> <i>Circuits for Thermal Light,</i> P. Ben-Abdallah S.-A. Biehs	<b>9055/MLT-H-112</b> <i>Molecular Dynamics Investigation on the Wetting Process of Liquid Droplet on a Solid Surface,</i> E. Arakaki, S. Nishida, D. Surblys, Y. Yamaguchi, K. Kuroda, M. Kagawa, T. Nakajima, H. Fujimura	<b>9572/TPP-I-112</b> <i>Analysis of Improved Lumped Models for Estimating the Thermal Conductivity Augmentation in Composite Materials,</i> D. Moreira, M.C. Telles, L.C. Nunes, L. Sphaier	<b>10516/CDS-J-112</b> <i>Versatile Models for Condensation of Fluids with Widely Varying Properties from the Micro to Macroscale,</i> S. Garimella, B.M. Fronk, J.A. Milkie, B.L. Keinath	<b>8662/EES-K-112</b> <i>Investigation on the Process of CO<sub>2</sub> Diffusion and Mass Transfer in Oil-Saturated Porous Media Using MRI,</i> Y. Zhao, Y. Song, M. Hao
14:10	<b>8746/MTR-F-113</b> <i>MRI Measurement and Numerical Modeling of Moisture Transport in Microwave Vacuum Drying of Porous Media,</i> T. Tsuruta, H. Tanigawa	<b>9038/PPE-G-113</b> <i>A New Theoretical Model of Selectively Photothermolysis to Aid Laser Treatment of Poor Responding Port Wine Stain Blood Vessels,</i> D. Li, B. Chen, G. Wang, W. Wu, Y. He	<b>8514/MLT-H-113</b> <i>Photon Upconversion Based on Inter-Molecular Energy Transfer in Ionic Liquids: A Technology for Utilizing Sub-Bandgap Wasted Solar Energies,</i> Y. Murakami, A. Kawai	<b>8568/ TPP-I-113</b> <i>Modeling Thermal Conductivity of Natural Rubber with Carbon Black,</i> J. Song, L. Ma, Y. He, W. Li, S. Yao	<b>9112/CDS-J-113</b> <i>A New Condensation Heat Transfer Model Based on the Flow Regime in a Nearly Horizontal Pipe,</i> T. Ahn, J. Jeong, K. Kang, J. Cheon, B. Yun	<b>9294/EES-K-113</b> <i>Effect of Boundary Conditions and Ventilator Size on the Natural Convection in a Naturally Ventilated Greenhouse,</i> S. Kruger, L. Pretorius
14:30	<b>8875/MTR-F-114</b> <i>Investigation of Heat Transfer within an Array of Impinging Jets with Local Extraction of Spent Fluid,</i> P. Cavadini, P. Scharfer, W. Schabel	<b>9156/PPE-G-114</b> <i>Thermal Conductivity Calculation of Magnesium Silicide Alloys by Lattice Dynamics and Molecular Dynamics Methods,</i> T. Shiga, T. Murakami, T. Hori, K. Esfarjani, J. Shiomi	<b>9635/MLT-H-114</b> <i>Heat Transferred from Cold to Hot in Near-Critical Fluids under Low Gravity,</i> G. Hu, H. Wang, Z. Guo	<b>8626/TPP-I-114</b> <i>The Effect of Porous Media Properties on Effective Thermal Conductivity of Tetrahydrofuran Hydrates and Evaluation of Existing Prediction Correlations,</i> L. Yang, J. Zhao, Y. Song, W. Liu, Y. Liu, Y. Zhang, D. Wang, M. Yang, J. Wang	<b>9536/CDS-J-114</b> <i>Numerical Simulation of Heat and Mass Transfer Processes in Air-Cooled Condenser,</i> V. Artemov, K. Minko, G. Yankov	<b>9011/EES-K-114</b> <i>Multi-Scale Modeling and Approximation Assisted Optimization of Bare Tube Heat Exchangers,</i> D. Bacellar, J. Ling, V. Aute, R. Rademacher, O. Abdelaziz
14:50		<b>9064/PPE-G-115</b> <i>In-Plane Thermal Conductivity of Si Thin Films from First-Principles Calculation,</i> X. Wang, B. Huang	<b>9499/MLT-H-115</b> <i>A Coupling Scheme of Lattice Boltzmann Method and Finite Volume Method for Multi-Component Diffusion Processes,</i> Z. Tong, Y. He, W. Yang, W. Tao	<b>8646/TPP-I-115</b> <i>Intriguingly High Thermal Conductivity Enhancement of Graphene Nanoplatelets Contained Poly (Methyl Methacrylate) Composites,</i> W. Yu, H. Xie, X. Zhou, Y. Li, L. Chen	<b>9958/CDS-J-115</b> <i>A Numerical Study of Condensation on Asymmetric Microstructures,</i> S. Natesh, V. Narayanan, S. Bhavnani	<b>9639/EES-K-115</b> <i>Heat Balance of Anti-Season Ice Cave,</i> L. Shu, S. Jin, S. Huang, X. Qian, X. Wang, K. Tan, Y. Liang, J. Tan
15:10				<b>8688/TPP-I-116</b> <i>Characterization of Thermal Transport in Carbon Nanotube Yarns,</i> J. Wang, S. He, J. Bao, X. Zhang, J. Yang, Y. Chen	<b>9361/CDS-J-116</b> <i>Drag Experimental Studies of Condensation Heat Transfer in an Inclined Microfin Tube,</i> A.O. Adelaja, J. Dirker, J.P. Meyer	<b>8280/EES-K-116</b> <i>Energy-Based Assessment of Optimal Operating Parameters for Coupled Biochar and Syngas Production in Stratified Downdraft Gasifiers,</i> G. Allesina, S. Pedrazzi, E. La Cava, M. Orlandi, M. Hanuskova, C. Fontanesi, P. Tartarini

# General Sessions in Parallel

11th, Monday

Session 12 (16:00 - 18:00)

	Room B1	Room B2	Room C1	Room C2	Room D	Room E
	<b>EVP2 : Evaporation, Droplet/Spray/Liquid Film (2)</b> O. A. Kabov & M. Monde	<b>TPB : Two-Phase, Boiling/Condensation</b> S. J. Kim & Y. Utaka	<b>FCV2 : Forced Convection (2)</b> Z. Kawara & M. S. Kim	<b>TTR2 : Turbulent Transport (2)</b> A. Keshmiri & M. Tagawa		<b>MNF : Manufacturing</b> T. Saito & Y. Xuan
16:00	<b>8367/EVP-B1-121</b> <i>Spray Cooling by Gently-Deposited Droplets: Experiments and Modeling of Heat-Transfer Mechanisms,</i> P.E. Santangelo, M.A. Corticelli, P. Tartarini	<b>8958/TPB-B2-121</b> <i>Flow Boiling Heat Transfer in Small Cross Section Area Tube with R134a and R32,</i> F. Ramirez-Rivera, F. Vera-García, J.R. García-Cascales, F. Illán-Gómez	<b>9135/FCV-C1-121</b> <i>Simultaneous Thermal and Flow Measurements in a Boundary Layer by Using High-speed Infrared Thermograph and PIV Combined System,</i> S. Yamada, H. Nakamura	<b>8909/TTR-C2-121</b> <i>Effects of System Rotation on Transitional Boundary Layer,</i> O. Iida, K. Noto	 IHTC SINCE 1951	<b>8586/MNF-E-121</b> <i>Mass Spectroscopy of Intermediate Products Involved in Chemical Vapor Deposition Synthesis of Carbon Nanotube,</i> S. Inoue, D. Nakahara, Y. Oga, Y. Matsumura
16:20	<b>8936/EVP-B1-122</b> <i>Modelling of Biodiesel and Diesel Fuel Droplet Heating and Evaporation,</i> S.S. Sazhin, M. Al Qubeissi, M.R. Heikal	<b>8598/TPB-B2-122</b> <i>Nucleation Site Interactions in Upward Flow Boiling Experiments,</i> C. Baltis, C.W.M. van der Geld	<b>8497/FCV-C1-122</b> <i>Laminar, Transitional, and Turbulent Mixed Convective Heat Transfer from a Thin Inclined Plate Having a Uniform Surface Heat Flux,</i> P.H. Oosthuizen	<b>9516/TTR-C2-122</b> <i>Concurrent Large-Eddy Simulation of Wall-Jet Heat Transfer Enhanced by Systematically- Deformed Turbulence Promoter,</i> Y. Oda, K. Takeishi		<b>9843/MNF-E-122</b> <i>Development of an in-Plane Thermal Diffusivity Measurement Method with a Lock-in Thermography and Application to High Thermal Conductive CFRPs,</i> T. Ishizaki, H. Nagano
16:40	<b>9287/EVP-B1-123</b> <i>Comparative Study of the Cooling of a Hot Temperature Surface Using Sprays and Liquid Jet,</i> A. Labergue, T. Aiguier, M. Gradeck, F. Lemoine	<b>8790/TPB-B2-123</b> <i>Numerical Investigation of Taylor-Bubble Characteristics during Flow Boiling in a Square Minichannel,</i> A. Pattamatta, M. Freystein, J. Dietl, P. Stephan	<b>8755/FCV-C1-123</b> <i>Three-Dimensional Turbulent Convection inside a Parallelepiped with Two Heated Vertical Walls,</i> V.I. Terekhov, A.L. Ekaid	<b>9676/TTR-C2-123</b> <i>Operation of Functional Fluid by Local Wall Heating in a Drag-Reducing Surfactant Solution Flow,</i> S. Hara, S. Kawada, T. Tsukahara, Y. Kawaguchi	<b>8623/MNF-E-123</b> <i>High Thermal Conductive Graphite Films from Thin Polymer Films,</i> A. Tatami, M. Tachibana, T. Yagi, M. Akoshima, M. Murakami	
17:00	<b>9581/EVP-B1-124</b> <i>An Experimental Study of the Leidenfrost Transition for Water on Nanostructured Superhydrophilic Surfaces,</i> J. Padilla, V. Carey	<b>8999/TPB-B2-124</b> <i>Experimental Investigation of Hydrodynamics and Flow Boiling Heat Transfer in Minichannels at High Reduced Pressure,</i> A. Belyaev, A.V. Dedov, A.N. Varava, A.T. Komov	<b>9377/FCV-C1-124</b> <i>Entrainment Process in the Vicinity of Pool Fire under Ventilation Condition,</i> Y. Hattori, K. Matsuyama, H. Suto, E. Onuma, S. Okinaga	<b>9788/TTR-C2-124</b> <i>Direct Numerical Simulation on the Effects of Amplitude and Hydrophilicity of Wavy Wall on Turbulent Heat Transfer and Drag,</i> R. Akaiwa, A. Nishida, Y. Hagiwara	<b>9223/MNF-E-124</b> <i>Experimental Investigation of the Work Piece Temperatures in Dry Orthogonal Metal Turning,</i> M. Deppermann, H. Puls, M. Burghold, R. Kneer, F. Klocke	
17:20	<b>9140/EVP-B1-125</b> <i>Visual Observation of Liquid-Solid Contact Situations on Superheated Surface Cooled by Liquid Jet or Spraying,</i> N. Nagai, H. Onishi, H. Nikaido, Y. Serizawa	<b>8956/TPB-B2-125</b> <i>Two-Phase Flow Pressure Drop of R1234yf and R134a in a Mini-Channel Multipoint Tube,</i> F. Vera-García, A. Lopez-Belchí, F. Ramirez-Rivera, J.R. García-Cascales, F. Illán-Gómez	<b>8962/FCV-C1-125</b> <i>Experimental Research of Adiabatic Wall Temperature Influenced by Separated Supersonic Flow,</i> S. Popovich, K. Egorov, U. Vinogradov	<b>9552/TTR-C2-125</b> <i>Impinging Jet Passive Control for Wall Shear Stress Enhancement,</i> K. Sodjavi, B. Montagné, F. Bode, M. Kristiawan, I. Nastase, A. Meslem	<b>9077/MNF-E-125</b> <i>Four-Dimensional Flow Measurements of UV Curable Resin at a Thermally-Assisted Nanoimprint Process,</i> M. Asano, N. Unno, S. Satake, J. Taniguchi	
17:40	<b>9419/EVP-B1-126</b> <i>Effect of Marangoni Flow on the Evaporation Rate of Sessile Droplets,</i> D. Hu, H. Wu, Z. Liu			<b>8416/TTR-C2-126</b> <i>Multi-scale Second Moment Modelling of Turbulence and Heat Transfer in Porous Media,</i> Y. Kuwata, Y. Sakurai, K. Suga .		

Session 12 (16:00 - 18:00)

11th, Monday

	Room F	Room G	Room H	Room I	Room J	Room K
	<b>MTR2 : Mass Transfer and Drying (2)</b> G. Rosengarten & T. Tsukada	<b>HEX1 : Heat Exchanger (1)</b> J. Jeong & R. Matsumoto	<b>FCL : Fuel Cell</b> A. Fly & S. Tsushima	<b>TPP2 : Thermophysical Properties (2)</b> K. Miyazaki & C. Pradere	<b>CDS2 : Condensation (2)</b> A. Miyara & V. Narayanan	<b>EES2 : Energy Environmental Systems (2)</b> G. Allesina & C. Dang
16:00	<b>9089/MTR-F-121</b> <i>Direct Numerical Simulation Modeling of Multidisciplinary Transport during Li-Ion Battery Charge/Discharge Processes,</i> F. Jiang, J. Zeng, W. Wu, P. Peng	<b>8816/HEX-G-121</b> <i>Numerical Simulation of Complicated Chevron Plates Passages,</i> H. Luan, W. Tao, G. Zhu, B. Chen, S. Wang	<b>9494/FCL-H-121</b> <i>Optimization of Oxygen and Proton Transfer in Heterogeneous PEFC Catalyst Layer by Controlling Local Carbon Black Aggregate Structure,</i> G. Inoue, S. Baba	<b>8806/TPP-I-121</b> <i>Measurement of Temperature Distribution for the Hydrate Formation and Dissociation in Porous Media,</i> M. Yang, Y. Song, L. Jiang, S. Wang, Y. Zhao, J. Zhao	<b>9363/CDS-J-121</b> <i>Experimental Investigation on Pressure Drop and Friction Factor in Tubes at Different Inclination Angles during the Condensation of R134a,</i> A.O. Adelaja, D.R.E. Ewim, J. Dirker, J.P. Meyer	<b>9567/EES-K-121</b> <i>Analysis of Thermo-Hydraulic Couplings in a Heat Pump Water Heating System,</i> G. Segond, S. Launay, L. Tadrist
16:20	<b>9185/MTR-F-122</b> <i>Effect of Velocity and Evaporation on Non-Isothermal Meniscus in a Capillary,</i> A. Voirand, A. Benselama, Y. Bertin	<b>8647/HEX-G-122</b> <i>Investigation of the Flow Distribution for Supercritical Carbon Dioxide Fluid in a Plate Heat Exchanger,</i> Y. Tang, C. Chu, Y. Lin, R. Sian, C. Wang	<b>9267/FCL-H-122</b> <i>Measurements of the Temperature Distribution of a PEMFC Catalyst Layer Using an Ultra Thin Thermocouple Array,</i> T. Araki, T. Sugimoto	<b>9395/TPP-I-122</b> <i>Experimental Measurement on Spectral Properties of Quartz at High Temperature,</i> S. Zhang, Q. Ai, X. Xia	<b>8645/CDS-J-122</b> <i>A New Flow Pattern Based General Correlation for Heat Transfer during Condensation in Horizontal Tubes,</i> M. Shah	<b>9058/EES-K-122</b> <i>PIV Measurement of Heat Transfer Deterioration Phenomena,</i> H. Nakaharai, A. Yamada, R. Shigenaga
16:40	<b>9351/MTR-F-123</b> <i>Effect of Module Inclination Angle on Air Gap Membrane Distillation,</i> D.E.M. Warsinger, J. Swaminathan, J.H. Lienhard V	<b>9411/HEX-G-123</b> <i>A Computer Model for Simulation of Drying and Preheating of Wet Iron ore in a Rotary Kiln,</i> A. Agrawal, P. Ghoshdastidar	<b>9176/FCL-H-123</b> <i>Study on the Effect of Micro Porous Layer on Water Transport Phenomena in PEFC by Using Neutron Radiography,</i> H. Murakawa, K. Sugimoto, N. Kitamura, H. Asano, N. Takenaka, Y. Saito	<b>9451/TPP-I-123</b> <i>Raman Spectra Method for Determining Viscosity of Supercritical Fluids,</i> Q. Li, X. Zhang	<b>8873/CDS-J-123</b> <i>Steam Flow Condensation in Semi-Circular and Square Mini-Channels</i> M. Derby, Y. Peles, M.K. Jensen	<b>8895/EES-K-123</b> <i>The Impact of Thermal Engineering Research on Global Climate Change,</i> P. Phelan, O. Abdelaziz, T. Otanicar, B. Phelan, R. Prasher, R. Taylor, H. Tyagi
17:00	<b>9151/MTR-F-124</b> <i>Experimental Investigation of Interfacial Temperature Evolution during Evaporation of Sessile Droplet,</i> M. Still, T. Gambaryan-Roisman, P. Stephan	<b>8503/HEX-G-124</b> <i>Effect of Sand Fouling on Compact Fin Heat Exchangers,</i> S. Obadina, J. Fody, S. Dessiatoun, M. Ohadi, A. Shooshtari	<b>9587/FCL-H-124</b> <i>Effect of Heat and Mass Transfer and Electrochemistry on Performance in Solid Oxide Fuel Cell Stacks,</i> R. Nishida, S. Beale, J. Pharoah	<b>8213/TPP-I-124</b> <i>Reconstruction of Thermal Boundary Resistance and Intrinsic Thermal Conductivity of SiO<sub>2</sub>-GaN-Sapphire Structure and Temperature Dependence,</i> Z. Wang, Y. Ma, G. Yao, X. Tian, D. Tang	<b>10018/CDS-J-124</b> <i>Condensation in Mini and Microchannels: Effect of Diameter, Shape, Inclination and Fluid Properties,</i> S. Bortolin, D. Del Col	<b>9246/EES-K-124</b> <i>CFD Study of Non-Guided Laminar Mixed Convection of a High Prandtl Number Fluid in a Transformer Winding-Like Geometry,</i> T. Laneryd, J. Kraneborg, Y. Jiao, A. Gustafsson
17:20		<b>9412/HEX-G-125</b> <i>Thermal Performance and Characteristics of Spiral-Tube Ground Heat Exchanger for Ground-Source Heat Pump,</i> J. Haddada, A. Miyara	<b>9440/FCL-H-125</b> <i>Towards the Microstructural Optimisation of Solid Oxide Fuel Cell Electrodes,</i> M. Kishimoto, M. Lomborg, E. Ruiz-Trejo, N. Brandon	<b>9128/TPP-I-125</b> <i>Development of a Thermal Measurement Technique for Detection of Localized Filler Distribution within a Polymer Composite,</i> D. Oh, J. Park, O. Kim, S. Park	<b>10015/CDS-J-125</b> <i>Condensation Heat Transfer of a Non-Azeotropic Mixture in a Single Minichannel,</i> D. Del Col, M. Azzolin, S. Bortolin, C. Zilio	<b>9019/EES-K-125</b> <i>A Study on the Prediction of Solar Insolation and Its Effects on Building Heating Load,</i> S. Yoo, T. Kim, K. Han
17:40		<b>9149/HEX-G-126</b> <i>Comparison between the Thermal Performance of Single and Two-Layer Microchannels Inserted with Micro Pin Fins,</i> O.O Adewumi, T. Bello-Ochende, J.P. Meyer	<b>9078/FCL-H-126</b> <i>Flow Distribution Uniformity Evaluation in kW-Range Direct Methanol Fuel Cell Stack,</i> Y. Nakano, Y. Morimatsu, Z. Guo, M. Ohashi, M. Mochizuki		<b>9033/CDS-J-126</b> <i>Condensation Heat Transfer Characteristics on A Micro-Structured Surface with Wettability Gradient,</i> A. Tokunaga, M. Mizutani, G. Nagayama, T. Tsuruta	<b>9883/EES-K-126</b> <i>Domestic Passive Ventilation with Heat Recovery (PVHR): Performance Criteria, Tests and Operational Variations,</i> T. Lipinski, S. Lee, P. RN Childs

# General Sessions in Parallel

12th, Tuesday

Session 21 (09:40 - 11:40)

	Room B1	Room B2	Room C1	Room C2	Room D	Room E
	<b>EVP3 : Evaporation, Droplet/Spray/Liquid Film (3)</b> V. Carey & H. Ohtake	<b>SOL1 : Solar Energy (1)</b> Y. Murakami & E. Wang	<b>MIN1 : Measurement and Instrumentation (1)</b> N. Ninomiya & B. Remy	<b>NMS : NEMS/MEMS</b> A. Ueno & C. Yang	<b>ADS : Adsorption and Desorption</b> S. Koyama & Z. X. Yuan	<b>INV : Inverse Problems</b> A. Komiya & Y. Mitsutake
09:40	<b>8637/EVP-B1-211</b> Heat Transfer Characterization during Transient Boiling, N. Baudin, C. Colin, P. Ruyer, J. Sebilleau	<b>8410/SOL-B2-211</b> Design and Analysis of a Rooftop Solar Furnace, R. Taylor, M. Yang, A. Bandara, K. Morrison, A. Ashraf, E. Hawkes	<b>8678/MIN-C1-211</b> An Investigation of Wall Temperature Characteristics to Improve the Evaluation Method for Thermal Fatigue at a T-Junction Pipe, K. Miyoshi, A. Nakamura, N. Takenaka	<b>8752/NMS-C2-211</b> Development of a Mini-Channel Gas Separator Utilizing Soret Effect, N. Ono, T. Wako, T. Higurashi, S. Matsumoto	<b>9289/ADS-D-211</b> Design and Performance Analysis of an Advanced Thermal Battery for Electric Vehicle Climate Control, S. Narayanan, X. Li, S. Yang, I. McKay, H. Kim, E. Wang	<b>9796/INV-E-211</b> Parameter Estimation Using Heat Transfer Models with Experimental Data Using a Combined Ann-Bayesian Approach, N. Gnanasekaran, Nithin, C. Balaji
10:00	<b>8766/EVP-B1-212</b> Propagation Dynamics of Self-Sustained Evaporation Front and Characteristics of Small-Scale Perturbations at the Interface, V. Zhukov, A. Pavlenko, M. Moiseev, D. Kuznetsov	<b>8072/SOL-B2-212</b> Development of Concentrating System of Dye-Sensitized Solar Cell with a Heat Exchanger, Y. Kim, Y. Kim, S. Park	<b>8703/MIN-C1-212</b> High Speed Observation and Measurement of Surface Temperature and Surface Heat Flux during Impact of a Droplet on Hot Surface, S. Ilias, M. Nasim Hasan, Y. Mitsutake, M. Monde	<b>9313/NMS-C2-212</b> Fabrication and Visualization of a Micro Pulsating Heat Pipe, K. Yang, Y. Cheng, M. Jeng, K. Chien, J. Shyu	<b>8866/ADS-D-212</b> Effects of the Induced Charge on CO <sub>2</sub> Adsorption in Cu-BTC at Different Temperature: A Combined Experimental and Molecular Simulation Study, H. Wang, Z. Qu, W. Zhang, W. Tao	<b>9577/INV-E-212</b> Recovering the Front Surface Temperature of Metallic and Composite Targets Subject to Localized Heating via Inverse Heat Transfer Modeling, Y. Zhang, J. Chen, Z. Feng
10:20	<b>8439/EVP-B1-213</b> Experimental Study of Pulsed and Steady State Confined Subcooled Jet Impingement Boiling, S. Abishek, R. Narayanaswamy, V. Narayanan	<b>9580/SOL-B2-213</b> Analysis of Regenerative Thermal Storage Geometries for Solar Gas Turbines, P. Klein, T. Roos, J. Sheer	<b>8290/MIN-C1-213</b> New Methodology and Apparatus for the Thermal Characterization of Semi-Crystalline Thermoplastics in Extreme Conditions, B. Pignon, X. Tardif, V. Sobotka, N. Boyard, D. Delaunay	<b>9625/NMS-C2-213</b> The Influence of Surface Electric Charge on Water Freezing, J. Zhou, X. Zhang, M. Chen	<b>9555/ADS-D-213</b> Theoretical and Experimental Studies on Characteristics of Adsorption Performance of Desiccant Rotor Applied to Desiccant Heat Pump, S. Feng, N. Nakagawa, T. Koyano, C. Dang, E. Hihara	<b>9764/INV-E-213</b> Research and Development of Heat Flux Sensor for Thermokinetic Processes, O. Alifanov, S. Budnik, A. Nenarokomov, A. Netelev
10:40	<b>8347 EVP-B1-214</b> Flow inside Evaporating Water Sessile Drop: A Numerical Study, C. Bouchenna, M. Ait Saada, S. Chikh, L. Tadrist	<b>9162/SOL-B2-214</b> Mathematical Modeling of Radiative Heat Transfer Process in High-Temperature Solar Power Plant, V. Leonov, A. Bannikov, I. Zharenov	<b>8749/MIN-C1-214</b> The Freestanding Sensor-Based 3w Technique for Thermophysical Properties Characterization, L. Qiu, X. Zheng, P. Yue, M. Liu, D. Tang	<b>9130/NMS-C2-214</b> Effect of Wall Structures on Nano-Channel Flows, H. Yasuoka, T. Imae, M. Kaneda, K. Suga	<b>9051/ADS-D-214</b> Inclusion of Non-Isothermal Effects in Modeling Electrochemical Kinetics of Contaminated PEM Fuel Cell Electrodes, S. Hasmady, K. Fushinobu	<b>9532/INV-E-214</b> A Non-Intrusive Inverse Problem Technique for the Identification of Contact Failures in Double-Layered Composites, L. Abreu, C. Alves, M. Colaco, H.R.B. Orlande
11:00	<b>8693 EVP-B1-215</b> Heat Transfer and Crisis Phenomena Development at Boiling and Evaporation in Falling Liquid Film at Stepwise Heat Generation, A. Pavlenko, A. Surtaev, I. Starodubtseva	<b>8054/SOL-B2-215</b> Hybrid Device for CPV Power Generation and Heating, D. Lee, S. Baek	<b>8725/MIN-C1-215</b> Method to Analyze the Spatial Current Distribution in an Operating PEFC Based on NMR Measurement Using Small Planar Surface Coils, K. Ogawa, Y. Yokouchi, T. Haishi, K. Ito	<b>9508/NMS-C2-215</b> Enhanced Flow Boiling Heat Transfer in Microchannels with Structured Surfaces, Y. Zhu, D. Antao, K. Chu, T. Hendricks, E. Wang	<b>9392/ADS-D-215</b> A Measurement Method of Adsorption/Desorption Rate Controlled by Adsorbent Temperature in Moist Air of Atmospheric Pressure, T. Ouchi, Y. Hamamoto, H. Mori	<b>9473/INV-E-215</b> Retrieval of Geometric Structure of Internal Defect in Two-Dimensional Semi-Transparent Media under Laser Irradiation Using the RDS-PSO, H. Qi, Z. He, T. Jia, B. Zhang, L. Ruan
11:20	<b>8652/EVP-B1-216</b> Capillary and Thermal Performance of Advanced Multi-Height Micropost Evaporator Wicks, S. Ryu, W. Lee, Y. Nam	<b>8611/SOL-B2-216</b> Design and Analysis of a Low-Profile, Concentrating Solar Thermal Collector, Q. Li, C. Zheng, X. Gu, A. Woffenden, G. Rosengarten, E. Hawkes, M. Yang, R. Taylor	<b>9775/MIN-C1-216</b> Study of Thermal Characteristics of Power Mosfet Package under Body-Diode and Saturate Test Conditions, Y. Luo, Y. Kajita, T. Hatakeyama, S. Nakagawa, M. Ishizuka		<b>9623/ADS-D-216</b> Molecular Simulation of CO <sub>2</sub> Sorption on Mesoporous Material Filled with Polyethylenimine, J. Li, W. Wang, J. Ding	<b>9190/INV-E-216</b> Estimation of the Heat Transferred to a Fluid in a Minichannel by an Inverse Technique, W. Al Hadad, Y. Rouizi, Y. Jannot, B. Rémy, D. Maillet

Session 21 (09:40 - 11:40)

12th, Tuesday

	Room F	Room G	Room H	Room I	Room J	Room K
	<b>FCV3 : Forced Convention (3)</b> T. Houra & X. R. Zhang	<b>HEX2 : Heat Exchanger (2)</b> K. Inaoka & G. Ziskind	<b>EEC1 : Electronic Equipment Cooling (1)</b> M. Baelmans & S. Nakagawa	<b>TPP3 : Thermophysical Properties (3)</b> S. Kabelac & Y. Takata	<b>CDS3 : Condensation (3)</b> Y. Abe & X. Ma	<b>ECS : Energy Conversion and Storage</b> Y. Okumura & Y. Wei
09:40	<b>8965/FCV-F-211</b> <i>Experimental Investigation of the Heat Transfer Process at a Gas-Dynamic Method of Energy Separation,</i> A. Zditovets, U. Vinogradov, A. Titov	<b>8536/HEX-G-211</b> <i>Flow and Thermal Performance of Graphite Foam Dimpled Fin Heat Exchangers,</i> W. Lin, G. Xie, B. Sunden, Q. Wang	<b>8910/EEC-H-211</b> <i>Transient Thermal Behavior of the Micro-processor System - Investigation of Effects by Distributed Thermal Capacitance and Thermal Spreading Resistances,</i> K. Nishi, T. Hatakeyama, S. Nakagawa, M. Ishizuka	<b>9050/TPP-I-211</b> <i>Tailoring Radiative Property of Two-Dimensional Complex Grating Structures,</i> S. Han, B. Lee	<b>9602/CDS-J-211</b> <i>In-tube Condensation of Low GWP Mixture Refrigerants R1234ze(E)/R32,</i> A. Miyara, H.M.M. Afroz, MD.A. Hossain	<b>9174/ECS-K-211</b> <i>Study on the Improvement of the Performance of a Novel Adsorption Heat Pump System for Generating High-temperature Steam,</i> K. Nakaso, S. Kobayashi, S. Eshima, J. Fukai
10:00	<b>9225/FCV-F-212</b> <i>Heat Transfer and Pressure Drop Characteristics in the Annuli of Tube-in-Tube Heat Exchangers (Horizontal Lay-Out),</i> F.P.A Prinsloo, J. Dirker, J.P. Meyer	<b>9007/HEX-G-212</b> <i>Entropy Generation Minimization Analysis of Passive and Active Magnetocaloric Regenerators,</i> P. Trevisoli, D. Alcalde, J. Barbosa	<b>8951/EEC-H-212</b> <i>An 1-D Model for Species Crossover through the Membrane in All-Vanadium Redox Flow Batteries,</i> Y. Lei, B. Zhang, B. Bai, T. Zhao	<b>9505/TPP-I-212</b> <i>Molecular Simulation of Water Sorption and Diffusion Characterization in Cation-Exchanged ZSM-5,</i> H. Chen, J. Ding, W. Wang, X. Wei, J. Lu	<b>9758/CDS-J-212</b> <i>Condensation Heat Transfer of R-410A and R-22 in U-Tubes,</i> L. Chien, C. Liu	<b>9820/ECS-K-212</b> <i>Benchmark Numerical Simulations of Solar Thermoelectric Generators,</i> S. Lei, R. Frizzell, R. Enright
10:20	<b>9107/FCV-F-213</b> <i>Gas-Dynamic Temperature Stratification in a Compressible Low-Prandtl Gas Flow on a Permeable Wall,</i> M. Makarov, V. Naumkin	<b>8908/HEX-G-213</b> <i>Heat Transfer and Pressure Drop Performance of Offset Strip Fin with Gap between Adjacent Rows,</i> S. Hwang, J. Jeong, J. Jeong	<b>8327/EEC-H-213</b> <i>A Miniature Multiple Vibrating-Fan Cooling System Using Magnetic Force and Piezoelectric Force,</i> H. Su, C. Liu	<b>9220/TPP-I-213</b> <i>Diffusion of Carbon Dioxide in Decane by MRI Technique,</i> H. Min, Y. Song, Y. Zhao, Y. Liu, B. Su, L. Jiang, X. Zhou, L. Tang	<b>9887/CDS-J-213</b> <i>Study on Computational Method of Filmwise Non-Equilibrium Condensation,</i> T. Ohshima, T. Kajishima	<b>9326/ECS-K-213</b> <i>Efficient Utilization of the Electrodes in a Redox Flow Battery by Modifying Flow Field and Electrode Morphology,</i> S. Tsushima, F. Kondo, S. Sasaki, S. Hirai
10:40	<b>9469/FCV-F-214</b> <i>Flow and Heat Transfer Characteristics of Ammonium Alum Hydrate Slurries with Surfactants as Drag-Reducers and with Polyvinyl Alcohol as Stabilizers,</i> R. Hidema, H. Suzuki, T. Tano, Y. Komoda	<b>8929/HEX-G-214</b> <i>A Numerical Study on Turbulent Single-Phase Flow and Heat Transfer in Pillow Plates,</i> M. Piper, A. Zibart, J.M. Tran, E.Y. Kenig	<b>9808/EEC-H-214</b> <i>Liquid Film Wave Patterns and Dryout in Microgap Channel Annular Flow,</i> C. Holloway, A. Bar-Cohen, D. Sharar	<b>9664/TPP-I-214</b> <i>Heat Transport Along Polar Nanofilms Due to Surface Phonon-Polaritons,</i> J. Ordenez-Miranda, L. Tranchant, B. Kim, Y. Chalopin, T. Antoni, S. Volz	<b>8532/CDS-J-214</b> <i>A New Model for Refrigerant Condensation inside a Brazed Plate Heat Exchanger (BPHE),</i> G.A. Longo, G. Righetti, C. Zilio	<b>8552/ECS-K-214</b> <i>Experimentally Determined Thermal Parameters of an Energy Conversion Device Using a Constraint Least Square Parameter Estimation Method Coupled with an Analytical Thermal Model,</i> J. Hey, A. Malloy, R. Martinez-Botas, M. Lamperth
11:00	<b>9210/FCV-F-215</b> <i>Inlet Flow Effects in Microchannels on Single-Phase Heat Transfer Coefficients and Friction Factors,</i> D.V. Garach, J. Dirker, J.P. Meyer	<b>9144/HEX-G-215</b> <i>Quantitative Estimation of Frost Formation on Plate-Fn Tube Heat Exchanger by Neutron Radiography,</i> R. Matsumoto, T. Yoshimura, H. Umekawa, T. Ami, D. Ito, Y. Saito		<b>8917/TPP-I-215</b> <i>Thermal Conductivity of Silicon Nanofilms Predicted by Combined Phonon Hydrodynamics and Phonon Gas Dynamics,</i> Y. Dong, B. Cao, Z. Guo	<b>9416/CDS-J-215</b> <i>Nitrogen Liquefaction: A Prototype Plant,</i> M. De Salve, D. Milani, B. Panella, G. Roveta	<b>9402/ECS-K-215</b> <i>Effect of Thermal Conductivity Enhancement of Thermochemical Energy Storage Material on Unused Heat Utilization System,</i> Y. Kato, M. Zamengo, K. Fujioka
11:20	<b>9250/FCV-F-216</b> <i>Heat Transfer Coefficients for Tubes in the Turbulent Single Phase Flow Regime with a Focus on Uncertainty,</i> M. Steyn, J.P. Meyer					

# General Sessions in Parallel

12th, Tuesday

Session 22 (14:00 - 16:00)

	Room B1	Room B2	Room C1	Room C2	Room D	Room E
	<b>FBL1 : Flow Boiling (1)</b> M. Kohno & J. K. Oh	<b>SOL2 : Solar Energy (2)</b> P. Dutta & S. Hirasawa	<b>MIN2 : Measurement and Instrumentation (2)</b> K. Ogawa & W. Rohlf's	<b>HTE1 : Heat Transfer Enhancement (1)</b> K. Fujioka & J. Szmyd	<b>TBF : Two-phase, Bubble Flow, Water Film</b> M. Katsuta & A. Sielaff	<b>BMA2 : Bio and Medical Applications (2)</b> H. Orlande & H. Takamatsu
14:00	<b>9930/FBL-B1-221</b> <i>Experimental Investigations of Flow Boiling Heat Transfer and Flow Behaviors in Microgap Channel,</i> O. Kawanami, Y. Matsuda, Y. Egami, I. Honda, H. Yamaguchi, T. Niimi	<b>9067/SOL-B2-221</b> <i>A Heat Transfer Model for Concentrating Silicon Solar Cells in a Spectrally Splitting Hybrid Receiver,</i> A. Mojiri, C. Stanley, E. Thomsen, V. Everett, A. Blakers, G. Rosengarten	<b>9132/MIN-C1-221</b> <i>Non Contact Temperature Field Measurement on Non-Uniform Dynamical Scenes: Contribution of Thermoreflectometry,</i> R. Gilblas, T. Sentenac, Y. Le Maoult, D. Hernandez	<b>8240/HTE-C2-221</b> <i>Heat Transfer in a 90° T-Junction,</i> J. Pellé, O. Duran Medina, T.D. Nguyen, S. Harmand	<b>8960/TBF-D-221</b> <i>Bubble Growth in Microgravity under the Action of Electric Forces: Experiments and Numerical Simulation,</i> P. Di Marco, R. Kurimoto, G. Saccone, K. Hayashi, A. Tomiyama	<b>9304/BMA-E-221</b> <i>Experimental Study on the Vascular Thermal Response to Visible Laser Pulses,</i> D. Li, B. Chen, W. Wu, G. Wang, Y. He, Z. Ying
14:20	<b>9604 FBL-B1-222</b> <i>An Experimental Investigation of Two-Phase Refrigerant R-410A Flow Distribution in Plate Heat Exchangers,</i> C. Yang, Y. Lin, G. Li	<b>9239/SOL-B2-222</b> <i>An Integrated Thermal Electrical Model for Single Cell Photovoltaic Receivers under Concentration,</i> M. Theristis, T. S. O'Donovan	<b>9929/MIN-C1-222</b> <i>Accuracy Verification on 2D Temperature Measurement Method Using CT-Tunable Diode Laser Absorption Spectroscopy,</i> T. Kamimoto, Y. Deguchi, Y. Kiyota	<b>9123/HTE-C2-222</b> <i>Numerical and Experimental Studies of the Flow and Heat Transfer in Circular Tubes with Straight Frame Rotor Inserts,</i> X. Zhu, J. Meng, H. Zhou, Z. Li	<b>8906/TBF-D-222</b> <i>Study on Liquid Film Thickness of Accelerated Slug Flow in Micro Tubes,</i> K. Muramatsu, Y. Youn, Y. Han, K. Yokoyama, Y. Hasegawa, N. Shikazono	<b>8933/BMA-E-222</b> <i>Observation of Ice-Solute Interaction in Freezing of Trehalose and Albumin Solutions by Using Confocal Raman Microscope Equipped with Directional Solidification Stage,</i> H. Hirahata, Y. Nagare, A. Twomey, K. Kurata, T. Fukunaga, A. Aksan, H. Takamatsu
14:40	<b>8821/FBL-B1-223</b> <i>Enhancing FC-72 Flow Boiling Heat Transfer through Bubble Pumping from Imbalance Shear Flow Driven Rotating Beads,</i> S. Wang, T. Lin	<b>9597/SOL-B2-223</b> <i>Investigation of Design Parameters in Planar Solar Thermophotovoltaic Devices,</i> D. Bierman, A. Lenert, E. Wang	<b>9934/MIN-C1-223</b> <i>Simultaneous 2D NH<sub>3</sub> and Temperature Measurement Using CT-Tunable Diode Laser Absorption Spectroscopy,</i> Y. Deguchi, T. Kamimoto, Y. Kiyota	<b>9615/HTE-C2-223</b> <i>A Numerical and Experimental Study on Flow and Heat Transfer Characteristics of Viscoelastic Fluid in a Serpentine Channel,</i> K. Tatsumi, W. Nagasaka, T. Matsuo, K. Nakabe	<b>9171/TBF-D-223</b> <i>Microscale Convective Heat Transfer with Plug Flow in Microchannels,</i> T. Wong, Z. Che, N.T. Nguyen	<b>9119/BMA-E-223</b> <i>Voxel-Based Simulation of Air-Conditioning in the Human Nasal Cavity,</i> G. Tanaka, F. Araki, S. Shimizu, T. Sera, H. Yokota, K. Ono
15:00	<b>8800/FBL-B1-224</b> <i>The Impact of Fin Deformation on Boiling Heat Transfer and Pressure Drop in Internally Grooved Tubes,</i> S. Mehendale	<b>9490/SOL-B2-224</b> <i>Numerical Simulation of Parabolic Trough Receiver under Non-Uniform and Fluctuant Solar Flux Condition,</i> K. Wang, Y. He, Z. Cheng, M. Li, W. Tao	<b>8853/MIN-C1-224</b> <i>Cooling of Electronic Components by Steady/Unsteady Air Flow,</i> D. Altura, A. Liberzon, N. Brauner	<b>9974/HTE-C2-224</b> <i>Numerical Investigation of Bénard-Marangoni Convection of Paramagnetic Liquid in Annular Layers,</i> T. Tagawa	<b>8857/TBF-D-224</b> <i>Measurements of Heat Transfer Coefficients to Cylinders in Shallow Bubble Columns,</i> E. W. Tow, J.H. Lienhard V	<b>9542/BMA-E-224</b> <i>Blinking and Temperature Gradients in Normal Functioning Human Eye,</i> A. Abdelmessih
15:20	<b>8435 FBL-B1-225</b> <i>Evaluation of Correlations for Predicting Heat Transfer during Boiling of Carbon Dioxide Inside Channels,</i> M. Shah	<b>9290/SOL-B2-225</b> <i>Numerical Simulation of Heat Transfer in a Directly Illuminated Solar Thermal Energy Store,</i> I. Amber, T. S. O'Donovan	<b>9574/MIN-C1-225</b> <i>Effect of the Vapor Flow on the Drop Spreading in the Leidenfrost Regime,</i> G. Castanet, O. Caballina, A. Labergue, M. Gradeck, F. Lemoine	<b>9062/HTE-C2-225</b> <i>Investigation of Heat Exchange and Hydrodynamics Parameters in Annular Channels with Interacting Swirling Flows,</i> A. Zakharenkov, E. Boltenko, A. Varava, A. Dedov, A. Komov	<b>8573/TBF-D-225</b> <i>Experimental Research on Falling Film Flow Characteristic for Horizontal Drop-shaped Tube Bundle in Cold State,</i> C. Bai, L. Luo, G. Zhang, M. Tian, W. Li, Y. Shi	<b>8277/BMA-E-225</b> <i>Investigations on Interactions between Heat Exchanger Biofouling and Suspended Matter,</i> Q. Yang, L. Shi, S. Chang
15:40	<b>8351/FBL-B1-226</b> <i>Evaluation of a Method for Predicting Heat Transfer during Boiling of Mixtures in Plain Tubes,</i> M. Shah	<b>9526/SOL-B2-226</b> <i>Heat Transfer Modeling in Integrated Photoelectrochemical Hydrogen Generators Using Concentrated Irradiation,</i> S. Tembume, M. Dumortier, S. Haussener	<b>9918/MIN-C1-226</b> <i>Cross-Ventilation Measurements in Buildings: Small and Full Scales Experimental Models,</i> J. Salort, H. Pabiou, F. Chillà, C. Ménézo		<b>8671/TBF-D-226</b> <i>Study of the Flow and Heat Transfer of Water Film on Hot Air Anti-Icing Airfoil Surface,</i> M. Zheng, W. Dong, G. Lei, J. Zhu	

Session 22 (14:00 - 16:00)

12th, Tuesday

	Room F	Room G	Room H	Room I	Room J	Room K
	<b>FCV4 : Forced Convection (4)</b> S. Chandra & K. Yoshida	<b>HEX3 : Heat Exchanger (3)</b> Jalaluddin & H. Suzuki	<b>EEC2 : Electronic Equipment Cooling (2)</b> M. Ishizuka & N. Jeffers	<b>TPP4 : Thermophysical Properties (4)</b> J. Okajima & H. Xie	<b>CDS4 : Condensation (4)</b> N. Miljkovic & T. Takeda	<b>EEF1 : Energy Efficiency (1)</b> W. Heidemann & Y. Kato
14:00	<b>8952/FCV-F-221</b> <i>An Analytical Study of the Heat Transfer in a Regular-Shaped Micro-Channel Type Stirling Regenerator,</i> Z. Li, D. Tang, Y. Haramura, M. Zeng, Y. Kato	<b>9435/HEX-G-221</b> <i>Enhanced Melting in Geometries Suitable for Thermal Energy Storage,</i> T. Rozenfeld, Y. Kozak, G. Ziskind	<b>9594/EEC-H-221</b> <i>Conjugate Forced Convection-Conduction Heat Transfer in Channel Flow Using Different Cooling Fluids,</i> F.B. Nishida, Y. de S. Tadano, T. Antonini Alves	<b>8604/TPP-I-221</b> <i>Investigation into the pH and Electrical Conductivity Enhancement of MgO-Ethylene Glycol Nanofluids,</i> S.A. Adio, M. Sharifpur, J.P. Meyer	<b>9335/CDS-J-221</b> <i>The Enhancement of Steam Condensation Heat Transfer on a Horizontal Tube by Addition of Ammonia,</i> B. Dong, J. Zhao, S. Wang, M. Ge, Y. Zhao, K. Liang	<b>8661/EEF-K-221</b> <i>Pilot Test and Model Analysis of Plastic Heat Exchanger for Flue Gas Heat Recovery,</i> L. Chen, X. Du, J. Liang, Y. Sun, L. Yang, G. Xu
14:20	<b>9280/FCV-F-222</b> <i>Effects of Evaporation and Condensation on Apparent Thermal Slip,</i> M. Hodes, L. Lam, S. MacLachlan, R. Enright	<b>9085/HEX-G-222</b> <i>Fin Efficiency and the Optimisation of X-Shaped Louvered Fins,</i> B. Ameer, J. Degroote, H. Huisseune, J. Vierendeels, M. De Paepe	<b>9396/EEC-H-222</b> <i>Development of In-Plane Thermal Conductivity Measurement Method of Multi-Layer Printed Wiring Boards Called Straight Fin Temperature Fitting Method,</i> T. Ogushi, K. Aoki, T. Kobayashi, Y. Niki, T. Hirata	<b>8606/TPP-I-222</b> <i>Combined Influence of Size and Sonication on Constant Shear Viscosity of MgO-Ethylene Glycol Nanofluids,</i> S.A. Adio, M. Sharifpur, J.P. Meyer	<b>9609/CDS-J-222</b> <i>Droplet Departure Characteristics for Steam Dropwise Condensation at Low Pressure,</i> X. Ma, R. Wen, Z. Lan, B. Peng, W. Xu	<b>8390/EEF-K-222</b> <i>Thermo-Electricity Analogy Method for Computing Transient Heat Transfer In a New Reciprocating Finned Piston Compressor,</i> M. Heidari, K. Gharibdoust, A. Rufer, J.R. Thome
14:40	<b>9409/FCV-F-223</b> <i>Characteristics of Thermal Convective Flow of Near-Critical CO<sub>2</sub> Fluid in Microchannels,</i> L. Chen, X. Zhang	<b>9362/HEX-G-223</b> <i>The Effect of the Circular Cylinder's Insertion Position on Heat Transfer Enhancement in Transition Flow,</i> H. Xu, L. Wang, K. Inaoka, G. Xi	<b>8546/EEC-H-223</b> <i>L-Shaped Thermosyphon Loop with Vertical Evaporator for Power Electronics Cooling,</i> F. Agostini, T. Gradinger	<b>9160/TPP-I-223</b> <i>Evaporation of Nanofluids,</i> J. Eggers, S. Kabelac	<b>9177/CDS-J-223</b> <i>Wettability-Driven Water Condensation at the Micron and Submicron Scale,</i> Y. Yamada, A. Kusaba, T. Ikuta, T. Nishiyama, K. Takahashi, Y. Takata	<b>9767/EEF-K-223</b> <i>Heat Transfer Analysis of Blast Furnace Tuyere through CFD Simulation,</i> Y. Chen, B. Wu, X. Chen, A. Okosun, D. Fu, T.R. Hensler, D. Zuke, S. Trenkinshu, C.Q. Zhou
15:00	<b>9745/FCV-F-224</b> <i>Experimental Analysis of Gas Forced Convective Heat Transfer in Microtubes under H and T Thermal Boundary Conditions,</i> Y. Yang, C. Hong, G.L. Morini	<b>9194/HEX-G-224</b> <i>Study of Heat Pipe Effectiveness Filled with Different Refrigerants,</i> G. Gorecki	<b>9420/EEC-H-224</b> <i>Performance Evaluation of Micro-Jet Impingement on Various Dimpled Surfaces,</i> S. Kim, K. Kim	<b>8643/TPP-I-224</b> <i>Frost Formation and Growth on Hydrophilic, Hydrophobic, and Biphilic Surfaces,</i> A. Van Dyke, A. Betz	<b>9801/CDS-J-224</b> <i>Bulk Condensation of Supersaturated Vapor with Allowance of Temperature Distribution of Droplets,</i> N. Kortsenshteyn, A. Yastrebov	<b>9020/EEF-K-224</b> <i>Entransy Based Optimization on Data Center Cooling Process and Its Application,</i> H. Tian, Z. Li, Z. He
15:20				<b>8835/TPP-I-225</b> <i>A Non-Equilibrium Molecular Dynamics Study on Thermal Transport in Functionalized Carbon Nanotube/Polymer Nanocomposites,</i> Y. Kuang, B. Huang	<b>9895/CDS-J-225</b> <i>Study of the Heat Transfer and Flow Characteristic of an Ultra Micro Steam Injector,</i> T. Koshiji, Y. Abe, A. Kaneko, Y. Suzuki	
15:40				<b>8348/TPP-I-226</b> <i>Two Different Methods for Determination of Exothermic Reaction Enthalpies from Temperature Measurements in Beechwood Cylinders during Torrefaction,</i> A. Ohliger, P. Steffen, R. Kneer	<b>8969/CDS-J-226</b> <i>Condensation of Water from Saturated Air in a Compact Plate Condenser with Application to Water Balance in Proton Exchange Membrane Fuel Cell Systems,</i> A. Fly, R. Thring	

# General Sessions in Parallel

12th, Tuesday

Session 23 (16:30 - 18:30)

	Room B1	Room B2	Room C1	Room C2	Room D	Room E
	<b>FBL2 : Flow Boiling (2)</b> H. Asano & S. Mehendale	<b>SOL3 : Solar Energy (3)</b> K. Nagano & R. Taylor	<b>MIN3 : Measurement and Instrumentation (3)</b> N. Ninomiya & H. Pabiou	<b>HTE2 : Heat Transfer Enhancement (2)</b> M. Kawaji & N. Sasaki		
16:30	<b>8792/FBL-B1-231</b> <i>Pressure Drop and Flow Boiling Heat Transfer of Refrigerant R-134a in a Microchannel Heat Sink,</i> V.V. Kuznetsov, A.S. Shamirzaev	<b>9014/SOL-B2-231</b> <i>A Numerical Model of Transient Thermal Transport Phenomena in a High-Temperature Solid-Gas Reacting System for CO<sub>2</sub> Capture Applications,</i> Li. Yue, W. Lipinski	<b>8595/MIN-C1-231</b> <i>The Effect of Sonication Time on Effective Thermal Conductivity of Glycerol-MgO Based Nanofluids,</i> N. Tshimanga, M. Sharifpur, J.P. Meyer	<b>8825/HTE-C2-231</b> <i>Numerical Investigation of Fluid Flow and Heat Transfer Characteristics of Partial Length Pin Fins in Vertical Parallel Plate Channel,</i> R.S. Jadhav, C. Balaji	 <b>IHTC</b> SINCE 1951	 <b>IHTC</b> SINCE 1951
16:50	<b>9049/FBL-B1-232</b> <i>Experimental Study of Two Phase Flow Boiling Heat Transfer and Pressure Drop of Water in a Minichannel,</i> M. Aravinthan, S.K. Das, A.R. Balakrishnan	<b>8681/SOL-B2-232</b> <i>DSMC Study on the Rarefied Gaseous Heat Transfer in Annulus Heated by Nonuniform Heat Flux,</i> X. Zhao, Z. Li, Z. Tang, W. Tao	<b>9800/MIN-C1-232</b> <i>Thermal-Hydraulic Experiments with Sodium Chloride Aqueous Solution,</i> L. Jiao, W. Liu, T. Nagatake, K. Takase, H. Yoshida, F. Nagase	<b>9372/HTE-C2-232</b> <i>Thermal Performance of Nanofluids in Microchannel Equipped with a Synthetic Jet Actuator,</i> A. Lee, D. Darson Li, G.E. Lau, G.H. Yeoh		
17:10	<b>9410/FBL-B1-233</b> <i>Heat Transfer Coefficient and Pressure Drop Characteristics during R-1234yf Evaporation Inside Horizontal Small Tubes,</i> N. Chien, P. Vu, K. Choi, J. Oh	<b>9309/SOL-B2-233</b> <i>Forecast Methods for Direct Normal Irradiance at the Ground Level,</i> C. Coimbra	<b>8605/MIN-C1-233</b> <i>Combined Three-Dimensional Flow- and Temperature Field Measurements Using Digital Light Field Photography,</i> M. Rietz, O. Garbrecht, W. Rohlf, R. Kneer	<b>9259/HTE-C2-233</b> <i>The Effect of a Crossed Electromagnetic Field on Mixed Convection of a Low Pr Fluid in a Vertical Duct,</i> Praveen T., N. L. Gajbhiye, V. Eswaran		
17:30	<b>9589/FBL-B1-234</b> <i>Characteristics of Flow Boiling Heat Transfer in Rectangular Minichannels,</i> C. Tanaka, C. Dang, E. Hihara	<b>9257/SOL-B2-234</b> <i>Simulation Study of Regenerator of Stirling Engine Used for Solar Energy Thermal Power Generation,</i> J. Wang, X. Zhang, M. Zeng, M. Jia	<b>8855/MIN-C1-234</b> <i>Temperature Imaging of Water Around a Small Heated Sphere Using a Near-Infrared Absorption Technique,</i> N. Kakuta, K. Yamada, R. Fujioka, K. Kondo, H. Arimoto, Y. Yamada	<b>9950/HTE-C2-234</b> <i>An Analysis of Paramagnetic Fluid Thermal Convection in a Concentric Annuli under Strong Magnetic Field Gradient,</i> W. Wrobel, E. Fomalik-Wajs, Ł. Pleskacz, S. Kenjereš, J.S. Szmyd		
17:50	<b>9122/FBL-B1-235</b> <i>Flow Boiling Heat Transfer of R1234ze(E) in a 3.4 mm ID Microfin Tube,</i> S. Mancini, A. Diani, L. Rossetto	<b>9150/SOL-B2-235</b> <i>Heat Transfer Enhancement in a Parabolic Trough Receiver Using Perforated Conical Inserts,</i> A. Mwesigye, T. Bello-Ochende, J.P. Meyer	<b>8990/MIN-C1-235</b> <i>New Estimation Method Based on Integral Transforms for the Thermal Diffusivity Measurement of Anisotropic Materials,</i> C. Rodiet, M. Niezgodna, B. Remy, A. Degiovanni			
18:10	<b>8705/FBL-B1-236</b> <i>An Analysis of the Effect of the Footprint Orientation on the Heat Sink Performance during Flow Boiling in Micro-Scale Channels,</i> H.L.S.L. Leão, G. Ribatski		<b>9380/MIN-C1-236</b> <i>Visualization and Analysis of Heat and Mass Transfer with Chemical Reactions in Microchannels,</i> D. Kawashima, N. Kakuta, K. Kondo, H. Arimoto, Y. Yamada			

Session 23 (16:30 - 18:30)

12th, Tuesday

	Room F	Room G	Room H	Room I	Room J	Room K
	<b>FCV5 : Forced Convention (5)</b> J. Alvarado & K. Suga	<b>HEX4 : Heat Exchanger (4)</b> J. Barbosa & H. Umekawa	<b>EEC3 : Electronic Equipment Cooling (3)</b> F. Agostini & T. Ogushi	<b>TST : Thermal Storage</b> D. Groulx & G. Tanaka	<b>CDS5 : Condensation (5)</b> T. Tsuruta & A. Yastrebov	<b>EEF2 : Energy Efficiency (2)</b> M. Hirota & C. Q. Zhou
16:30	<b>8769/FCV-F-231</b> Volumetric Heat Transfer Determination for Forced Convection of Air through Alumina (Al <sub>2</sub> O <sub>3</sub> ) Foam, D. Vijay, P. Goetze, R. Wulf, U. Gross	<b>9766/HEX-G-231</b> Numerical Simulation of 3D Flow Effect on Heat Transfer from a Tube Bank of Subsea Cooler, N.Ivanov, V. Ris, E.M. Smirnov, N. Tschur	<b>9166/EEC-H-231</b> The Forced Circulation Cooling System with Rectangular Mini-Channels for the Inverter of Electric Vehicles, J. Yeo, D. Jige, S. Yamashita, S. Koyama	<b>9169/TST-I-231</b> Non-Isothermal Kinetics of Zeolite Water Vapor Adsorption into a Packed Bed Lab Scale Thermochemical Reactor, M. Gaeini, H. Zondag, C. Rindt	<b>9002/CDS-J-231</b> Study of the Vapor Superheat Effect on Heat Transfer in Plate Heat Exchanger Based on Infrared Thermography, K. Sarraf, S. Launay, L. Tadrist	<b>8843/EEF-K-231</b> Treated Aluminum as Highly Reflective Facade Materials for Energy-Efficient Buildings, T. Ihara, T. Gao, A. Gustavsen, B.P. Jelle
16:50	<b>9036/FCV-F-232</b> High Temperature Metal Foam Heat Exchanger, P. Hafeez, S. Salavati, J. Esmeelpanah, S. Chandra, J. Mostaghimi, T. Coyle	<b>9041/HEX-G-232</b> Effect of Fin Specification on Thermal Performance of Fin-Tube Heat Exchanger for Heat Pump under Frosting Condition J. Kim, K. Cho	<b>9936/EEC-H-232</b> Practical Measurement System for Very Large Scale Integration Circuits Using Infrared Thermography, Y. Hsieh, J. Wu, C. Fang, H. Tsai, Y. Juang	<b>9987/TST-I-232</b> A Composite Mesoporous Material for an Open Sorption Thermal Energy Storage System, H. Liu, K.Nagano, D. Sugiyama, J. Togawa, M. Nakamura	<b>8896/CDS-J-232</b> Electric-Field-Enhanced Jumping-Droplet Condensation, N. Milijkovic, D.J. Preston, R. Enright, E.N. Wang	<b>9681/EEF-K-232</b> Application of Micro-Channel Heat Exchanger in Refrigerated Display Cabinet, C. Tian, H. Li
17:10	<b>9167/FCV-F-233</b> Experimental Determination of Convective Heat Transfer Coefficients during Molten Aluminum Purification Using Open Cell Alumina (Al <sub>2</sub> O <sub>3</sub> ) Ceramics, P. Goetz, D. Vijay, E. Jäeckel, R. Wulf, U. Gross, K. Eigenfeld	<b>9644/HEX-G-233</b> CFD Modelling of Flow over in-Line Tube-Banks, H. Iacovides, B. Launder, A. West	<b>9227/EEC-H-233</b> Heat Transfer and Fluid Mechanics from a Piezoelectric Fan Operating in Its Second Resonant Frequency Mode, N. Jeffers, J. Stafford, B. Donnelly	<b>8881/TST-I-233</b> Investigation of Heat and Mass Transfer in a Magnesium Hydride Heat Storage Reactor, D. Shen, C. Zhao, Q. Wang	<b>9082/CDS-J-233</b> Study on the Compact Steam Dump Device Development for the Damage Reduction of the Condenser Tube, H. Kim, W. Kim, J. Lee	<b>8632/EEF-K-233</b> Energy Efficient Cooling of Switch Cabinets Using Optimized Internal Settings, W. Heidemann, C. Staub, K. Spindler
17:30	<b>9489/FCV-F-234</b> Hydrothermal-Wave Instability and Resultant Flow Patterns Induced by Thermo-capillary Effect in a Half-Zone Liquid Bridge of High Aspect Ratio, I. Ueno, H. Kawasaki, T. Watanabe, K. Motegi, T. Kaneko	<b>9093/HEX-G-234</b> Maximal Velocity Ratio Design Method for Shell-and-Tube Heat Exchangers with Continuous Helical Baffles, J. Yang, M. Zeng, G. Chen, Q. Wang	<b>9115/EEC-H-234</b> Convolution Based Steady State Compact Thermal Model for 3D Integrated Circuits: Methodology for Including the Thermal Impact of Die to Die Interconnections, F.L.T. Maggioni, H. Oprins, E. Beyne, I. De Wolf, M. Baelmans	<b>8892/TST-I-234</b> Heat Transfer in Latent Heat Thermal Energy Storage Device for Automobile Applications, D.P.-C. Shih, H. Tran, M. Kawajj, M. Birkett, J. Burgers	<b>8916/CDS-J-234</b> Parameter Comparison of Condensation Heat Transfer of R134a Outside Horizontal Low-Finned Tubes, D. Zhang, W. Ji, J. Du, Z. Zhang, X. Fan, Y. He, W. Tao	<b>8995/EEF-K-234</b> A Numerical Solution Algorithm for a Heat and Mass Transfer Model of a Desalination System Based on Packed-Bed Humidification and Bubble Column Dehumidification, K. Chehayeb, F. Cheaib, J. Lienhard V
17:50	<b>9852/FCV-F-235</b> The Effect of Radiative Heat Transfer on Slip Flow through Parallel-Plate Microchannels, M. Shojaeian, R. Zamanian, A. Koşar	<b>9791/HEX-G-235</b> Optimization of Lifetime Expectance for Heat Exchangers with Special Requirements, P. Freko, I. Thomas, R. Hoelzl, A. Lehmacher, A. Woitalka		<b>8518/TST-I-235</b> Experimental and Numerical Investigation of Phase Change Heat Transfer Characteristics in Open-Cell Metal Foam Infiltrated with Eutectic Salt for Solar Energy Storage, P. Zhang, X. Xiao, M. Li	<b>9161/CDS-J-235</b> Analysis of the Condensate Carryover Phenomenon on Fin and Tube Evaporators, E. Navarro-Peris, J. Corberan, J. González-Maciá, M. Zamora	
18:10		<b>9449/HEX-G-236</b> Size Effect of the Flow Path on the Flow and Heat Transfer Characteristics in a Cavity Swept by a Visco-Elastic Fluid, H. Suzuki, R. Hidema, Y. Komoda		<b>8753/TST-I-236</b> Performance Analysis of the Molten-Salt Thermal Storage System Filled by PCM Capsules with Cascaded Melting Temperatures, C. Xu, M. Wu, X. Ju, X. Du, Y. He, Y. Li	<b>9296/CDS-J-236</b> Effect of Hydrocarbon Adsorption on the Wetting of Rare Earth Oxides, D. J. Preston, N. Milijkovic, J. Sack, R. Enright, J. Queency, E. N Wang	

# General Sessions in Parallel

13th, Wednesday

Session 31 (08:20 - 10:20)

	Room B1	Room B2	Room C1	Room C2	Room D	Room E
	<b>FBL3 : Flow Boiling (3)</b> T. Kunugi & S. Launay	<b>TPF1 : Two-phase, Flow Behavior (1)</b> S. Momoki & M. Spector	<b>IPJ : Impinging Jet</b> K. Muralidhar & N. Nagai	<b>HTE3 : Heat Transfer Enhancement (3)</b> Y. Shibata & T. N. Wong		
08:20	<b>9867/FBL-B1-311</b> <i>A Study on Post-CHF Heat Transfer at Near-Critical Pressure,</i> T. Mawatari, H. Mori, K. Kariya	<b>8981/TPF-B2-311</b> <i>Analysis of Two-Phase Flow Behavior in a Sharp Return Bend Using Capacitive Measurements,</i> K.De Kerpel, M.De Paepe	<b>9035/IPJ-C1-311</b> <i>Heat Transfer Measurements from Concave and Convex Surfaces with a Fully Developed Confined Impinging Slot Jet,</i> S. Kim, Y. Kim, H. Park, D. Lee, P. Ligrani	<b>8750/HTE-C2-311</b> <i>A Numerical Study of Fluid and Heat Transfer Performance of Heat Exchangers with Novel Short-Circuit Prevention Helical Baffles,</i> W. Du, H. Wang, G. Xin, S. Zhang, L. Cheng	 <b>IHTC</b> SINCE 1951	 <b>IHTC</b> SINCE 1951
08:40	<b>9840/FBL-B1-312</b> <i>Effect of Heat Transfer Surface Structure on Boiling Heat Transfer and Flow Characteristics in a Horizontal Narrow Channel,</i> H. Asano, J. Yoshidome, T. Gomyo	<b>9810/TPF-B2-312</b> <i>Non-Equilibrium Discharging Flow From Safety Valves,</i> Y. Kitagawa, S. Horiki, M. Osakabe	<b>8838/IPJ-C1-312</b> <i>Transient Flow and Thermal Performance of Integrated Deflector under Periodic Supersonic Flame Impingement,</i> J. Zhang, Z. Qu, R. Fu, Y. He	<b>9424/HTE-C2-312</b> <i>Numerical Study of Flow and Heat Transfer Characteristics of Different Distributed Corrugated Tube Bundles,</i> W. Shao, B. Li, H. Wu, Y. Zhang, Z. Xu		
09:00	<b>9214/FBL-B1-313</b> <i>Boiling Investigation in the Microchannel with Nano-Particles Coating,</i> Y. Kuzma-Kichta, A. Leontyev, A. Lavrikov, M. Shustov, K. Suzuki	<b>8971/TPF-B2-313</b> <i>Visualization of Ammonia Boiling Flow Phenomena Inside Narrow Flat Plates,</i> H. Arima, F. Mishima, K. Koyama, Y. Ikegami	<b>9047/IPJ-C1-313</b> <i>Experimental and Numerical Investigation of the Flow behind a Sphere Moving Vertically in a Stratified Fluid,</i> S. Akiyama, S. Nakamura, S. Okino, H. Hanazaki	<b>8727/HTE-C2-313</b> <i>Mathematical Derivation on Heat Transfer Improvement of the Air-Cooled Condenser Cell in a Power Plant,</i> H. Zhang, H. Zhou, Y. Yue, L. Yang, X. Du, Y. Yang		
09:20	<b>9072/FBL-B1-314</b> <i>Flow Boiling under Microgravity Conditions Comparative Study of Two Experimental Data Sets,</i> M. Nancy, A. Scammell, C. Colin, J. Kim	<b>8720/TPF-B2-314</b> <i>Dynamic Flow Structures in the Wakes of Sliding Bubbles for Convective Heat Transfer Enhancement,</i> R. O'Reilly Meehan, B. Donnelly, T. Persoons, D. Murray	<b>9385/IPJ-C1-314</b> <i>Heat transfer Enhancement for Row of Impinging Jets in Cross-Flow with Some Baffle Attachments,</i> R. Pansang, M. Wae-hayee, P. Vessakosol, C. Nuntadusit	<b>9931/HTE-C2-314</b> <i>Analysis on Optimal Configuration of Air-Foil Shaped Printed Circuit Heat Exchanger in Supercritical Carbon Dioxide Power Cycle,</i> S. Yoon, J. Kwon, T. Kim, H. Park, M. Kim		
09:40	<b>9333/FBL-B1-315</b> <i>Micro Liquid Film Heat Transfer and Critical Heat Flux of Flow Boiling in Micro-Channels,</i> Y. Jiang, T. Wang, Z. Wang, D. Tang	<b>8927/TPF-B2-315</b> <i>Structure of Two-Phase Swirl Flow in Various Channels,</i> A. Yakovlev, S. Tarasevich, A. Shishkin		<b>8719/HTE-C2-315</b> <i>New Correlations for Heat Transfer and Pressure Drop for Serrated and Solid Fin Tube Bundles,</i> A. Holfeld, E. Næss		
10:00				<b>8867/HTE-C2-316</b> <i>Model-Based Optimization of Three-Dimensional Complex Structure for Heat Transfer Enhancement in Single-Phase Flows,</i> Y. Hasegawa, N. Shikazono		

Session 31 (08:20 - 10:20)

13th, Wednesday

	Room F	Room G	Room H	Room I	Room J	Room K
	<b>FCV6 : Forced Convention (6)</b> Y. Hattori & M. Hodes	<b>MFP : Materials and Foods Processing</b> Y. Shan & T. Yoshinaga	<b>NSM1 : Numerical Simulation (1)</b> L. Gong & M. Tanahashi	<b>PMD1 : Porous Media (1)</b> M. Quintard & S. Uemura	<b>RAD1 : Radiation (1)</b> V. Rodolphe & J. Yamada	<b>PLS : Plasma</b> Y. Itaya & Y. Yan
08:20	<b>8378/FCV-F-311</b> <i>Influence of Local Flow Acceleration on the Heat Transfer of Submerged and Free-Surface Jet Impingement</i> , W. Rohfs, C. Ehrenpreis, H.D. Hausteин, O. Garbrecht, R. Kneer	<b>8844/MFP-G-311</b> <i>The Contact Heat Transfer in Rotary Drums in Dependence on the Particle Size Ratio</i> , A.I. Nafsun, F. Herz, E. Specht, V. Scherer, S. Wirtz, H. Komossa	<b>9037/NSM-H-311</b> <i>Heat and Mass Transfer Modelling of an Industrial Autoclave to Minimise Steam Consumption</i> , W.L. Lau, J.A. Reizes, V. Timchenko, S. Kara, B.J. Kornfeld	<b>8405/PMD-I-311</b> <i>Thermal Conductivity of Ceramic Sponges at Temperatures up to 1000 °C</i> , B. Dietrich, T. Fishedick, M. Wallenstein, M. Kind	<b>8207/RAD-J-311</b> <i>Effect of Processing Temperature on Radiative Properties of Polypropylene and Heat Transfer in the Pure and Glassfibre Reinforced Polymer</i> , D. Hakoume, L. Dombrovsky, D. Delaunay, B. Rousseau	<b>9138/PLS-K-311</b> <i>3D Numerical Simulation of Buoyancy Driven Flow in a Cubical Enclosure with Different Wall Conductivities</i> , N. Gajbhiye, Praveen T., V. Eswaran
08:40	<b>9295/FCV-F-312</b> <i>Thermo-Hydrodynamic Characteristics of Magneto-thermal Wind Created in a Tube in Gravitational and Nongravitational Fields</i> , T. Okitsu, M. Akamatsu, M. Kaneda	<b>9321/MFP-G-312</b> <i>Fundamental Study on Agglomeration Control of Metallic Nano-Particles by Thermal Treatment</i> , T. Saito, T. Kawaguchi, I. Satoh	<b>8447/NSM-H-312</b> <i>Heat Transfer Enhancement in a Tube Filled with a Porous Medium: Influence of the Thermal Conductivity of the Porous Medium</i> , T. Ming, Y. Tao	<b>8278/PMD-I-312</b> <i>One Dimensional Thermal Analysis of Solar Air Receiver Using Silicon Carbide Ceramic Foam</i> , F. Bai	<b>8214/RAD-J-312</b> <i>Radiative Heat Transfer Modeling in Supersonic Gas Flow with Suspended Particles to a Blunt Body</i> , L. Dombrovsky, D. Reviznikov	<b>9408/PLS-K-312</b> <i>Integrated Modeling of Transport Phenomena in Keyhole Welding with Plasma Arc</i> , Y. Li, Y. Feng, Y. Li, X. Zhang, C. Wu
09:00	<b>8548/FCV-F-313</b> <i>Heat and Mass Transfer in a Single-Channel Plate Membrane Contactor with a Combined Counter/Cross-Flow Arrangement</i> , S. Huang, M. Yang, F.G.F. Qin, Y. Xu, Y. Zuo, X. Yang	<b>8383/MFP-G-313</b> <i>Three-Dimensional Simulation of Phosphor Dispensing Process in Light Emitting Diode Packaging by Lattice Boltzmann Method</i> , L. Li, H. Zheng, C. Yuan, X. Yu, X. Luo	<b>9182/NSM-H-313</b> <i>Molecular Simulation of the Dynamic Process of Water Vapour Absorption into Aqueous LiBr Solution with or without Alcohol Surfactants</i> , H. Gao, B. Zhu, Y. Yan	<b>8530/PMD-I-313</b> <i>Temperature Evolution of Evacuated Tube Adsorption Bed Heated by Solar Radiation</i> , C. Du, Z. Yuan, X. Hou, F. Xin, D. Gao, Y. Chen	<b>9012/RAD-J-313</b> <i>Prediction of the Resonance Condition of Metamaterial Emitters and Absorbers Using LC Circuit Model</i> , A. Sakurai, B. Zhao, Z. Zhang	<b>8815/PLS-K-313</b> <i>Thermoelectric Properties of ZnNiO/Polyparaphenylene Hybrids Prepared by Spark Plasma Sintering</i> , Z. Wu, H. Xie, L. Gan, J. Liu
09:20	<b>8711/FCV-F-314</b> <i>Development of an Empirical Model for Convective Evaporation of Sessile Droplets of Volatile Fluids</i> , F. Carle, D. Brutin	<b>8715/MFP-G-314</b> <i>Numerical Investigation of Cooling in the Continuous Fiber Glass Drawing Process</i> , Q. Chouffart, P. Simon, V.E. Terrapon	<b>9196/NSM-H-314</b> <i>Comparative Study on Simulation of Convective Al<sub>2</sub>O<sub>3</sub>-Water and ZrO<sub>2</sub>-Water Nanofluid by Using ANSYS-FLUENT</i> , M. Mahdavi, M. Sharifpur, J. P. Meyer	<b>8893/PMD-I-314</b> <i>Heat and Mass Transfer Model of a Packed-Bed Reactor for Solar Thermochemical CO<sub>2</sub> Capture</i> , L. Reich, R. Bader, T. Simon, W. Lipinski	<b>9222/RAD-J-314</b> <i>The Micro-Macro Model for Transient Radiative Transfer Simulations</i> , M. Roger, N. Crouseilles, P.J. Coelho	<b>9541/PLS-K-314</b> <i>Application of an Integrated CFD Model to Aluminum Nanoparticle Production</i> , S. Lopes, P. Proulx, J.-B. Gouriet, P. Rambaud
09:40	<b>8736/FCV-F-315</b> <i>Behavior and Optimization of Spray Humidification inside Air-Cooled Condenser of Power Generating Unit</i> , L. Xiao, X. Xi, X. Du, L. Yang	<b>8601/MFP-G-315</b> <i>Optimization of the Chemical Vapor Deposition Process for Gallium Nitride</i> , P. George, J. Meng, Y. Jaluria	<b>8760/NSM-H-315</b> <i>Effect of Material Thermal-Physical Parameters on Weld Pool and Residual Stress Peak Value</i> , L. Tong, L. Li, F. Bai, S. Yin, L. Wang	<b>8657/PMD-I-315</b> <i>Evaluation of Gas Production Behavior from Hydrate-Bearing Sediments with Different Thermal Properties by Depressurization</i> , Y. Song, Z. Zhu, J. Zhao, C. Cheng, D. Liu, L. Yang, J. Wang	<b>9382/RAD-J-315</b> <i>Numerical Study of the Effects of Surface Micro-Roughness on the Optical Constants of Aluminum Determined by Spectroscopic Ellipsometry</i> , W. Zhang, J. Yang, L. Liu	<b>9897/PLS-K-315</b> <i>A Comparison of Methane Hydrate Decomposition Using Radio Frequency Plasma and Microwave Plasma Methods</i> , I. Rahim, S. Nomura, S. Mukasa, H. Toyota
10:00			<b>9069/NSM-H-316</b> <i>Comparison of Preconditioned Density-Based Algorithm with Pressure-Velocity Correction Algorithm for Incompressible Convection</i> , C. Shen, F. Sun, X. Xia	<b>9191/PMD-I-316</b> <i>Identification of the Radiative Properties of <math>\alpha</math>-SiC Foams Realistically Designed with a Numerical Generator</i> , S. Guevelou, B. Rousseau, G. Domingues, J. Vicente, C. Caliot, G. Flamant	<b>8268/RAD-J-316</b> <i>Absorption of Short-Pulsed Laser Radiation in Superficial Human Tissues: Transient vs Quasi-Steady Radiative Transfer</i> , J. Randrianalisoa, L. Dombrovsky, W. Lipinski, V. Timchenko	<b>9415/PLS-K-316</b> <i>Two Successive Thermal Inverse Problems Solved for Plasma Facing Components inside JET Tokamak: Estimation of Surface Heat Flux and Thermal Resistance of a Surface Carbon Layer</i> , J.-L. Gaspar, F. Rigollet, J. Gardarein, C. Le Niliot, Y. Corre

# General Sessions in Parallel

13th, Wednesday

Session 32 (10:30 - 12:30)

	Room B1	Room B2	Room C1	Room C2	Room D	Room E
	<b>PBL1 : Pool Boiling (1)</b> C. Colin & Y. Haramura	<b>TPF2 : Two-phase, Flow Behavior (2)</b> M. de Paepe & T. Yokomine	<b>RNE : Renewable Energy</b> C. Coimbra & K. Matsubara	<b>HTE4 : Heat Transfer Enhancement (4)</b> Y. Hasegawa & G. Xi		
10:30	<b>9284/PBL-B1-321</b> Numerical Simulation of Pool Boiling from Artificial Cavities Using the Phase Field Method, A. Sathyanarayana, Y. Joshi	<b>9876/TPF-B2-321</b> Correlation of Transition Boundaries to and from Annular Flow Regime of Ammonia Evaporating Inside a Horizontal Internally Spirally Grooved Tube, S. Momoki, H. Arima, Y. Takashiba, T. Yamaguchi, S. Sasaki	<b>8834/RNE-C1-321</b> Numerical Assessment and Optimization of Wind Farm on Complex Terrain, M. Song, B. Wu, K. Chen, Z. He, X. Zhang	<b>9180/HTE-C2-321</b> Thermal-Hydraulic Performance of a Printed Circuit Heat Exchanger in a CO <sub>2</sub> -H <sub>2</sub> O Heat Exchange Process under Different Mass Flow Rates, X. Xu, T. Ma, L. Li, M Zeng, Q. Wang, Y. Chen	 <b>IHTC</b> SINCE 1951	 <b>IHTC</b> SINCE 1951
10:50	<b>8590/PBL-B1-322</b> Numerical Simulation of Boiling from a Single Reentrant-Cavity, J. Dietl, P. Stephan	<b>9376/TPF-B2-322</b> Effect of Flow Pattern on Critical Heat Flux, T. Ami, G. Yamashina, H. Umekawa, M. Ozawa	<b>9869/RNE-C1-322</b> Numerical Modelling of Combined Natural Convection and Surface Radiation Heat Transfer in Cavity Receiver with Plate Fins, L.C. Ngo, T. Bello-Ochende, J.P. Meyer	<b>9262/HTE-C2-322</b> Heat Transfer Characteristics in Forced Convection through a Rectangular Channel with V-Shaped Rib Roughened Surfaces, D. Fustinoni, P. Gramazio, L. Colombo, A Niro		
11:10	<b>8851/PBL-B1-323</b> Direct Numerical Simulations of Subcooled Boiling Phenomena Based on Non-Empirical Boiling and Condensation Model, Y. Ose, T. Kunugi	<b>9005/TPF-B2-323</b> A Phenomenological Model of Dryout with Circumferentially Varying Heat Flux, J. Manning, G.F. Hewitt, S. Walker	<b>8963/RNE-C1-323</b> Prediction of the First Pyrolysis Product and Yield in Biomass Gasifier, Y. Okumura, T. Okada, K. Okazaki	<b>8718/HTE-C2-323</b> Influence of the Fin Type and Base Tube Diameter of Serrated and Solid-Fin Tubes on the Heat Transfer and Pressure Drop Performance, A. Holfeld, E. Næss		
11:30	<b>8911/PBL-B1-324</b> Numerical Simulation on Bubble Growth Process and Heat Transfer Characteristics with Microlayer Evaporation in Nucleate Boiling for Water, Z. Chen, Y. Utaka	<b>9023/TPF-B2-324</b> Study on High-Void Fraction Gas-Liquid Two-Phase Flow in Tube Bundle, Y. Kondo, L. Cheng, S. Utsumi, T. Ueno, R. Kawakami, K. Shimamura	<b>9817/RNE-C1-324</b> A Numerical Study on Bed Temperature and Gasifying Agent Effects on the Sugarcane Bagasse Gasification Process, G. Verissimo, J. de Pinho, A. Leiroz, M.E. Cruz	<b>8827/HTE-C2-324</b> Heat Transfer Enhancement in Heat Exchanger with Dimpled/ Protruded Surface, T. Tang, A. Lee, G. Yeoh		
11:50	<b>9631/PBL-B1-325</b> Effect of Surface Wettability on Subcooled Boiling Heat Transfer, Y. Saito, D. Ito		<b>8989/RNE-C1-325</b> Optimal Sizing of Heat Exchangers for Organic Rankine Cycles (ORC) Based on Thermo-Economics, S. Lecompte, M. van den Broek, M. De Paepe	<b>9864/HTE-C2-325</b> Pool Boiling of Hydrocarbon Mixture in Kettle-Reboiler with Low-Finned Tubes, E. Estiot, C. Richardt		
12:10	<b>8817/PBL-B1-326</b> Boiling Heat Transfer Theory: To Overcome Historical Deadlock, I.G. Shekrladze		<b>9916/RNE-C1-326</b> Anatical Solution of Nanofluid Volumetric Receiver, S. Lee, H. Kim, Y. Park, K. Kim, S. Jang	<b>9299/HTE-C2-326</b> In-Tube Convective Heat Transfer Characteristics of CO <sub>2</sub> -Hydrate Mixture, H. Park, R. Yun		

Session 32 (10:30 - 12:30)

13th, Wednesday

	Room F	Room G	Room H	Room I	Room J	Room K
	<b>FCV7 : Forced Convection (7)</b> K. Kariya & R. Kneer	<b>ACR : Air Conditioning and Refrigeration</b> E. Hihara & J. Wei	<b>NSM2 : Numerical Simulation (2)</b> T. Kajishima & Y. X. Tao	<b>PMD2 : Porous Media (2)</b> T. Chikahisa & B. Dietrich	<b>RAD2 : Radiation (2)</b> P. Coelho & K. Hanamura	<b>TEL : Thermoelectric Devices</b> S. Lei & K. Yazawa
10:30	<b>8418/FCV-F-321</b> A Uniform Temperature Heat Sink for Cooling of High Concentrator Photo-Voltaic Systems, G. Hetsroni, A. Bar-Cohen	<b>8563/ACR-G-321</b> Study on Heat Transfer Characteristics of Active Magnetic Regenerator in Magnetic Refrigeration System, M. Kim, K. Kuk, I. Mun	<b>9811/NSM-H-321</b> Towards High-Performance Thermal Flow Solvers Based on the Link-Wise Artificial Compressibility Method, C. Obrecht, F. Kuznik, G. Rusaouën, J. Roux	<b>8575/PMD-I-321</b> A Rigorous Derivation and its Applications of Volume Averaged Transport Equations for Heat Transfer in Nanofluid Saturated Metal Foams, F. Sakai, W. Li, A. Nakayama	<b>8771/RAD-J-321</b> Radiation Enhancement by Metal Film on Micro Cavities in Resin, T. Totani, T. Irokawa, M. Iwata, M. Wakita, H. Nagata	<b>9360/TEL-K-321</b> Thermoelectric Properties of Polymer-Semiconductor-Polymer Molecular Junction, Y. Wang, H. Xie
10:50	<b>8684/FCV-F-322</b> Numerical Study of Conjugate Heat Transfer of Supercritical Kerosene Flow in Rectangular Cooling Channel, F. Zhong, G. Dang, Y. Xing, L. Chen, X. Chang	<b>8940/ACR-G-322</b> Experimental Study of Ground Source Heat Pumps That Use the Direct Expansion Method, T. Takeda, D. Yokoyama, A. Ohashi, S. Ishiguro, S. Funatani, K. Ichimiya	<b>8812/NSM-H-322</b> Asymmetric Transition for High Froude Number Plane Fountains in Linearly Stratified Fluids, M.I. Inam, W. Lin, S.W. Armfield, Y. He	<b>8782/PMD-I-322</b> Effective Thermal Conductivity of Metal Foams: Experiments and Analysis, P. Yue, L. Qiu, X. Zheng, D. Tang	<b>8871/RAD-J-322</b> Study of Amorphous Silicon Gratings with Disorder for Solar Energy Absorbers, X. Fang, C. Zhao, H. Bao	<b>8966/TEL-K-322</b> Evaporation of a Water Droplet Deposited on a Nano-Patterned Transparent Film Fabricated by UV Nanoimprint, N. Unno, M. Asano, S. Satake, J. Taniguchi
11:10	<b>9266/FCV-F-323</b> Determination of Convective Heat Transfer for Subsonic Flows over Heated Asymmetric Airfoil NACA 4412, Y. Dag, S. Akwaboa, P. Mensah	<b>9310/ACR-G-323</b> Prediction Modeling of Automobile Dynamic Thermal Load, J. Wu, H. Song, C. Liu	<b>9729/NSM-H-323</b> Unified Integral Transforms in Single Domain Formulation for Internal Flow Three- Dimensional Conjugated Problems, D.C. Knupp, C.P. Naveira-Cotta, R.M. Cotta	<b>8831/PMD-I-323</b> Evaluation of the Thermal Hydraulic Performance of Round Tube Metal Foam Heat Exchangers for HVAC Applications, H. Huisseune, S. De Schampheleire, B. Aemeel, M. De Paepe	<b>9636/RAD-J-323</b> Thermal Radiation Characteristics in Sub-Micron Region for MEMS Space Radiator, A. Ueno, Y. Suzuki	<b>9096/TEL-K-323</b> Thermal Transport Properties of PEDOT-PSS Thin Films, H. Hagino, M. Hokazono, H. Anno, N. Toshima, K. Miyazaki
11:30	<b>8461/FCV-F-324</b> Convective Heat Transfer Characteristics of Low Concentrations CuO-Water Nanofluid in the Turbulent Flow Regime Based on Artificial Intelligent Models, M. Mehrabi, M. Sharifpur, J.P. Meyer	<b>9534/ACR-G-324</b> Development of All Aluminum Microchannel Heat Exchanger for Air-Conditioner, H. Fujino, T. Kamada, S. Inoue	<b>9521/NSM-H-324</b> Assessment of Three Coalescence and Breakage Kernel Models on Predicting Complex Bubbly Flow, X. Duan, L. Gong	<b>8865/PMD-I-324</b> Comparison of Aluminium Foam Finned Heat Sinks and Effect of Painting and Orientation in Buoyancy-Driven Convection, S. De Schampheleire, K. De Kerpel, G. Kenof, P. Pirmez, H. Huisseune, M. De Paepe	<b>9384/RAD-J-324</b> First-Principles Study on Electronic Band Structure and Optical Constants of Synthesized $Si_3Al(As_xP_{1-x})$ Alloys, J. Yang, L. Liu, J. Tan	<b>9996/TEL-K-324</b> Experimental Investigations on the Performance of a Thermoelectric Device with an Integrated Heat Exchanger and Flow Channels, M. Barry, K. Agbim, B.V.K. Reddy, M.K. Chyu
11:50	<b>9814/FCV-F-325</b> Heat Transfer Processes in Film Casting of Compressible Polymers, J. Ramos		<b>8783/NSM-H-325</b> Numerical Investigation on Conjugated Heat Transfer of Conduction in Wall and Mixed Convection in Horizontal Square Tube with Molten Salts, C. Wang, Y. Wu, C. Chen, B. Liu, C. Ma	<b>9734/PMD-I-325</b> Influence of Strut Shape and Porosities on Geometrical Properties and Effective Thermal Conductivity of Kelvin Like Anisotropic Metal Foams, P. Kumar, F. Topin	<b>9188/RAD-J-325</b> Reducing Thermal Radiation Between Parallel Plates in the Far-to-Near Field Transition Regime, Y. Tsurimaki, P.O. Chapuis, R. Vaillon, J. Okajima, A. Komiya, S. Maruyama	<b>8789/TEL-K-325</b> Design Optimization of Automobile Exhaust Thermoelectric Generator for Waste Heat Recovery, Z. Niu, Q. Li, W. He, Y. Huo, K. Jiao
12:10	<b>9154/FCV-F-326</b> Convection-Radiation Interaction in Eccentric Annulus Using the Coupled Lattice Boltzmann and Meshless Method, K. Luo, Z. Cao, H. Yi, H. Tan		<b>9371/NSM-H-326</b> Comparison of Turbulence Models in Simulating a Cruciform Impinging Jet on a Flat Wall, F. Bode, K. Sodjavi, A. Meslem, I. Nastase	<b>9841/PMD-I-326</b> An Improved Capillary Bundle Model by Using Tortuosity and Parameters Extracted from Pore Network Model, X. Zhou, L. Jiang, L. Chen, Y. Liu, Y. Song, M. Mutailipu	<b>8521/RAD-J-326</b> A Direct Numerical Simulation for Influence of Roughness on Near-Field Radiative Heat Transfer between Two Films, Y. Chen, Y. Xuan	<b>8931/TEL-K-326</b> The Optimization of Thermoelectric Module Size in a Waste Heat Power Generation System, W. He, S. Wang, C. Lu, Y. Li, X. Zhang

# General Sessions in Parallel

14th, Thursday

Session 41 (08:20 - 10:20)

	Room B1	Room B2	Room C1	Room C2	Room D	Room E
	<b>PBL2 : Pool Boiling (2)</b> Y. Saito & P. Stephan	<b>TPN1 : Two-phase, Numerical Simulation (1)</b> J. Cai & S. Yokobori	<b>TDY1 : Thermodynamics (1)</b> Y. Hagiwara & H. Herwig	<b>HTE5 : Heat Transfer Enhancement (5)</b> Y. Diao & K. Nakabe		<b>CPM1 : Computational Methods (1)</b> F. Liu & T. Tsukahara
08:20	<b>9265/PBL-B1-411</b> <i>Highly Subcooled Water Boiling: Some New Details of the Process,</i> K. Khodakov, Y. Zeigarnik	<b>8721/TPN-B2-411</b> <i>Population Balance Modeling for Air-Water Bubbly Flow in a Vertical U-Bend,</i> H. Zhu, X. Yang, Y. Huang, J. Tu, S. Jiang	<b>9370/TDY-C1-411</b> <i>A Simulation Study into the Thermodynamic Properties of Water-Alcohol Mixtures,</i> J. Cannon, T. Kawaguchi, E. Okuno, J. Shiomi	<b>9080/HTE-C2-411</b> <i>Heat Transfer Performance of a Channel Flow with Aluminum Fiber Layers (Comparison with Aluminum Porous Foams),</i> K. Imai, M. Yamamoto, M. Sakagami, M. Senda, K. Inaoka	 IHTC SINCE 1951	<b>9034/CPM-E-411</b> <i>A Two-Dimensional Numerical Method for Incompressible Flow Problem Based on SIMPLER Algorithm and Quadtree Grid with Collocated Arrangement,</i> W. You, Z. Li, W. Tao
08:40	<b>9568/PBL-B1-412</b> <i>Study on Nucleate Boiling Heat Transfer by Measuring Instantaneous Surface Temperature Distribution by Infrared Radiation Camera,</i> Y. Koizumi, K. Takahashi	<b>9780/TPN-B2-412</b> <i>Computational Studies of LNG Evaporation and Heat Diffusion through a LNG Cargo Tank Membrane,</i> J. Lee, Y. Kim, S. Hwang	<b>8636/TDY-C1-412</b> <i>Prediction of Anisotropic Crystal-Melt Interfacial Free Energy of Sugar Alcohols through Molecular Simulations,</i> H. Zhang, S. Nedea, C.C.M. Rindt, H.A. Zondag, D.M.J. Smeulders	<b>10554/HTE-C2-412</b> <i>Heat Transfer near Injection Hole by Shock and Boundary Layer Interaction in the Supersonic Flowfield,</i> N. Lee, J. Song, J. Bae, Y. Kang, H. Ham, J. Bae, H. Cho		<b>9302/CPM-E-412</b> <i>Different Approaches to FVM Method Fluid Flow and Heat Transfer Simulation Inside Thermosyphon,</i> M. Lecki, G. Gorecki
09:00	<b>9914/PBL-B1-413</b> <i>Pore-Scale Experimental Study of Boiling in Porous Media,</i> P. Sapin, P. Duru, F. Fichot, M. Prat, M. Quintard	<b>8564/TPN-B2-413</b> <i>Computational Fluid Dynamics Evaluation of the Multi-Nozzle Oil-Jet Lubrication for Rolling Bearings,</i> W. Wu, J. Hu, S. Yuan, X. Li	<b>8833/TDY-C1-413</b> <i>Influence of Form and Thermal Properties of Granular Layer to Subcooled Liquid Boiling Dynamics in Impulse Heat Generation in the Wall,</i> N. Zakharov, S. Karlov, B. Pokusaev	<b>8562/HTE-C2-413</b> <i>Non-Similar Heat Transfer Characteristics Associated with Nanofluid Forced Convection Cooling and Heating,</i> W. Li, A. Nakayama	<b>9342/CPM-E-413</b> <i>An HP-Adaptive Predictor-Corrector Split Projection Method for Turbulent Compressible Flow,</i> X. Wang, D.B. Carrington, D.W. Pepper	
09:20	<b>9772/PBL-B1-414</b> <i>Boiling Behaviors on a Vertical Surface in Saturated Pool Boiling at High Pressures,</i> H. Sakashita	<b>9543/TPN-B2-414</b> <i>Numerical Simulation of Liquid-Gas Two-Phase Flow with Large Density Difference in Multi-Layered Sintered Wick by the Lattice Boltzmann Method,</i> T. Yamaguchi, Q. Wan, Y. Yan, J. Hong	<b>8230/TDY-C1-414</b> <i>High Resolution Heat Transfer Measurements at the Three Phase Contact Line of a Moving Single Meniscus,</i> S. Fischer, S. Batzdorf, T. Gambaryan-Roisman, P. Stephan	<b>8571/HTE-C2-414</b> <i>Heat Transfer Optimization for Reducing Thermal and Flow Resistance,</i> W. Liu, H. Jia, Z. Liu, J. Yang	<b>9525/CPM-E-414</b> <i>Thermal Hydraulic Modeling of Shell and Tube Heat Exchangers,</i> J. Teixeira, A. Oliveira, S. Teixeira	
09:40	<b>9048/PBL-B1-415</b> <i>Local Heat Removal by Liquid Film on the Expansion of Dry Area on a Superheated Copper Wall,</i> Y. Haramura		<b>8349/TDY-C1-415</b> <i>Numerical Determination of Autothermal Operation Limits for Beechwood Torrefaction Processes as a Function of Different Operating Parameters,</i> A. Ohliger, R. Kneer	<b>8689/HTE-C2-415</b> <i>Thermal Fluid Flow Transport Characteristics in Pipe Flow Using Graphene-Oxide-Nanofluid,</i> S. Torii, H. Yoshino	<b>9337/CPM-E-415</b> <i>Dispersion of High Pressure Underexpanded Helium Jets into the Atmosphere,</i> X. Li, D. Christopher	
10:00			<b>8515/TDY-C1-416</b> <i>Notes on Singular Heat Radiation,</i> R. Segev, J. Goddard	<b>8801/HTE-C2-416</b> <i>Heat Transfer Enhancement in Tangential Injection Induced Swirl Flows,</i> G.R. Warrier, D. Lloyd, L. Yang, Y. Hu, V.K. Dhir, Y.S. Ju		

Session 41 (08:20 - 10:20)

14th, Thursday

	Room F	Room G	Room H	Room I	Room J	Room K
	<b>NCV1 : Natural Convection (1)</b>	<b>GTB : Gas Turbine</b>	<b>CND1 : Conduction (1)</b>	<b>PMD3 : Porous Media (3)</b>	<b>RAD3 : Radiation (3)</b>	<b>HPP1 : Heat Pipe (1)</b>
	D. Naylor & T. Tagawa	Y. Oda & L. Xu	G. Kikugawa & S. Mishra	R. Bennacer & A. Nakayama	L. Dombrovsky & A. Sakurai	N. Nagai & J. Yulong
08:20	<b>8947/NCV-F-411</b> <i>Transition in a Natural Convection Boundary Layer,</i> Y. Zhao, C. Lei, J. Patterson	<b>9600/GTB-G-411</b> <i>Effect of Swirled Leakage Flow on Endwall Film-Cooling,</i> M. Stinson, R. Goldstein, T. Simon, S. Fujimoto, C. Nakamata	<b>9735/CND-H-411</b> <i>Understanding of Non-Fourier Conduction Based on Thermon Gas Model,</i> X. Shan, M. Wang	<b>8706/PMD-I-411</b> <i>Numerical Investigation of Fluid Flow and Heat Transfer in Periodic Porous Lattice-Flame Materials,</i> S.G. Krishnan, K.K.Bodla, J.A. Weibel, S.V. Garimella	<b>9563/RAD-J-411</b> <i>Effects of Molecular Gas Radiation on Rayleigh-Bénard Convection in a 3D Cubical Cavity,</i> L. Soucasse, Ph. Rivière, A. Soufiani	<b>8985/HPP-K-411</b> <i>Flow Visualisation in a Transparent Thermosiphon: Influence of Internal Pressure,</i> K. Smith, R. Kempers, A. Robinson, S. Siedel
08:40	<b>9339/NCV-F-412</b> <i>Study on Free Convection Heat Transfer in Finned Tube Array,</i> R. Katsuki, C. Iwaki, T. Shioyama, T. Yanazawa	<b>8914/GTB-G-412</b> <i>Effects of Surface Geometry and Blowing Ratio on Film Cooling Performance at Airfoil Trailing Edge Investigated by Using Large Eddy Simulation,</i> A. Murata, E. Mori, K. Iwamoto	<b>8466/CND-H-412</b> <i>Accuracy of the First Eigenvalue of Heat Conduction Problems Calculated Through Tables and Explicit Approximate Expressions,</i> S. Dalmas, L.F. Milanez	<b>8987/PMD-I-412</b> <i>An Optimization Study of Heat Transfer Enhancement Due to Jet Impingement over Porous Heat Sinks Using Lattice Boltzmann Method,</i> S.K. Chinige, N. Ghanta, A. Pattamatta	<b>9357/RAD-J-412</b> <i>Numerical Study on Solar Reflection Performance of Cool Painting and the Optimization,</i> S. Kinoshita, S. Nishimura, A. Yoshida	<b>9031/HPP-K-412</b> <i>Super-Thin Heat Pipe in Smartphone Application,</i> T. Phan, M.S. Ahamed, T. Nguyen, M. Mochizuki, Y. Saito, S. Mochizuki
09:00	<b>9527/NCV-F-413</b> <i>Analysis of Heatfunction Boundary Conditions on Invariance of Heat Flow in Square Enclosures with Various Thermal Boundary Conditions,</i> P. Biswal, T. Basak	<b>8457/GTB-G-413</b> <i>Effects of Ingestion on the Flow and Heat Transfer in a Rotor-Stator System,</i> L. Wang, M. Wilson	<b>9021/CND-H-413</b> <i>Thermomass-Based General Law for Ballistic-Diffusive Heat Conduction in Nanostructures,</i> B. Cao, Y. Hua	<b>9590/PMD-I-413</b> <i>Influence on Stress Jump Coefficient of Porous Structure and Flow Conditions,</i> B. Chen, F. Liu, G. Zhang, Z. Liu	<b>8315/RAD-J-413</b> <i>Effect of Fractal Parameters on Absorption Coefficient of Soot Aggregates in the Electrostatic Limit,</i> P. Swaminathan, Ph. Rivière, A. Soufiani	<b>8842/HPP-K-413</b> <i>Boiling Heat Transfer Enhancement of Double-Tube Heat Pipe for High Power Devices,</i> T. Kato, M. Katsuta, K. Sugaya, R. Hotta
09:20	<b>9258/NCV-F-414</b> <i>Natural Convection around a Pulsating Line Heat Source,</i> M. Jarrahi, M.-C. Duluc, Y. Fraigneau, G. Defresne	<b>9249/GTB-G-414</b> <i>Experimental and Numerical Study of Flow Structure and Liner Wall Temperature in Reverse Flow Combustor,</i> X. Gao, F. Duan, S. Lim, M. Yip	<b>9207/CND-H-414</b> <i>Topology Optimisation for the Volume-to-Surface Problem in a Three-Dimensional Cubic Domain Using Conduction Cooling,</i> F.H. Burger, J. Dirker, J.P. Meyer	<b>9303/PMD-I-414</b> <i>Analytical Prediction of the Transition Point to Weak Turbulent Convection in a Porous Layer Subject to Feedback Control,</i> P. Vadasz	<b>9143/RAD-J-414</b> <i>Implementation of the SUN Model for Radiation Heat Transfer in Packed Pebble Bed Gas Cooled Reactors,</i> P.G. Rousseau, C.G. du Toit, S. van der Walt	<b>9124/HPP-K-414</b> <i>Heat Pipe Applications in Cooling Nuclear Fuel,</i> R. Singh, M. Mochizuki, T. Nguyen, Y. Saito
09:40	<b>8776/NCV-F-415</b> <i>Confinement-Induced Enhancements of Heat-Transfer Efficiency and Thermal Plume Coherency in Turbulent Thermal Convection,</i> K. Xia, M. Kaczorowski, S. Huang, K. Chong	<b>9553/GTB-G-415</b> <i>Blade and Vane Leading Edge Fillet on Endwall Cooling in Linear Turbine Cascades,</i> G. Mahmood, S. Acharya	<b>9920/CND-H-415</b> <i>An Application of the Generalized Least Squares Method to the Analysis of the Heat Transfer Process with Supplementary Data,</i> A. Sciazko, Y. Komatsu, S. Kimijima, Z.S. Kolenda, J.S. Szymd	<b>9742/PMD-I-415</b> <i>Experimental and Numerical Investigations of Supersonic Transpiration Cooling through Sintered Porous Flat Plates,</i> Z. Huang, Y. Xiong, Y. Zhu, P. Jiang	<b>9478/RAD-J-415</b> <i>The Influence of Carbon Fiber Composite Material Structures on the Spectral Attenuation Properties of Thermal Radiation,</i> M. Xie, Q. Ai, X. Xie, L. Yang, H. Tan	<b>9619/HPP-K-415</b> <i>Dynamics of Evaporation in a Single, Straight-Tube Pulsating Heat Pipe.,</i> K. Okuyama, T. Ichikawa, S. Mori
10:00	<b>10004/NCV-F-416</b> <i>Interaction of Rayleigh - Benard Convection and Oscillatory Flows,</i> M.K. Aktas, S. Cetindag	<b>9584/GTB-G-416</b> <i>Experimental and Computational Film Cooling with Backward Injection for Cylindrical and Fan-Shaped Holes,</i> S. Li, A. Chen, W. Wang, J. Han				

# General Sessions in Parallel

14th, Thursday

Session 42 (10:30 - 12:30)

	Room B1	Room B2	Room C1	Room C2	Room D	Room E
	<b>PBL3 : Pool Boiling (3)</b> L. Fan & H. Sakashita	<b>TPN2 : Two-phase, Numerical Simulation (2)</b> H. Arima & Y. J. Kim	<b>TDY2 : Thermodynamics (2)</b> T. Gambaryan-Roisman & T. Yamaguchi	<b>HTE6 : Heat Transfer Enhancement (6)</b> N. Shikazono & G. Warrier		<b>CPM2 : Computational Methods (2)</b> S. Satake & S. Teixeira
10:30	<b>8680/PBL-B1-421</b> <i>Characteristic Behaviors of Boiling Bubble Initiation Under High Pressure Conditions,</i> S. Yokobori, K. Yasumi, S. Akiyama	<b>9798/TPN-B2-421</b> <i>Numerical Simulation of Condensing and Evaporating Annular Flows in Microchannels with Laminar and Turbulent Liquid Films,</i> N. Antonsen, J.R. Thome	<b>8482/TDY-C1-421</b> <i>Loss Coefficients for Compressible Flows in Conduit Components under Different Thermal Boundary Conditions,</i> B. Schmandt, H. Herwig	<b>9825/HTE-C2-421</b> <i>Evaluation of Herringbone Wavy Fin Based Heat Exchanger for Heat Transfer Enhancement in Automobile Exhaust Energy Harvesting Systems,</i> J. Athavale, J. Pandit, S. Ekkad, S. Huxtable		<b>9797/CPM-E-421</b> <i>Lattice Boltzmann Simulations for Anisotropic Crystal Growth of a Binary Mixture,</i> A. Younsi, A. Cartalade, M. Quintard
10:50	<b>8795/PBL-B1-422</b> <i>The Influence of Single Bubble Growth and Bubble Coalescence on Boiling Heat Transfer,</i> A. Sialaff, P. Stephan	<b>8670/TPN-B2-422</b> <i>Numerical Study of Water Droplet Parameters in Icing Tunnel Test,</i> W. Dong, J. Zhu, M. Zheng, R. Wang	<b>8583/TDY-C1-422</b> <i>Energy Separation of Gases with Prandtl Numbers Unequal to Unity,</i> A.I. Leont'ev, I.I. Vlgdorovich	<b>9969/HTE-C2-422</b> <i>Natural Convection in an Open-Ended Channel under Staggered Thermal Boundary Conditions. Application to the Control of the Free Cooling in Photovoltaic Doubleskin Facades,</i> C. Ménézo, S. Giroux-Julien, V. Timchenko, M. Fossa		<b>8580/CPM-E-422</b> <i>Numerical Investigation of Heat Transfer in a Forced Flow of He II,</i> C. Soulaire, M. Quintard, H. Allain, B. Baudouy, R. van Weelderden
11:10	<b>9102/PBL-B1-423</b> <i>Nucleation Incipience on a Heated Surface: Effect of Pressure Oscillations,</i> L. Leal, P. Lavieille, M. Miscevic, F. Topin, L. Tadrist	<b>9133/TPN-B2-423</b> <i>Numerical Simulation of Reactive Multiphase Flows in Porous Media Using Lattice Boltzmann Method,</i> F. Xin, X. Li, M. Xu, X. Huai, Z. Cui	<b>9158/TDY-C1-423</b> <i>Chimney-Enhanced Natural Convection in Honeycombs,</i> X. Yang, J. Bai, H. Yan, T. Lu, T. Kim	<b>8747/HTE-C2-423</b> <i>Thermal and Hydraulic Characteristics of SCO<sub>2</sub> in a Horizontal Tube at High Reynolds Number,</i> K. Tanimizu, R. Sadr, D. Ranjan		<b>10035/CPM-E-423</b> <i>Hilbert Spectral Analysis of Oscillating Forced Convection in Curved Ducts,</i> F. Liu
11:30	<b>9404/PBL-B1-424</b> <i>Experimental Study of Transport Phenomena at the Onset of Nucleate Boiling Using a Boilingmeter,</i> M. Zamoum, B. Dubrac, F. Goepper, L. Tadrist, H. Combeau, M. Kessal	<b>9595/TPN-B2-424</b> <i>Modelling of Fundamental Transfer Processes in Crude-Oil Fouling,</i> J. Yang, O. Matar, G. Hewitt, W. Zheng, P. Manchanda	<b>9184/TDY-C1-424</b> <i>Calculating and Assessing Complex Convective Heat Transfer Problems: The CFD-SLA Approach,</i> C. Redecker, H. Herwig	<b>8554/HTE-C2-424</b> <i>Dynamic and Heat Transfer of Lobed Impinging Jets,</i> D. Brouilliot, D. Lo Jacono		<b>8982/CPM-E-424</b> <i>1D and 3D Numerical Simulation of the Reactor Cavity Cooling System of a Very High Temperature Reactor,</i> C.G. du Toit, P. Rousseau, J. Jun, J.-M. Noh
11:50	<b>9320/PBL-B1-425</b> <i>Effects of Pool Subcooling on Coalescence Heat Transfer and Bubble Dynamics,</i> J. Bi, D.M. Christopher, X. Lin, X. Li	<b>8692/TPN-B2-425</b> <i>Numerical and Experimental Study of Slug Flow Dynamics in Inclined Pipes with Granular Layer,</i> D. Khramtsov, D. Nekrasov, B. Pokusaev	<b>9847/TDY-C1-425</b> <i>Effect of the Fin Height on Unsteady Flows and Heat Transfer in a Differentially Heated Cavity,</i> J. Ma, F. Xu	<b>8864/HTE-C2-425</b> <i>An Experimental Study of Heat Transfer in the Turn Region of a U-Bend Channel with Various Ribs,</i> C. Wang, L. Wang, B. Sunden		<b>9662/CPM-E-425</b> <i>Regimes of Heating and Compression in Magneto-Inertial Fusion,</i> V.V. Kuzenov, S.V. Ryzhkov
12:10			<b>9966/TDY-C1-426</b> <i>Numerical Study on Cooling Performance for Multi-Holes Steam Jet in the Internal Channel of a Hollow Turbine Blade,</i> L. Xu, S. Zhang, W. Wang, J. Gao, T. Gao	<b>8904/HTE-C2-426</b> <i>Enhancement of Heat Transfer Performance by Using Sawtooth Fin Structure in the Multiport Microchannel Flat Tube,</i> J. Zhang, Y. Diao, Y. Zhao, Y. Zhang		<b>9724/CPM-E-426</b> <i>Oscillatory Instability of Natural Convection of Air in a Laterally Heated Cubic Box,</i> A. Gelfgat

Session 42 (10:30 - 12:30)

14th, Thursday

	Room F	Room G	Room H	Room I	Room J	Room K
	<b>NCV2 : Natural Convection (2)</b> M. Akamatsu & M. C. Duluc	<b>NMM1 : Nano/Micro Scale Measurement and Simulation (1)</b> X. Luo & J. Shiomi	<b>CND2 : Conduction (2)</b> L. F. Milanez & T. Takano	<b>PMD4 : Porous Media (4)</b> T. Araki & J. Weibel	<b>RAD4 : Radiation (4)</b> L. Liu & T. Makino	<b>HPP2 : Heat Pipe (2)</b> M. Marengo & H. Onishi
10:30	<b>8506/NCV-F-421</b> <i>Experimental and Analytical Investigation on Thermal Stratification under Natural Circulation Cooling</i> , S. Kodama, I. Kataoka, K. Yoshida, T. Suga, K. Michii, T. Fujisaki	<b>9485/NMM-G-421</b> <i>Single-Walled Carbon Nanotubes for Heterojunction Solar Cells</i> , K. Cui, T. Chiba, S. Chiashi, E. Kauppinen, S. Maruyama	<b>8973/CND-H-421</b> <i>Efficient Coupling Procedures in Steady and Unsteady Thermal Analysis</i> , M.P. Errera	<b>8811/PMD-I-421</b> <i>A Porous Media Approach for Analyzing a Spiral-Wound Reverse Osmosis Desalination Module</i> , Y. Sano, A. Horibe, N. Haruki, A. Nakayama	<b>9822/RAD-J-421</b> <i>Heat Transfer in Vacuum Thermal Insulation of Space Vehicles: An Experimental Estimate vs Theoretical Prediction</i> , A.V. Nenarokomov, L.A. Dombrovsky, I.V. Krainova, O.M. Alifanov, S.A. Budnik	<b>9141/HPP-K-421</b> <i>Investigation of Gravity Heat Pipe with Internal Helical Microfins in Different Sections</i> , G. Xin, C. Zhang, W. Du, Y. Chen, L. Cheng
10:50	<b>8239/NCV-F-422</b> <i>Interferometric Study of the Effect of Insect Screens on Free Convection at a Window Glazing</i> , D. Zalman, S.S.M. Ferooshani, D. Naylor	<b>8569/NMM-G-422</b> <i>Thermal Performance of a Propylene Glycol /Alumina Nanofluid under Internal Developing Laminar Flow</i> , P. Fariñas Alvaríño, J.M. Sáiz Jabardo, J. García del Valle, A. Soto	<b>9090/CND-H-422</b> <i>Analysis of Heat Transfer in a 2-D Cylindrical Porous Medium</i> , S.C. Mishra, S. Panigrahy	<b>9774/PMD-I-422</b> <i>Convective to Diffusive Contribution of Mass Transfer in Porous Building Materials through Peclet Number Evaluation</i> , K. Abahri, R. Belarbi, R. Bennacer, B. Liu	<b>8683/RAD-J-422</b> <i>Effect of Structure and Transfer Function on Artificial Neural Networks Used in Radiation Thermometry for Steel</i> , C. Wen, P. Fu	<b>9125/HPP-K-422</b> <i>Effect of Inclination Angle onto Heat Transport Characteristics of Bubble-Actuated Circulating Heat Pipe (Bach) Covering High-Temperature Region</i> , Y. Ji, N. Nagai, K. Takano
11:10	<b>8531/NCV-F-423</b> <i>Conjugate Natural Convection in a Porous Three-Dimensional Enclosure with a Heat Source: A Comparison Study of Different Models</i> , M. Sheremet, T. Trifonova	<b>9607/NMM-G-423</b> <i>Thermal Conductivity Measurement of Bare Carbon Nanotube Films Using the Photoacoustic Technique</i> , T.L. Bougher, C.J. Vasquez, B.A. Cola	<b>9932/CND-H-423</b> <i>Prediction of Effective Thermal Conductivity of Sintered Porous Media with the Discrete Element Method</i> , X. Ouyang, R. Xu, L. Zhang, B. Zhou, P. Jiang	<b>9248/PMD-I-423</b> <i>Discussion on Conditions of Local Thermal Non-Equilibrium Effect in Porous Media</i> , H. Xu, L. Gong, S. Huang	<b>9545/RAD-J-423</b> <i>Enhancement of Ray Tracing Method for Radiative Heat Transfer: Application to EU1 Space Instrument</i> , L. Jacques, L. Masset, G. Kerschen	<b>9076/HPP-K-423</b> <i>Oscillation-Induced Heat Transportation in a Curved Heat Transportation Pipe</i> , S. Yuguchi, H. Kusaka, K. Shiratori, G. Tanaka
11:30	<b>8499/NCV-F-424</b> <i>Natural Convective Heat Transfer from an Inclined Isothermal Square Flat Element Mounted in a Flat Adiabatic Surrounding Surface</i> , P.H. Oosthuizen	<b>9063/NMM-G-424</b> <i>Growth and Applications of Horizontally Aligned Single-Walled Carbon Nanotubes</i> , S. Chiashi, T. Inoue, K. Otsuka, D. Hasegawa, S. Maruyama	<b>9501/CND-H-424</b> <i>Study of Thermal Conductivity in Nanoporous Thin Film and Nanocomposites</i> , B. Fu, C. Bi, G. Tang	<b>9347/PMD-I-424</b> <i>Effect of Temperature and Porosity Change on Numerical Analysis of CO<sub>2</sub> Absorption Behavior in Porous Solid Sorbent by Using the Unreacted-Core Model</i> , S. Xu, T. Tanaka, T. Nakagaki	<b>9531/RAD-J-424</b> <i>Effect of Fractal-Like Aggregation on Radiative Properties and Specific Growth Rate of Chlorella</i> , Z. He, H. Qi, Q. Chen, Y. Ren, L. Ruan	<b>9442/HPP-K-424</b> <i>An Investigation of Operating Limit for Oscillating Heat Pipes</i> , Y. Ji, C. Chang, G. Li, H. Ma
11:50	<b>9319/NCV-F-425</b> <i>Interaction Effects between Surface Radiation and Sub-atmosphere Natural Convection in Multi-Heat Sources Enclosures</i> , H. Wang, C. Sun, X. Xia, H. Tan	<b>9642/NMM-G-425</b> <i>Monitoring Heat Conduction in Nanostructures with Embedded Planar Defects</i> , H. Han, Y. Kosevich, S. Volz	<b>9506/CND-H-425</b> <i>Improving Solidification Structure of Paraffin-Based Nanofluid by Surfactant and Ultrasound</i> , L. Jia, Y. Chen, S. Lei, S. Mo, Z. Liu, X. Shao	<b>9116/PMD-I-425</b> <i>Structural Optimization of Porous Flow Fields to Improve Water Management Ability of PEFC</i> , K. Suzuki, D. Sato, Y. Tabe, T. Chikahisa	<b>9126/RAD-J-425</b> <i>Measurement of Radiative Properties of Scattering and Absorbing Layered Media</i> , T. Kono, J. Yamada	<b>9476/HPP-K-425</b> <i>Experimental Investigation of Ultrasonic Effect on a Nanofluid Oscillating Heat Pipe</i> , N. Zhao, B. Fu, H. Ma
12:10	<b>8292/NCV-F-426</b> <i>Effect of Direct Liquid Cooling on Light Emitting Diode Local Hot Spots: Natural Convection Immersion Cooling</i> , E. Tamdogan, M. Arik	<b>9618/NMM-G-426</b> <i>Electrokinetic Focusing of Colloidal Particles by Joule Heating Induced Temperature Gradient in a Convergent-Divergent Microfluidic Structure</i> , Z. Ge, C. Yang		<b>9438/PMD-I-426</b> <i>Tortuosity in Porous Anode Electrode of Solid Oxide Fuel Cells Estimated from Saturation Currents and a Mass Transport Model in Comparison with a Real Micro-Structure</i> , G. Brus, K. Miyawaki, H. Iwai, M. Saito, H. Yoshida	<b>8901/RAD-J-426</b> <i>Measurement and Prediction of Absorbed Irradiating Energy Distribution in Narrow Channel of Desiccant Rotor</i> , J. Li, Y. Hamamoto, H. Mori	<b>9208/HPP-K-426</b> <i>Effects of Tube Diameter on Internal Flow Patterns and Heat Transport Performance of Parallel-Tube Heat Transport Device</i> , K. Abiko, A. Murata, H. Saito, K. Iwamoto

15th, Friday

Session 51 (08:40 - 10:40)

	Room B1	Room B2	Room C1	Room C2	Room D	Room E
	<b>PBL4 : Pool Boiling (4)</b> Y. Koizumi & G. Ribatski	<b>TPS : Two-phase, Spray/Droplet</b> M. Osakabe & F. Vera-Garcia	<b>TDY3 : Thermodynamics (3)</b> S. Fischer & Y. Miyamoto	<b>HTE7 : Heat Transfer Enhancement (7)</b> W. Liu & S. Torii	<b>MCV : Mixed Convection</b> T. Kawanami & J. Teixeira	
08:40	<b>9471/PBL-B1-511</b> <i>Interfacial Instability on Vapor Bubble Exposed to Subcooled Pool,</i> I. Ueno, T. Saiki, T. Osawa, J. Ando, T. Kaneko, C. Hong	<b>8860/TPS-B2-511</b> <i>Kinetic Modelling of Diesel Fuel Droplet Heating and Evaporation: Effects of Inelastic Collisions and Three Components,</i> S. Sazhin, I. Shishkova	<b>9827/TDY-C1-511</b> <i>Heat Transfer in Supersonic Flow over Blunt Body with Resonator of Hartmann Whistle Type,</i> N. Palchekovskaya	<b>8491/HTE-C2-511</b> <i>Entransy Balance Equation for Heat Transfer with Phase Change,</i> W. Wang, X. Cheng, X. Liang	<b>9081/MCV-D-511</b> <i>Mixed Convection Heat Transfer in a Pressurizing Confined-Jet Flow Field,</i> M. Heath, P. Woodfield, W. Hall, M. Monde	 <p><b>IHTC</b> SINCE 1951</p>
09:00	<b>9659/PBL-B1-512</b> <i>A Comparison Study of State-of-the-Art Experimental and Numerical Simulation Results Associated with Nucleate Boiling of a Single Bubble,</i> S. Jung, Y. Ose, H. Kim, T. Kunugi	<b>9815/TPS-B2-512</b> <i>Evaporation of Bi-Component Droplets in a Highly Turbulent Channel Flow,</i> A. Jean, R. Bazile, B. Ferret	<b>9243/TDY-C1-512</b> <i>Non-Equilibrium Electron Gas Thermodynamic Cycle with Nano Features,</i> K. Yazawa, A. Shakouri	<b>9231/HTE-C2-512</b> <i>Heat Transfer Measurements in a Swirl Chamber Using the Transient Liquid Crystal Technique,</i> C. Biegger, B. Weigand	<b>9524/MCV-D-512</b> <i>Numerical Study on Entropy Generation for Mixed Convection in Square Enclosures for Isothermally and Non-Isothermally Hot Bottom Wall,</i> M. Roy, T. Basak, S. Roy	
09:20	<b>8854/PBL-B1-513</b> <i>Enhanced Boiling Heat Transfer on Super-Hydrophilic Surface with Porous Copper Layer,</i> P. Xu, Q. Li, Y. Xuan	<b>9328/TPS-B2-513</b> <i>Numerical Simulation of Heat Transfer and Gas Dynamics in Warm Spray,</i> Y. Shan, F. Gong, C. Shen, L. Li, M. Lu	<b>8937/TDY-C1-513</b> <i>The Applied Condition of Lumped Parameter Method for Finite Mass Transfer Duration,</i> J. Cao, C. Liu, Y. Zhang	<b>8669/HTE-C2-513</b> <i>Impingement Cooling with Spent Flow in the Blade Leading Edge Using Double Swirl Chambers,</i> G. Lin, K. Kusterer, D. Bohn, T. Sugimoto, R. Tanaka, M. Kazari	<b>9297/MCV-D-513</b> <i>Experimental Investigation on Mixed Convection in Horizontal Channels Heated Below and Partially Filled with Aluminium Foam,</i> B. Buonomo, O. Manca, L. Marinelli, S. Nardini	
09:40	<b>9224/PBL-B1-514</b> <i>Enhancement of Heat Transfer at Transition and Film Boiling of Nitrogen on Spheres with Dimples and Low Conductivity Coating,</i> V. Zhukov, Y. Kuzma-Kichta, V. Lenkov, A. Lavrikov, M. Shustov	<b>8593/TPS-B2-514</b> <i>The Effect of Pulses Frequency on Flow and Heat Transfer Due to Intermittent Impinging Mist Jets,</i> M. Pakhomov, V.I. Terekhov	<b>9373/TDY-C1-514</b> <i>A Study of Macroscopic Physical Meaning of Entropy,</i> J. Wu	<b>9965/HTE-C2-514</b> <i>Experimental Study and Prediction of Film Cooling Effectiveness for a Guide Vane in Heavy Gas Turbine,</i> W. Wang, J. Gao, L. Xu, X. Shi	<b>8059/MCV-D-514</b> <i>Experimental Investigation of Mixed Convection Heat Transfer from Heated Vertical Rectangular Fin Array,</i> J. Shete, N. Sane, S. Pavithran	
10:00	<b>8941/PBL-B1-515</b> <i>Improvement of Nucleate Boiling Heat Transfer Characteristics by Using Immiscible Mixtures,</i> S. Kita, S. Onishi, Y. Fukuyama, H. Ohta	<b>9060/TPS-B2-515</b> <i>Experimental Study on Heat Transfer Characteristics of High-Velocity Circular Jet Impingement Boiling on the Nano-Characteristic Stagnation Zone,</i> Y. Li, Y. Chen, Z. Liu	<b>9414/TDY-C1-515</b> <i>Implementation of Entransy Analysis for Heat Transfer Optimization and System Design,</i> M. Sun, X. Zhang	<b>8319/HTE-C2-515</b> <i>An Investigation into Momentum and Temperature Fields of a Meso-Scale Slot Synthetic Jet for a Small Jet-to-Surface Spacing,</i> O. Ghaffari, B. Dogruoz, M. Arik	<b>9165/MCV-D-515</b> <i>Energy Conservative Dissipative Particle Dynamics Simulation of Mixed Convection in Complex Geometries with Moving Surface,</i> Z. Cao, K. Luo, H. Yi, H. Tan	
10:20	<b>8619/PBL-B1-516</b> <i>Pool Boiling Heat Transfer Enhancement by <math>\gamma</math>-Al<sub>2</sub>O<sub>3</sub>/FC-72 Nanofluids on a Smooth Surface,</i> X. Kong, J. Wei, J. Ding, Y. Zhang		<b>8483/TDY-C1-516</b> <i>Internal Symmetries, Fundamental Invariants and Convective Heat Transfer from a Rotating Disc,</i> C. Helbig, S. aus der Wiesche, I.V. Shevchuk	<b>8667/HTE-C2-516</b> <i>Transient Heat Transfer for a Twisted Plate in Forced Convection Flow of Helium Gas,</i> Q. Liu, Z. Zhao, K. Fukuda		

Session 51 (08:40 - 10:40)

15th, Friday

	Room F	Room G	Room H	Room I	Room J	Room K
	<b>NCV3 : Natural Convection (3)</b> P. Biswal & I. Kataoka	<b>NMM2 : Nano/Micro Scale Measurement and Simulation (2)</b> H. Daiguji & K. Termentzidis	<b>CND3 : Conduction (3)</b> D. Maillet & H. Nakamura	<b>PMD5 : Porous Media (5)</b> P. Jiang & K. Okazaki	<b>SAT : Spray and Atomization</b> S. Inoue & P. E. Santangelo	<b>TMG1 : Thermal Management (1)</b> L. K. Choong & T. Tomimura
08:40	<b>8565/NCV-F-511</b> <i>Large-Eddy Simulations of Plumes with and without Turbulent Diffusion Flames</i> , H. Suto, Y. Hattori	<b>8732/NMM-G-511</b> <i>The Effect of Inner Surface Roughness and Heating on Friction Factor in Horizontal Mini-Tubes</i> , L. Tam, H. Tam, A.J. Ghajar, W. Ng, C. Wu	<b>8419/CND-H-511</b> <i>Determination of Thermal Contact Resistance Coefficients through Thermo-Mechanical Simulation</i> , Y. Frekers, S. Vieler, S. van Buren, M. Deppermann, R. Kneer	<b>9617/PMD-I-511</b> <i>Influence of Porous Cathode Microstructure on Overpotential Characteristics of Solid Oxide Fuel Cells</i> , K. Miyoshi, H. Iwai, M. Kishimoto, W. Matsumoto, M. Saito, H. Yoshida	<b>8859/SAT-J-511</b> <i>Experimental and Theoretical Study on the Thermal Characteristics of Flashing Spray Cooling Using R404a</i> , Z. Zhou, B. Chen, G. Wang	<b>8847/TMG-K-511</b> <i>Thermal Performance of a Multi-Channel Heat Exchanger-Reactor</i> , X. Guo, Y. Fan, L. Luo
09:00	<b>9046/NCV-F-512</b> <i>Three-Dimensional Computational Study of Natural Convection in a Non-Uniformly Heated Vertical Open-Ended Channel</i> , O.A. Tkachenko, S. Tkachenko, V. Timchenko, J.A. Reizes, G. Yeoh, G. de Vahl Davis	<b>8543/NMM-G-512</b> <i>Temperature Dependent Thermal Transport across the Interfaces between CNT Array and Adjacent Layers</i> , Z. Wang, Y. Ma, J. Liang, D. Tang	<b>9330/CND-H-512</b> <i>High Thermal Conductivity Performance of Compressed Graphene Sheet Layers</i> , Y. Fu, X. Wang, D. Mo, S. Lu	<b>8665/PMD-I-512</b> <i>Numerical Investigation of the Flow and Temperature Uniformity in the Reactor Core of a Pebble Bed HTGR Using Porous Media Method</i> , X. Li, Q. Min, X. Wu, S. Liu	<b>9805/SAT-J-512</b> <i>Experimental Study on Heat Transfer Characteristics of Spray Cooling</i> , Ni Liu, J. Zhao	<b>8938/TMG-K-512</b> <i>Startup Characteristic of Loop Heat Pipes for Alpha Magnetic Spectrometer Cryocoolers</i> , N. Wang, Z. Cui, F. Luo, L. Cheng
09:20	<b>9291/NCV-F-513</b> <i>Comparative Study of Numerical Simulations of a 2D Buoyancy-Driven Flow in a Vertical Channel Asymmetrically Heated with or without External Domain</i> , C. Garnier, A. Sergent, Y. Fraigneau, P. Le Quere	<b>9503/NMM-G-513</b> <i>Behaviors of Gas Flow in Tree-Shaped Microchannel Networks</i> , Z. Deng, Y. Chen, C. Zhang	<b>8596/CND-H-513</b> <i>Study of Thermal Conductance in a Strip-Roll System</i> , J.-M. Buchlin, M. Delsipée, Ph. Planquart, M. Renard	<b>8763/PMD-I-513</b> <i>An Investigation of Anisotropic Structure of Wood-Derived Char Using X-Ray CT and Effect of Particle Aspect Ratio on its Gasification Reactivity</i> , T. Pattanotai, R. Nakano, H. Watanabe, K. Okazaki	<b>9821/SAT-J-513</b> <i>Experimental Investigation of Enhanced Spray Cooling on Nano- and Hybrid Micro/Nano-Structured Surfaces</i> , J. Chen, Z. Zhang, P. Jiang	<b>9354/TMG-K-513</b> <i>Preliminary Experimental Study of Start-Up Behavior in Nitrated Gravity Heat Pipe</i> , Y. Wu, Q. Meng, Y. Xiong, S. Liu, W. Cui, C. Ma, D. Li
09:40	<b>8624/NCV-F-514</b> <i>A Numerical Study of g-Jitter Effects in Cubic-Cavity Convection in Low Gravity</i> , K. Tatasumoto, H. Tanigawa, K. Hirata	<b>9453/NMM-G-514</b> <i>Numerical Study of Ethanol Reforming in Micro-Channels</i> , S. Roychowdhury, S.K. Das, T. Sundararajan	<b>8758/CND-H-514</b> <i>The Influence of Deposited Metal Material Parameters on the Heat Transfer Process and Fluid Dynamics in the Welding Pool</i> , L. Tong, J. Gu, S. Yin, L. Wang, S. Bai	<b>9837/PMD-I-514</b> <i>Surface Charge Effects on Reactive Transports in Microporous Media</i> , L. Zhang, M. Wang	<b>9481/SAT-J-514</b> <i>Thermal Behaviors of Droplet-Substrate in Thermal Spray New Applications</i> , G. Wei, L. Zheng, C. Zhao, S. Sampath	<b>9120/TMG-K-514</b> <i>Fuel Cell Co-Generation System with Loop Heat Pipe Based Thermal Control</i> , R. Singh, M. Mochizuki, Y. Saito, T. Nguyen, Z. Guo, M. Ohashi, T. Nguyen, E.B. Haghghi, V. Wuttijumnong
10:00	<b>9053/NCV-F-515</b> <i>Natural Convection in an Inclined Differentially Heated Square Cavity</i> , S. Armfield, M. Kirkpatrick, N. Williamson, W. Lin	<b>8946/NMM-G-515</b> <i>The Flow Resistance and Heat Transfer Characteristics of Micro Pin-Fins with Different Cross-Section Shapes</i> , Z. Liu, N. Guan, C. Zhang, G. Jiang	<b>8887/CND-H-515</b> <i>Two-Region Fin Model Adjacent Temperature Profile Interactions</i> , L. Desgrosseilliers, D.Groulx, M.A. White	<b>9073/PMD-I-515</b> <i>Thermal Entrance Effects in a Thermoacoustic Stacked Screen Regenerator</i> , S. Bühler, D. Wilcox, J. Oosterhuis, T. van der Meer	<b>8977/SAT-J-515</b> <i>The Effect of Liquid Mass Flow Rate on Heat Transfer for an Air-Water Atomizing Mist Jet</i> , C. Quinn, D. Murray, T. Persoons	<b>9656/TMG-K-515</b> <i>An Experimental Analysis of an Open Loop Pulsating Heat Pipe Operating with a Dielectric Working Fluid for Embedded Power Electronic Applications</i> , D. Kearney, O. Suleman, J. Griffin
10:20	<b>9747/NCV-F-516</b> <i>Natural Convection in an Open Vertical Channel with Heated Walls at high Rayleigh Number</i> , C. Daverat, Y. Li, H. Pabiou, C. Ménézo, S. Xin		<b>8444/CND-H-516</b> <i>Thermal Protection Design for Flight Data Recorders</i> , R. Amin Rana, R. Li			<b>9178/TMG-K-516</b> <i>Experimental and Theoretical Study of Steady Non-Fourier Heat Conduction in Free-Standing Gold Nanofilm</i> , H. Wang, X. Zhang, Z. Guo

# General Sessions in Parallel

15th, Friday

Session 52 (12:50 - 14:50)

	Room B1	Room B2	Room C1	Room C2	Room D	Room E
	<b>PBL5 : Pool Boiling (5)</b> C. Colin & M. Ozawa	<b>TPM1 : Two-phase/Multiphase Flow (1)</b> T. Ami & C. Y. Yang	<b>CNV1 : Convection (1)</b> S. Anouar & K. Kobayashi	<b>HTE8 : Heat Transfer Enhancement (8)</b> K. Tatsumi & V. Timchenko		
12:50	<b>8441/PBL-B1-521</b> <i>Stability and Mode Transition of Boiling on a Flat Surface,</i> J. Lu, J. Ding	<b>8955/TPM-B2-521</b> <i>R1234yf Heat Transfer Coefficient during Condensation in a Mini-Channel Multiport Tube,</i> A. Lopez-Belchi, J.R. García-Cascales, F. Vera-García, F. Illán-Gómez	<b>9942/CNV-C1-521</b> <i>Heat Transfer Performance of Finless Heat Exchanger Using Airfoil-Shaped Tubes with Extended Leading or Trailing Edge Section,</i> H. Onishi, A. Yamamoto, Y. Tada, A. Takimoto	<b>8426/HTE-C2-521</b> <i>Heat Transfer Analysis of Aluminum Honeycomb Panels Incorporating Microencapsulated PCM,</i> C. Lai, S. Hokoi	 <b>IHTC</b> SINCE 1951	 <b>IHTC</b> SINCE 1951
13:10	<b>9511/PBL-B1-522</b> <i>Boiling Heat Transfer Characteristics and Film Boiling Collapse Temperature through the Two-Dimensional Temperature Field Measurement,</i> H. Ohtake, K. Hasegawa	<b>8561/TPM-B2-522</b> <i>Flow Condensation Heat Transfer on Engineered Surfaces,</i> C. Yao, J. Alvarado, C. Marsh, B. Jones, M. Collins	<b>9230/CNV-C1-522</b> <i>Modified Endwall Fluid Flow in a Dimpled Pin Fin Array for Heat Transfer Enhancement,</i> S. Roux, G. Mahmood, J.P. Meyer	<b>9952/HTE-C2-522</b> <i>Vortex Heat Transfer Enhancement in Dimpled Channels,</i> A.I. Leontiev, S. Isaev, N. Kornev, Y. Chudnovsky, E. Hassel		
13:30	<b>10081/PBL-B1-523</b> <i>Effects of Porous SiC Deposition and High Thermal Conductive Graphene Layer on Critical Heat Flux,</i> H. Seo, I. Bang	<b>10072/TPM-B2-523</b> <i>Gallium Melting in a Rectangular Box,</i> O. Ben-David, A. Levy, B. Mikhailovich, A. Azulay	<b>8698/CNV-C1-523</b> <i>Heat Transfer and Pressure Drop of Serrated Finned Tube Banks in Forced Convection,</i> A. Yamada, H. Nakaharai, S. Goto, M. Oda	<b>8765/HTE-C2-523</b> <i>A Numerical-Experimental Study of Heat Transfer Enhancement Using Unconfined Steady and Pulsating Turbulent Air Jet Impingement,</i> S. Alimohammadi, T. Persoons, D.B. Murray		
13:50	<b>8856/PBL-B1-524</b> <i>Boiling on an Isolated Nucleation Site Close to CHF Conditions,</i> O. Kannengieser, W. Bergez, C. Colin	<b>8609/TPM-B2-524</b> <i>Turbulent Mass Transfer Model to Predict Wax Deposition in Multiphase Flow in Pipelines,</i> F. Brum, S. Stuckenbruck, A. Nieckele	<b>8338/CNV-C1-524</b> <i>The Influence of Surface Roughness on Heat Transfer in the Transitional Flow Regime,</i> M. Everts, S. Ayres, F. Mulock Houwer, C. Vanderwagen, N.M. Kotze, J.P. Meyer	<b>8983/HTE-C2-524</b> <i>Applying Phase Separation of a Solvent System with a Lower Critical Solution Temperature for Enhancement of Cooling Rates by Forced and Free Convection,</i> A. Ullmann, I. Lipstein, N. Brauner		
14:10	<b>9423/PBL-B1-525</b> <i>Effect of Kelvin-Helmholtz Instability on CHF for Thin Flat Plate Heater,</i> J. Lee, W. Lee	<b>9066/TPM-B2-525</b> <i>Numerical Study of Slug Flow Heat Transfer in Microchannels,</i> T. Bandara, S.C.P. Cheung, G. Rosengarten	<b>9092/CNV-C1-525</b> <i>High-Order Numerical Implementation of Surface Radiation for the Coupling with Natural Convection in an Air-Filled Square Cavity,</i> R. Knikker, S. Xin, R. Dai	<b>9271/HTE-C2-525</b> <i>Unravelling Convective Heat Transfer in the Rotated Arc Mixer,</i> M. Speetjens, Ö. Baskan, G. Metcalfe, H. Clercx		
14:30	<b>9592/PBL-B1-526</b> <i>Crisis in Pool Boiling: Alternative to Hydrodynamic Approach,</i> V.V. Yagov	<b>9192/TPM-B2-526</b> <i>Irreversibility Analysis of an Evaporator for Use in a Micro-Refrigeration Cycle,</i> G. Türkakar, T. Okutucu-Özyurt				

Session 52 (12:50 - 14:50)

15th, Friday

	Room F	Room G	Room H	Room I	Room J	Room K
	<b>OPT : Optimal Control/Theory</b> T. Hatakeyama & Z. Li	<b>NMM3 : Nano/Micro Scale Measurement and Simulation (3)</b> W. Ma & K. Takahashi	<b>CND4 : Conduction (4)</b> D. Groulx & S. Kimijima	<b>PMD6 : Porous Media (6)</b> N. Haruki & P. Vadasz	<b>CMB1 : Combustion (1)</b> Y. Deguchi & Y. Fukuyama	<b>TMG2 : Thermal Management (2)</b> I. Satoh & J. Shi
12:50	<b>9477/OPT-F-521</b> Heat Conduction Optimization of Anisotropic Composite Material Using Simulated Annealing Algorithm, C. Yuan, L. Li, X. Luo	<b>9459/NMM-G-521</b> Investigation of Thermal Resistance and Heat Conduction at $\alpha$ -Quartz-Liquid Alkane Interfaces Using Non-equilibrium Molecular Dynamics Simulations, H.K. Chilukoti, G. Kikugawa, M. Shibahara, T. Ohara	<b>9137/CND-H-521</b> Experimental Investigation on Unsteady Conjugate Heat Transfer Caused by Flow Turbulence, H. Nakamura, N. Shiibara, S. Yamada	<b>8742/PMD-I-521</b> A Mathematical Model for a Boiling Process of Food Stuff Based on the Porous Media Theory, T. Yoshinaga, T. Hara	<b>8589/CMB-J-521</b> Effects of Local Flame Displacement Velocity on Turbulent Burning Velocity for Stoichiometric Hydrogen-Oxygen-Dilution Gas Mixtures, M. Nakahara, F. Abe, K. Tokunaga	<b>8553/TMG-K-521</b> Effect of Electrode Configuration on the Heat Transfer Performance of a Concentrated Heat Source, C. Chen, I. Chen, C. Wang
13:10	<b>9670/OPT-F-522</b> Adjoint-Based Optimum Thermal Control of Pulsed Laser Diodes, K. Morimoto, Y. Suzuki	<b>9136/NMM-G-522</b> Gas Molecular Momentum Exchange Characteristics in Nanopores, Q. Liu, Z. Chai	<b>9556/CND-H-522</b> Conjugate Cooling of Protruding Heaters in a One Side Closed Duct by Impinging Flow, I. de Marchi Neto, C. Altemani	<b>9730/PMD-I-522</b> Direct-Inverse Analysis of Heat Transfer in Micro-Models of Porous Media, C.P. Naveira-Cotta	<b>9097/CMB-J-522</b> Hydrogen Combustion in the Turbulent Boundary Layer on a Permeable Surface, V. Lukashov, V. Terekhov	<b>8807/TMG-K-522</b> Thermal Contact Resistance of Gamma-Irradiated Metallic Foil and Carbon Nanotube Thermal Interface Materials, R.A. Sayer, S.L. Hodson, T.P. Koehler, S.E. Swanson, T.S. Fisher
13:30	<b>8602/OPT-F-523</b> Virtual Distribution and Mixing Entransy Analysis Method, X. Qian, Z. Li, Z. Li, Z. He	<b>9429/NMM-G-523</b> Evaporation Dynamics of Microdroplets, M. Matsumoto, J. Tatsumi, M. Hosoda	<b>9383/CND-H-523</b> Thermal Management Characteristics of Lithium-Ion Batteries According to the Arrangement, H. Lee, H. Son, I. Park	<b>8848/PMD-I-523</b> Modelling Heat and Mass Transfer in Porous Material during Pyrolysis Using Operator Splitting and Dimensionless Analysis, J. Maes, A. Muggeridge, M. Jackson, M. Quintard, A. Lapene	<b>8744/CMB-J-523</b> Effect of Ambient Pressure on Soot Formation in Oxy-Fuel Spray Jet Flame, T. Kitano, J. Nishio, R. Kurose, S. Komori	<b>8824/TMG-K-523</b> Experimental Investigation of Thermal Performance of Phase Change Material Based Composite Heat Sink with Discrete Heat Sources, Srikanth R., C. Balaji
13:50	<b>9018/OPT-F-524</b> Multi-Objective Optimization of Vortex Generators Position and Angles in Fin-Tube Compact Heat Exchanger at Low Reynolds Number Using Neural Network and Genetic Algorithm, L. Salviano, D. Dezan, J. Yanagihara	<b>9391/NMM-G-524</b> Heat Transfer across a Confined Thin Film with Structural or Mass Disorder: A Molecular Dynamics Study, C. Shao, H. Bao	<b>9253/CND-H-524</b> Heat Transfer Analysis in Human Skin Subjected to Flash Fire: Investigation of Dual Phase Lag Phenomenon, U. Raj, P. Talukdar, A. Das, A. Samy	<b>9108/PMD-I-524</b> Towards a General Spatial Averaging Procedure for Multi-Scale Flow Modeling in Heat Transfer Devices with Repetitive Fin Structures, G. Buckinx, M. Baelmans	<b>9464/CMB-J-524</b> Role of CO <sub>2</sub> in the Soot Formation and Reduction Mechanisms in CH <sub>4</sub> Flat Flame Doped with Toluene under O <sub>2</sub> /CO <sub>2</sub> Environments, H. Watanabe, S. Sugai, K. Okazaki	<b>9032/TMG-K-524</b> Study on Heat Transfer Characteristics of Miniature/Micro Pins, N. Matsumoto, T. Tomimura, Y. Koito
14:10	<b>8411/OPT-F-525</b> Study on Model Predictive Control to Minimize Temperature Change at Multi Positions in Vertical Plate with Varying Heat Generation, S. Hirasawa, T. Kawanami, K. Shirai	<b>9000/NMM-G-525</b> Kinetic Study of Li <sub>2</sub> SO <sub>4</sub> .H <sub>2</sub> O Dehydration Using Microscopy and Modeling, S. Lan, H. Zondag, C. Rindt	<b>9444/CND-H-525</b> Numerical Simulation on Coupling of Heat Conduction and Curing of Polymer Composite with Finite Volume Method, Y. Yu, P. Ming, Y. Jiao, X. Zhang	<b>9217/PMD-I-525</b> Simulation of Multiphase Flow and Heat Transfer in Porous Media Using Lattice Boltzmann Method, D. Wang, J. Shen, Z. Liu, W. Liu	<b>9830/CMB-J-525</b> Relaxation Phenomena in Reaction-Diffusion Processes, J. Ramos	<b>9071/TMG-K-525</b> Analysis of Space Environmental and ISS Parameters on the Thermal Behavior of AMS, Z. Cui, K. Wang, N. Wang, J. Song, Q. Sun, L. Cheng
14:30	<b>9168/OPT-F-526</b> Numerical Topology Optimization of Heat Sinks, T.V. Oevelen, M. Baelmans	<b>9418/NMM-G-526</b> MD Simulation on Cryogenic Sublimation Dynamics of Dry Ice Nanoparticles, Y. Chen, L. Chen, X. Zhang	<b>8813/CND-H-526</b> The Mean Free Path of Gas Molecules in Confined Nano-Porous Structures, G. Wei, L. Wang, X. Du, Y. Yang		<b>9466/CMB-J-526</b> Alternating Currents Enhanced PAHs Formation in Nonpremixed Jet Flames, Y. Xiong, M. Cha, S. Chung	<b>9461/TMG-K-526</b> Characterization of Valveless Piezoelectrically-Actuated Micropumps with Novel Diffuser Elements, L. Ehrlich, J. Punch, N. Jeffers, J. Stafford

# General Sessions in Parallel

15th, Friday

Session 53 (15:10 - 17:10)

	Room B1	Room B2	Room C1	Room C2	Room D	Room E
	<b>PBL6 : Pool Boiling (6)</b> I. C. Bang & K. Suzuki	<b>TPM2 : Two-phase/Multiphase Flow (2)</b> H. Nagano & S. Sazhin	<b>CNV2 : Convection (2)</b> K. Ichimiya & H. Pabiou	<b>HTE9 : Heat Transfer Enhancement (9)</b> T. Kawaguchi & A. Ullmann		
15:10	<b>8964/PBL-B1-531</b> <i>Enhancement of Nucleate Pool Boiling Heat Transfer Using Water on Titanium Oxide and Silicon Oxide Surface,</i> L. Fan, J. Li, D. Li, L. Zhang, Z. Yu, Y. Hu	<b>8793/TPM-B2-531</b> <i>Regimes of Nonisothermal Scavenging of Soluble Gaseous Pollutants by Rain in the Atmosphere with Non-Uniform Concentration and Temperature Distributions,</i> T. Elperin, A. Fominykh, B. Krasovtsov	<b>9209/CNV-C1-531</b> <i>Turbulent Thermal Convection in an Enclosure with Differently Inclined Horizontal Wall: A LES study,</i> S. Kenjereš	<b>9839/HTE-C2-531</b> <i>Effect of Surface Orientation on the Rewetting Phenomena during Jet Impingement Cooling,</i> A. Chitrnanjan, R. Kumar, A. Gupta, B. Chatterjee	 <b>IHTC</b> SINCE 1951	 <b>IHTC</b> SINCE 1951
15:30	<b>9632/PBL-B1-532</b> <i>Enhancement of Nucleate Pool Boiling Heat Transfer Using Water on Titanium Oxide and Silicon Oxide Surface,</i> S. Das, S. Bhaumik	<b>8935/TPM-B2-532</b> <i>Experimental Study on the Temperature and Pressure Distribution of Steam Jet in Subcooled Water Flow in a Restricted Channel,</i> X. Zong, T. Li, X. Yang, W. Han, J. Liu, J. Yan	<b>9593/CNV-C1-532</b> <i>Modeling the Thermal Environment in an Operating Room,</i> S. Teixeira, N. Rodrigues, A. Miguel, R. Oliveira, J. Teixeira, J. Baptista	<b>9448/HTE-C2-532</b> <i>Carbon Nanotubes as Thermal Interface Material Enhanced with Liquid Metal Alloy,</i> Y. Ji, G. Li, C. Chang, Y. Sun, H. Ma		
15:50	<b>9551/PBL-B1-533</b> <i>Modeling of Boiling Heat Transfer from Microstructured Surfaces,</i> A. Ustinov, J. Mitrovic	<b>9113/TPM-B2-533</b> <i>Numerical Investigation of Adiabatic Growth and Detachment of Gas/Vapor Bubbles Injected from a Submerged Orifice at Various Surface Inclinations,</i> A. Georgoulas, M. Marengo	<b>8429/CNV-C1-533</b> <i>Fluid Flow and Heat Transfer in Microchannel Heat Sinks with Zigzag Longitudinal Fins,</i> G. Davaa, O. Jambal, Y. Jaluria	<b>8700/HTE-C2-533</b> <i>Application of Heat Transfer Technology with Phase Change Inhibited to Integrated Heat Deriving and Radiating Systems,</i> S. Lee, B. Wu		
16:10	<b>9004/PBL-B1-534</b> <i>Study of the Combined Effects of Liquid Properties and Surface Micropatterning on Pool Boiling Heat Transfer,</i> E. Teodori, A. Moita, A. Moreira	<b>9456/TPM-B2-534</b> <i>Melting, Solidification and Coalescence of Metallic Particles Invoked by Laser Heating,</i> R. Dayal, T. Gambaryan-Roisman	<b>9355/CNV-C1-534</b> <i>Study on Period Flow and Heat Transfer Characteristics for Backward-Facing Step in Transition Flow,</i> M. Zhong, S. Zou, Y. Yuan, G. Xi	<b>9148/HTE-C2-534</b> <i>Geometric Optimisation of Multi-Layered Microchannel Heat Sink with Different Flow Arrangements,</i> O.O. Adewumi, T. Bello-Ochende, J.P. Meyer		
16:30	<b>9044/PBL-B1-535</b> <i>An Experimental Study of Carbon Nanotube Coatings for Pool Boiling Heat Transfer Enhancement,</i> J. Ho, K. Leong, C. Yang, I. Pranoto			<b>8244/HTE-C2-535</b> <i>Microscopic Mechanism of Cavitation Enhanced Heat Transfer: A Modeling Study,</i> B. Liu, J. Cai, X. Huai		
16:50	<b>8805/PBL-B1-536</b> <i>Influence of Gap Size on Boiling and Condensation Co-Existing Phase Change Heat Transfer in Small Confined Space,</i> G. Zhang, Z. Liu, L. Wang, L. Huang			<b>8900/HTE-C2-536</b> <i>Influence of Several Parameters on Heat Storage and Release Enhancement Behavior of Latent Heat Storage Paraffin with Aluminum Fiber Materials,</i> N. Haruki, A. Horibe, Y. Sano, K. Hachiya		

Session 53 (15:10 - 17:10)

15th, Friday

	Room F	Room G	Room H	Room I	Room J	Room K
	<b>NMT : New Materials</b> S. Maruyama & S. Volz	<b>NMM4 : Nano/Micro Scale Measurement and Simulation (4)</b> S. Maruyama & M. Shibahara	<b>FLM : Film</b> K. Hanamura & A. Komiya	<b>PMD7 : Porous Media (7)</b> G. Inoue & T. van der Meer	<b>CMB2 : Combustion (2)</b> J. Ramos & H. Watanabe	<b>TMG3 : Thermal Management (3)</b> K. Morimoto & R. Sayer
15:10	<b>8664/NMT-F-531</b> <i>Enhanced Thermal Conductivity of Epoxy Composites with Hybrid Carbon-Based Functional Materials and Nano-Copper Particles,</i> P. Zhang, Q. Li, Y. Xuan	<b>9922/NMM-G-531</b> <i>Adsorption/ Desorption and Transport of Water in Two-Dimensional Hexagonal Mesoporous Silica,</i> H. Daiguji, K. Yamashita, H. Yanagihara, A. Endo	<b>9254/FLM-H-531</b> <i>Thin Film Evaporation in Microchannel Membrane for Solar Vapor Generation,</i> A.A. Alshegri, T. Zhang	<b>9359/PMD-I-531</b> <i>CO<sub>2</sub> Trapping Phenomena in Porous Media of Geological Storage by Lattice Boltzmann Method,</i> S. Uemura, A. Noda, S. Tsushima, S. Hirai	<b>9164/CMB-J-531</b> <i>A Numerical Study on the Combustion and Heat Transfer Characteristics of a Spark Ignited Engine Applying Heat Insulation Coatings to the Combustion Chamber Wall Surface,</i> A. Kikusato, J. Kusaka, Y. Daisho	<b>8886/TMG-K-531</b> <i>Solar PV Passive Temperature Control Using Phase Change Materials,</i> D. Groulx, P.H. Biwole
15:30	<b>9153/NMT-F-532</b> <i>Radiative Properties of a Nanofluid Mixture,</i> J. Eggers, S. Kabelac	<b>9179/NMM-G-532</b> <i>Series Study on the Thermal Transport Properties of Nanofilm by Applying Transient Thermoreflectance Method,</i> W. Ma, X. Zhang, K. Kubo, M. Kohno, Y. Takata, T. Ikuta, K. Takahashi	<b>8899/FLM-H-532</b> <i>Measurement of Liquid Film Thickness Formed between Colliding Twin Bubbles during Coalescence Process,</i> T. Morokuma, Y. Utaka	<b>8734/PMD-I-532</b> <i>Numerical Study of Physical Characteristic of Porous Media Containing Methane Hydrate Using Pore Network Model,</i> J. Wang, Y. Song, J. Zhao, D. Liu, L. Yang, Z. Zhu, X. Chen	<b>9980/CMB-J-532</b> <i>On Heat Transfer in the Stabilization Zone of an Attached Methane Flame in Air Coflow,</i> S. Lamige, C. Galizzi, M. Kühni, K.M. Lyons, F. André, D. Escudié	<b>9200/TMG-K-532</b> <i>Photonic Structures Based Thermal Rectification: Toward Tunable Radiative Thermal Rectifiers,</i> E. Nefzaoui, Y. Ezzahri, K. Joulain, J. Drevillon
15:50	<b>8890/NMT-F-533</b> <i>Thermal and Electromagnetic Modeling of a Multi-Layer PCs Thermal Protection Structure for Laser Ablation,</i> H. Zhang, Y. Zhao, H. Yu, C. Qiu, Y. Li	<b>8343/NMM-G-533</b> <i>Thermal Conductivity of Amorphous/ Crystalline Silicon Nanowires and Superlattices,</i> K. Termentzidis, E. Blandre, A. France-Lanord, V. Jean, S. Merabia, T. Albaret, D. Lacroix	<b>9537/FLM-H-533</b> <i>Evaporation, Dynamics and Crisis Phenomena in Thin Liquid Films Sheared by Gas in a Narrow Channel,</i> O. Kabov, D. Zaitsev, Y. Kabova, V. Cheverda	<b>9025/PMD-I-533</b> <i>Numerical Modeling of Three Dimensional Heat Transfer and Fluid Flow through Interrupted Plates Using Unit Cell Scale,</i> C. Zhang, T. Simon, P. Li, J. Van de Ven	<b>9417/CMB-J-533</b> <i>CFD Analysis of Stationary Fire Whirls and Moving Fire Whirls Crossing Over Barriers in Urban Fires,</i> K. Satoh, N. Liu, X. Xie, W. Gao	<b>9251/TMG-K-533</b> <i>The Design &amp; Characterization of a Miniature Shape Memory Alloy Valve for Passive Thermal Management,</i> A. Waddell, J. Punch, J. Stafford, N. Jeffers
16:10	<b>9390/NMT-F-534</b> <i>The Experimental Investigation of Modified Surface Effect on Microbial Fouling Characteristics,</i> Z. Xu, Z. Liu, L. Wu, Y. Zhang, Z. Zhang	<b>8885/NMM-G-534</b> <i>Synthesis and Thermal Conductivity of Monodisperse Hollow Silica Nanospheres,</i> T. Gao, B.P. Jelle, L.I. Sandberg, A. Gustavsen	<b>9565/FLM-H-534</b> <i>Modeling of Nanoporous Membranes for High Flux Thin Film Evaporation,</i> Z. Lu, S. Narayanan, D. Hanks, R. Raj, R. Xiao, D. Antao, E.N. Wang	<b>9937/PMD-I-534</b> <i>Performance of a Drainage Trench Employed as Ground Heat Exchanger,</i> M. Bottarelli, H. Fujii, V. Di Federico	<b>9387/CMB-J-534</b> <i>The Importance of Detail Reaction Mechanisms for Temperature Field Predictions of Compartment Fires,</i> C. Yuen, G. Yeoh, R.K.K. Yuen, V. Timchenko	<b>8913/TMG-K-534</b> <i>Numerical Investigation of Thermal Management for Kilowatt Vanadium Redox Flow Batteries,</i> B. Zhang, Y. Lei, B. Bai, T. Zhao
16:30	<b>9823/NMT-F-535</b> <i>Experimental Analysis of High Weber Number Drop Impact onto Super-Hydrophobic and Hydrophobic Surfaces,</i> F. Villa, C. Antonini, I. Roisman, M. Marengo	<b>8366/NMM-G-535</b> <i>Monte Carlo Simulations of the Thermal Properties of Silicon and Germanium Mesoporous Nanostructures,</i> V. Jean, S. Fumeron, K. Termentzidis, D. Lacroix	<b>9671/FLM-H-535</b> <i>Marangoni Effect in Heated Falling Liquid Film on a Vertically Confined Plate,</i> F. Zhang, Y. Ding, X. Zhu, H. Wang, Q. Liao, G. Song		<b>9238/CMB-J-535</b> <i>Experimental and Numerical Study of a Cooled Rocket Combustion Chamber,</i> L. Dorey, P. Grenard, L. Matuszewski, L. Selle	<b>9311/TMG-K-535</b> <i>An Entransy Dissipation-Based Method for Optimal Control of Variable Water Volume Heat Exchanger Networks,</i> Q. Chen, Y. Wang
16:50	<b>9482/NMT-F-536</b> <i>Superhydrophobicity or Icephobicity for an Effective Icing Mitigation Strategy?,</i> C. Antonini, A.Amirfazli, M. Marengo				<b>8615/CMB-J-536</b> <i>Research on Combustion Process in a Novel Microcombustor with Block Inserts,</i> W. Yang, D. Jiang, K. Chua, K. Chua	

## Recipient of the 2014 William Begell Medal



**Jing Liu**

Professor, Technical Institute of Physics and Chemistry,  
Chinese Academy of Sciences

Professor, Department of Biomedical Engineering, Tsinghua University

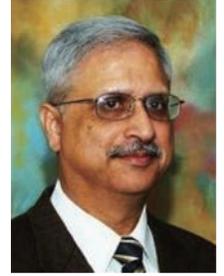
Dr. Jing Liu has been a professor at Technical Institute of Physics and Chemistry, Chinese Academy of Sciences since July 1999 and a professor at Tsinghua University since August 2008. Dr. Liu works intensively at the interdisciplinary areas of thermal sciences. He has made significant contributions to the bioheat transfer area through numerous conceptual innovation, methodology development and technical inventions spanning from high- to low-temperature medicines. Particularly, he proposed the concept of Nano-Cryosurgery and alkali metal hyperthermia therapy for a better targeted ablation of tumor. Through 15 years' continuous efforts, his invention on the Combined Cryosurgical/Hyperthermia System for Tumor Treatment has been translated into clinical trial. Dr. Liu's another noteworthy contribution is initiating the Liquid Metal Printed Electronics from which electronic circuit, sensor, conductive film or 3D metal objects can be printed out in a moment.

Dr. Liu is a recipient of 2010-2011 Best Paper of the Year Award from ASME Journal of Electronic Packaging, the National Science Fund for Distinguished Young Scholars of China, National Science and Technology Award for Chinese Young Scientist, Mao Yi-Sheng Science and Technology Award for Beijing Youth. He has graduated more than 50 Ph.D. or Master degree students and received five times highest teaching award from the CAS.

---

The William Begell Medal, For Excellence in Thermal Science and Engineering is being established in 2010 by **Begell House Inc.** The medal will be awarded to an individual, from among those selected to deliver Keynote lectures at the current IHTC Conference, who is held in high regard by the heat transfer community for his/her contributions an excellence in thermal science and technology and whose IHTC Keynote paper is judged to make a profound contribution to the thermal science and engineering literature.

## Recipient of the 2014 Donald Q. Kern Award



**Sumanta Acharya**

L. R. Daniel Professor and Fritz & Francis Blumer Professor,  
Department of Mechanical Engineering, Louisiana State University  
Program Director, National Science Foundation

Sumanta Acharya holds the L. R. Daniel professorship and the Fritz & Francis Blumer professorship in the department of Mechanical Engineering at Louisiana State University (LSU). He is the founding director of the Center for Turbine Innovation and Energy Research which focuses on energy generation and propulsion research. Since September 2010 he is on assignment (2010-2014) from LSU at the National Science Foundation as the Program Director of the Thermal Transport Program in the Engineering Directorate.

Professor Acharya received his undergraduate degree from the Indian Institute of Technology in Kharagpur, and his Ph.D. from the University of Minnesota. Following his Ph.D., he joined the faculty of mechanical engineering at LSU. Prof. Acharya has developed a multifaceted research program in heat transfer with a foci on gas turbine heat transfer and computational heat transfer. His scholarly contributions include mentoring nearly 85 post-doctoral researchers and graduate students, and publishing nearly 190 refereed journal articles and book chapters and over 230 refereed conference /proceedings papers. Prof. Acharya's research has been continuously supported by federal funding agencies and industries with nearly 25 million dollars of funded research during his LSU career, and includes major efforts in the area of gas turbine aerodynamics and heat transfer, combustion, computational fluid dynamics and fundamental heat transfer.

---

The Donald Q. Kern Award is bestowed in recognition of the expertise in a given field of heat transfer, transport phenomena, and energy processes. Special emphasis is given to contributions that have significant practical applications. Established in 1973 by the Heat Transfer and Energy Conversion Div., now known as the Transport and Energy Processes Div. of **AIChE**, the award honors Donald Q. Kern, a pioneer in the field of process heat transfer, and commemorates his outstanding contributions as a researcher, educator, author, and practicing engineer. The Award is sponsored by **Dana Holding Corporation**.

## Recipient of the 2012 Luikov Medal



**Nobuhide Kasagi**

Professor Emeritus, The University of Tokyo  
Principal Fellow, Japan Science and Technology Agency

Dr. Kasagi has been a faculty member at the University of Tokyo since he received Ph.D. in mechanical engineering in 1976. He has made fundamental and applied research on fluid mechanics and heat transfer with his unique synergetic experimental and computational methodology. In his early work on turbulent heat transfer, he visualized for the first time the thermal streaky pattern, and later developed a 3-D particle tracking technique and a direct numerical simulation method. These new tools enabled him to discover coherent turbulence motions and establish the data bases of various turbulent transport phenomena, which have been used as a standard benchmark by himself and many other workers in the world. His pioneering work was further extended to smart control of turbulent transport, two-phase flows with particles/bubbles/cells, micro-scale thermal and fluid systems. He has also conducted national projects on gas turbines, solid oxide fuel cells, micro heat exchangers, and small-scale distributed energy systems.

He has actively devoted himself to various professional services such as an organizer of many international conferences and an editorial member for several international journals, e.g., Editor-in-Chief of the Int. J. Heat & Fluid Flow from 1993-2012. He has been recognized by many awards and honors such as the William Begell Medal, the Aurel Stodola Medal, and Fellow of the Royal Swedish Academy of Sciences, the Royal Academy of Engineering, the Engineering Academy of Japan, the ASME, and the JSME.

---

The Luikov Medal is awarded by **the International Centre for Heat and Mass Transfer (ICHMT)** to one individual every two years for outstanding contributions to the science and art of heat and mass transfer and for activities in international scientific cooperation in conjunction with ICHMT programs. The award is dedicated to Aleksey Vasilievich Luikov, a renowned Russian pioneer in the field of heat transfer.

## Recipient of the Nukiyama Memorial Award 2014



**Gang Chen**

Carl Richard Soderberg Professor of Power Engineering  
Head of the Department of Mechanical Engineering  
Massachusetts Institute of Technology

Dr. Gang Chen is the Carl Richard Soderberg Professor of Power Engineering and Head of the Department of Mechanical Engineering at Massachusetts Institute of Technology (MIT). He received his B.S. and M.S. degrees from Huazhong University of Science and Technology (HUST), China, in 1984 and 1987, respectively. He obtained his Ph.D. degree from Mechanical Engineering Department, UC Berkeley, in 1993 under the supervision of the Chancellor Chang-Lin Tien. He was the first holder of the Warren and Towneley Rohsenow Professorship at MIT (2006-2009).

Dr. Chen's research interests center on nanoscale transport and energy conversion phenomena, and their applications in energy storage and conversion, and thermal management. He has made seminal contributions to the understanding of reduced thermal conductivity in nanostructures structures such as quantum wells and superlattices via both modeling and experimental studies. He and his collaborators exploited the unique nanoscale heat conduction physics to advance the field of thermoelectric materials and their applications in solar thermal and waste heat recovery. His group also developed strategies to engineer nanostructures to achieve high thermal conductivities, including the development and demonstration that polymer nanofibers can be more thermally conductive than most metals, and additives to liquids which significantly improve their thermal conductivity.

---

The Nukiyama Memorial Award has been established by **the Heat Transfer Society of Japan** in 2012 to commemorate the land-mark contributions by Shiro Nukiyama as an outstanding heat transfer scientist. Nukiyama addressed the challenges of the boiling phenomena and published an epoch-making paper, well known as the Nukiyama curve (boiling curve). The Nukiyama Memorial Award shall be bestowed to a scientist, preferably under 50 years of age, every two years in the field of Thermal Science and Engineering.

# Exhibitors



Established in 1984, Software Cradle has been dedicated to providing a consistent service including CFD software development, sales, technical support, and education to our customers. As our unique service, we are offering various types of products, holding regular workshops /seminars, and developing customized products corresponding to the individual needs of the customers.

Software Cradle Co., Ltd.

<http://www.cradle-cfd.com/>



We have devoted ourselves with unbridled passion to overcoming the ever-evolving challenges of air to become the leading manufacture of air conditioning equipment. Leveraging our unique cutting-edge technology, we deliver outstanding products and system solutions to ensure comfortable and sustainable living environment for all people & regions of the world.

Daikin Industries, Ltd.

<http://www.daikin.co.jp/>



The BEGELL DIGITAL LIBRARY (BDL) is a comprehensive, full-text database providing the latest research data and information across a broad spectrum of engineering and biomedical sciences and applied works. The BDL contains professional peer-reviewed journals, major engineering references, International Centre for Heat & Mass Transfer conference proceedings, eBooks and more.

Begell House, Inc.

[www.dl.begellhouse.com](http://www.dl.begellhouse.com)



With "Expanding the Ultimate in Technology" as one of our core values, Fujikin has not only acquired a reputation as a leading manufacturer of specialized valves in semiconductor manufacturing, aerospace & nuclear, but has also become renowned as R&D-based manufacturer of precision valves and ultra-precise electronic flow control systems.

Fujikin Incorporated

<http://www.fujikin.co.jp/>



DENSO is a leading supplier of advanced automotive technology systems and components for all the world's major automakers.

DENSO CORPORATION

[www.globaldenso.com/en/](http://www.globaldenso.com/en/)



From a wide variety of plants, energy systems, machinery and facilities that support industry and society, to simpler facilities closer to our daily lives, IHI is continuing to broaden this product lineup in all areas of human activity from the Earth to outer space.

IHI Corporation & IHI Plant & Construction Co., Ltd. <http://www.ihico.jp/en/>



LEA Co., Ltd. provides innovative Al vapor chamber heat sink applies condenser technology by using refrigerant as the working fluid to give a lighter, smaller and more efficient heat exchange system. LEA delivers heat exchangers for a wide variety of applications with this unique aluminum vapor chamber technology.

Leading Edge Associates Co., Ltd.

<http://www.alvc.jp/>

# Japan & Kyoto



From the "Choju Giga" (The Scrolls of Frolicking Animals)  
handed down for centuries at Kozanji Temple.

# Japan & Kyoto

## JAPAN

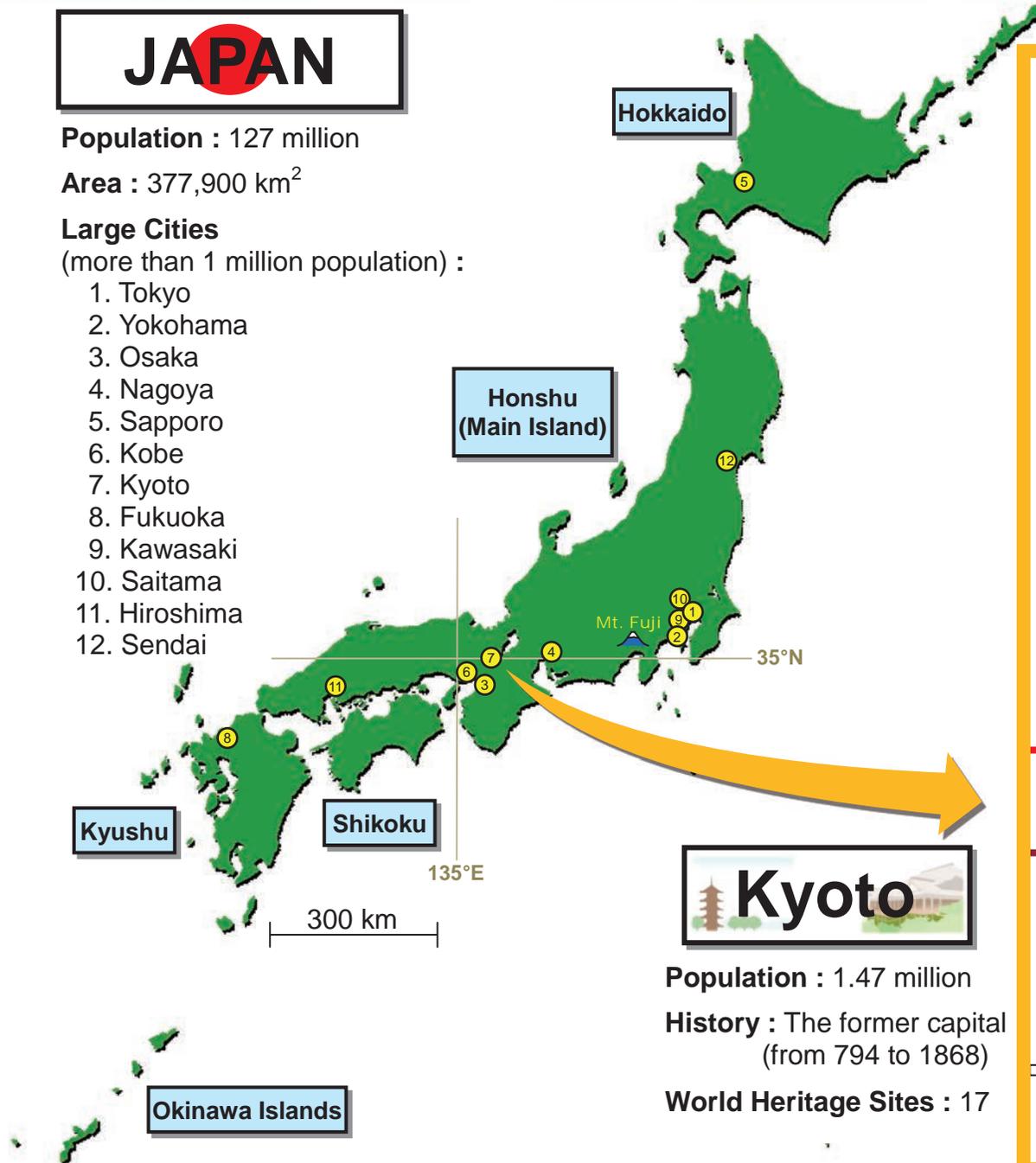
**Population** : 127 million

**Area** : 377,900 km<sup>2</sup>

### Large Cities

(more than 1 million population) :

1. Tokyo
2. Yokohama
3. Osaka
4. Nagoya
5. Sapporo
6. Kobe
7. Kyoto
8. Fukuoka
9. Kawasaki
10. Saitama
11. Hiroshima
12. Sendai

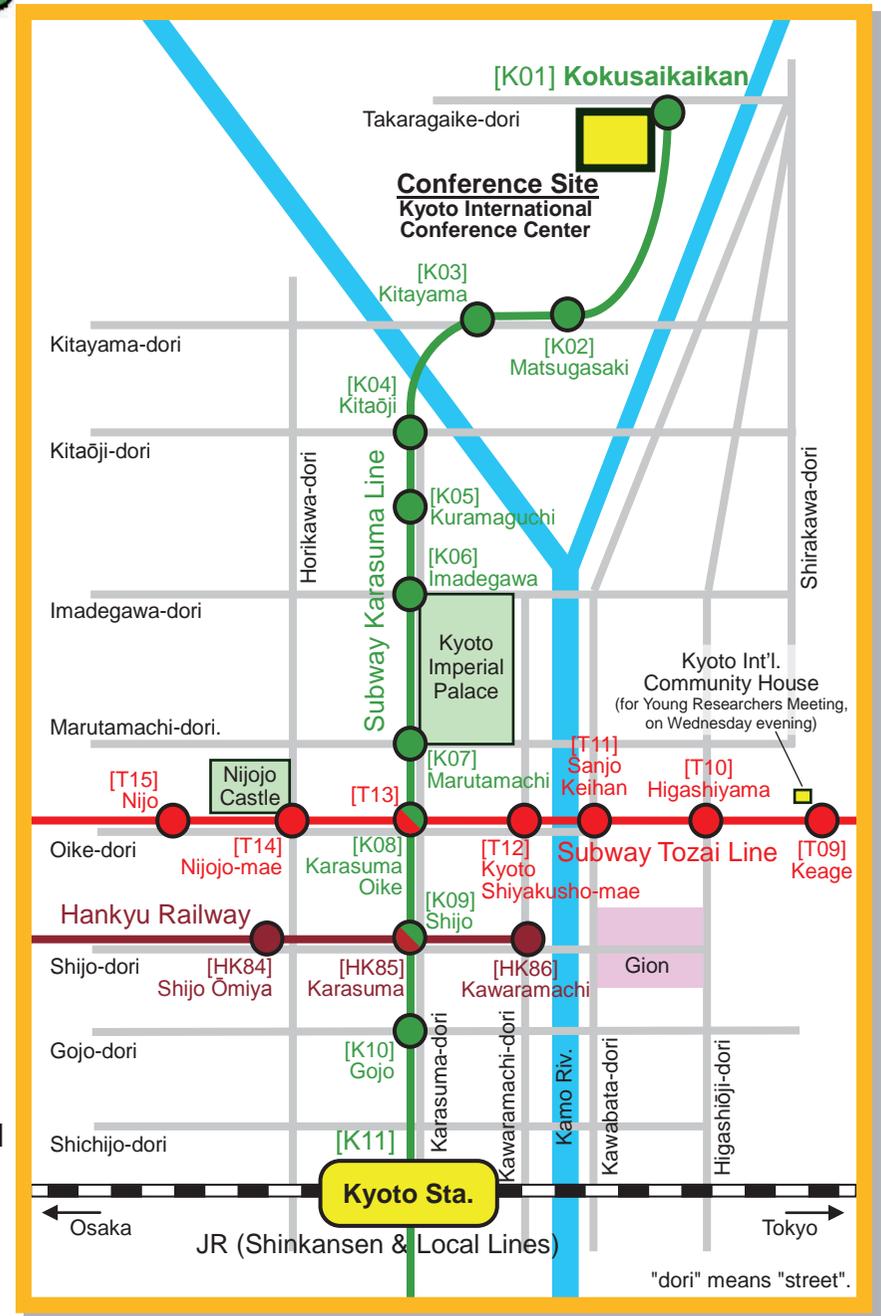


## Kyoto

**Population** : 1.47 million

**History** : The former capital  
(from 794 to 1868)

**World Heritage Sites** : 17



## Education System in Japan

The following is a typical example:

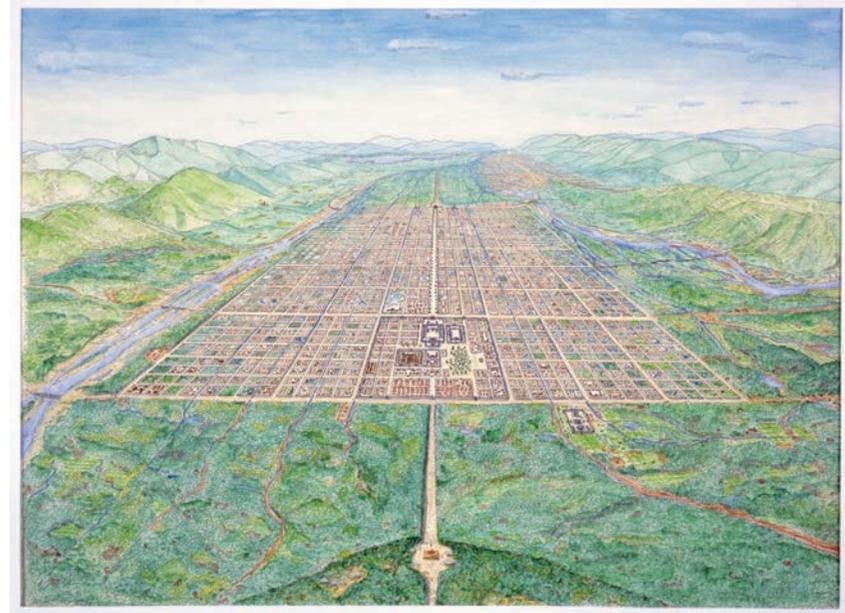
- Age 5–6: kindergarten
- Age 7–12: elementary school
- Age 13–15: junior high school
- Age 16–18: high school
- Age 19–22: university, undergraduate course
- Age 23–24: university, graduate course (master)
- Age 25–27: university, graduate course (doctor)

Semesters: April through March (2 or 3 terms)

In most university departments of engineering or science, senior students join a laboratory and submit a senior thesis.

## Kyoto (Heian-kyo)

Since Kyoto was the capital of Japan for more than one thousand years, from 794 to 1868, when it was known as Heian-kyo (“capital of tranquility and peace”), it offers myriad historic attractions. Seventeen UNESCO-designated World Cultural Heritage Sites are the crown jewels of Kyoto city.

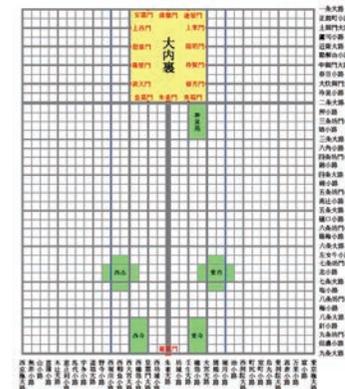


Heian-kyo (view from the north)

© Courtesy of Toshio Kajikawa, Director, Kyoto City Archeological Research Institute



Genji Monogatari Emaki (ca. 1120–1140), The Tokugawa Art Museum



<http://ja.wikipedia.org/wiki/%E6%9D%A1%E5%9D%8A%E5%88%B6>

<http://3dkyoto.blog.fc2.com/blog-entry-113.html>

Note: the Heian-kyo center was located to the west of today's Kyoto City.

# Kyoto in August

## Largest Full Moon of the Year: 10th, Sunday

The largest and brightest full moon of the year heralds our opening reception on August 10. On this day, the moon will be both full and closest to the Earth (technical name, perigee-syzygy). The pearly orb glowing in the sky will appear 14% larger and 30% brighter than when located at the farthest point of its elliptical orbit. The moon will rise at 18:14 and reach its zenith in Kyoto at 23:49 on August 10. <http://www.nao.ac.jp/astro/sky/2014/01.html>



## Special Tour: 13th, Wednesday

A special bus tour has been arranged for IHTC-15 participants, at a special discount. This tour, during the afternoon of August 13, will take you to Kinkaku-ji Temple (the Golden Pavilion), Nijo-jo Castle, and Kiyomizu-dera Temple, all of which are famous and exalted cultural treasures of Japan.

Departure Kyoto International Conference Center (ICCK), 13:00  
Terminuses Kyoto Station; Karasuma-Oike, 18:30  
Tour fee 8,000 JPY  
Minimum number of participants: 30  
Maximum number of participants: 80  
Tour fee includes: Travel cost, Admission fees, lunch box,  
English speaking guide

### Itinerary

ICCK to Kinkaku-ji Temple (13:10–13:40);  
Kinkaku-ji Temple to Nijo-jo Castle (14:30–14:50);  
Nijo-jo Castle to Kiyomizu-dera Temple (15:50–16:30);  
Kiyomizu-dera Temple to Kyoto Station (18:00–18:15);  
Karasuma-Oike (18:30)

### How to join the tour

1. Log in to “My Page” of the Registration site.
2. Click the “Confirm/Purchase/Edit/Cancel/Additional Application” button in the My Menu column.

3. Locate the “Special Conference Tour” column at the bottom of the page. Click the “New/Additional Application” button. Follow the procedure shown on the next page and fill in the required information. If you have any difficulty, please inquire at the registration or tour desk.

## Ikebana Experience: 14th, Thursday

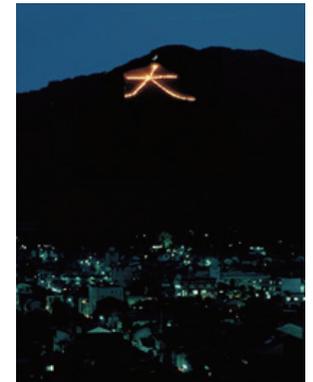
### “Ikebana”: The Japanese art of flower arrangement

A short lesson to experience the Japanese art of flower arrangement is held on August 14, specially for accompany persons. The lesson is for beginners and will be held in English. Please come to the registration desk if you like to join the lesson.

Maximum number of participants: 30  
Time 15:00-17:00  
Location Conference site (ICCK), Room 104  
Lecturer Prof. Katsuhito Kurata (Ikenobo Headquarters)

## Gozan-no-Okuribi: 16th, Saturday

Gozan-no-Okuribi, roughly meaning “fires lit on five mountains to guide the return of ancestor spirits,” is one of the most traditional and impressive annual events in Kyoto. Gigantic Chinese characters and symbols, constructed from hundreds of carefully stacked arrays of logs and sacred wooden offerings, are lit in sequence, from east to west, on the five mountains surrounding Kyoto. Starting at 8 p.m., the Chinese character of Dai, meaning of “Large,” is set ablaze on Daimonji Mountain, and is soon followed by the four other fires: “Myo-Hou”, “Funagata”, “Hidari-Daimonji,” and “Torii”. This event originated in the ancient religious practice of lighting torches to guide ancestor spirits, temporarily staying with relations in the present world for a few days, on their return journey to the spirit world. Marking the end of the O-bon festival that is held every August throughout Japan, people appreciate the summer they enjoyed and feel the breeze of the coming autumn they look forward to. Gozan-no-Okuribi is particularly loved by Kyoto people, and many thousands of tourists gather here on the evening of August 16 to share this feeling.



# Miscellaneous Topics



From the "Choju Giga" (The Scrolls of Frolicking Animals)  
handed down for centuries at Kozanji Temple.

# History of IHTCs

#	Year	City	Nation	#	Year	City	Nation
1	1951	London	United Kingdom	8	1986	San Francisco	United States
		Atlantic City	United States			9	1990
2	1961	Boulder	United States	10	1994		
		London	United Kingdom			11	1998
3	1966	Chicago	United States	12	2002		
4	1970	Paris Versailles	France	13	2006	Sydney	Australia
5	1974	Tokyo (東京)	Japan	14	2010	Washington	United States
6	1978	Toronto	Canada	15	2014	Kyoto (京都)	Japan
7	1982	München	Germany	16	2018	Beijing (北京)	China



## 2014 Tricentennial

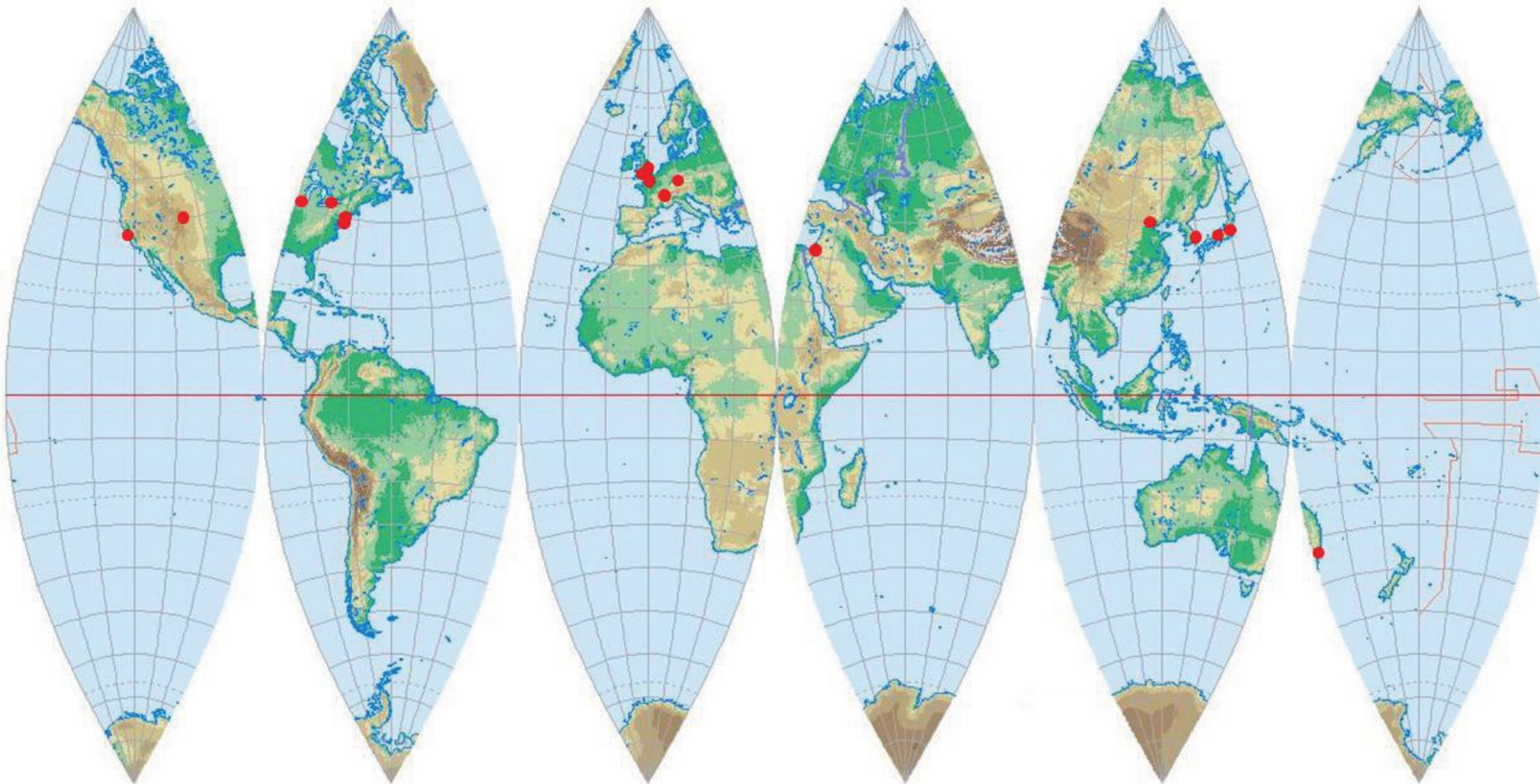
### Daniel Gabriel Fahrenheit

invented mercury thermometer in 1714

<http://www.pg.gda.pl/en/index.php/about/patrons>

<http://bigstory.ap.org/article/scientists-make-virtual-portrait-fahrenheit>

The undated picture provided on Tuesday, Nov. 27, 2012 by the **Gdansk University of Technology** Press Office shows a computer-generated portrait of physicist **Daniel Gabriel Fahrenheit**. As according to scientists there are no portraits of Fahrenheit, the Gdansk-born inventor of a temperature scale, scientists developed a special computer program generating portraits of people whose appearance is unknown, using portraits of relatives. (AP Photo/Gdansk University of Technology Press Office)



## Personal Memories of IHTCs

**John Rose**

Queen Mary University of London, UK



Having attended all except the first IHTC, I was honored to be invited to add a few lines on my personal memories. These are a few recollections of experiences and individuals whom I first met at IHTCs and who have influenced my life and career. I hope that at least something may be of interest to IHTC-15 attendees.

The conference called the IMechE/ASME General Discussion on Heat Transfer was held in London and Atlantic City **1951**, and later the International Heat Transfer Conference in Boulder **1961** and London **1962**. Only after the meeting in Chicago in **1966**, which was given the title Third International Heat Transfer Conference, did the earlier meetings become recognized as the first and second IHTCs. I attended the second when I was a graduate student working on dropwise condensation in London.

At the **1962** London conference a paper by Professor Westwater of the University of Illinois, Urbana (chairman of the later third conference) reported heat-transfer coefficients for dropwise condensation which were lower than I was observing by factors exceeding 10 and showed the opposite trend to mine regarding dependence on temperature difference. (The heat-transfer coefficient increases with increasing temperature difference in dropwise condensation due to increase in active nucleation site density.) I did not venture to speak at that meeting but later wrote in a 1964 Int. J. Heat Mass Transfer paper "There exists a wide range of published results. The approximate extremes are given by the present work and those of Welch and Westwater." Many years later Jim Westwater magnanimously invited me to participate in a special conference to mark his retirement.

The **1966** conference was of particular significance for me. On my way from London to Chicago I stopped in Boston for a few days and met Warren Rohsenow at MIT who invited me to spend a sabbatical year (1967/68) there. At the Chicago conference Professor Edwin Le Fevre, my PhD advisor, and I published our theory of dropwise condensation. Groups of papers were reviewed by rapporteurs rather than individual presentations by authors. Peter Griffith of MIT, the rapporteur in our case, in an otherwise fairly complimentary review remarked that we, after critically reviewing the earlier experimental data, had discarded those we thought to be questionable - but then he remarked that "this included most of the data in the literature." This was true - most of the earlier data were wrong due to the extreme sensitivity of the vapor-surface temperature difference to the presence

non-condensing gases as well as to inadequate methods used to determine the very small temperature differences. Unfortunately, this has also been the case in subsequently published results. As a young man I was dismayed that both our experiments and theory were not immediately accepted as being correct. This has apparently occurred only very slowly over the years and the recent resurgence of interest in dropwise condensation seems to have brought belated recognition of this work.

At the **1970** conference in Paris in order to save money I resided in a tent at the Bois de Boulogne camp site and was surprised to see other conference attendees there also. Perhaps most important for me was meeting Professor Ichiro Tanasawa of the University of Tokyo. He and I were around the same age, and both of us had closely similar views on dropwise condensation which differed from those held by many others at that time. This was the start of my long and happy association with Japan. It was at IHTC-5 in Tokyo **1974** that I first encountered a young Yoshio Utaka, a graduate student of Professor Tanasawa at that time and now Professor Utaka of Yokohama University.

I don't have too many recollections of the Toronto **1978** meeting - except an experience of "table dancing" in a bar where I was taken by students. At the Munich **1982** conference an important event for me was meeting again Professor Evgenii Fedorovic of the Leningrad Polytechnic Institute. He and I had shared an office in the heat transfer lab at MIT for my memorable year, 1967-68. San Francisco **1986** enabled me to renew friendships with Warren Rohsenow and Leon Glicksman from MIT, and Paul Marto of the US Naval Postgraduate School, Monterey where I had spent 6 months in 1981.

The Jerusalem conference in **1990** was clouded by events in the Middle East for which, unfortunately, I still see no solution. Several US colleagues whom I was hoping to see were not able to attend. I was only able to attend the Brighton, UK meeting in **1994** for one day. At the Kyongju meeting in Korea **1998**, I gave a keynote presentation - "Interphase matter transfer, the condensation coefficient and dropwise condensation." Here I tried to emphasize my conviction that the so-called *condensation coefficient* in kinetic theory of phase change must be near unity as assumed in our 1966 dropwise condensation theory.

Grenoble, **2002**, which I recall as a most pleasant interlude in one of my many vacation driving tours in France, enabled me to meet again my French colleagues from university and industry. I did not see too much of the Sydney **2006** meeting owing to a terrorist scare, which caused chaos at Heathrow airport in London and delayed my arrival in Sydney by two days. Washington **2010** was memorable as the end point of a trip via Beijing, Hong Kong, Los Angeles and Atlanta, where I was glad to be able to spend time with my good friend Srinivas Garimella and his students at Georgia Tech. Now I am looking forward to the Kyoto conference and renewing acquaintance with friends from Japan and around the world. I have no doubt that this will be very successful and trust that the conference series will continue long into the future.

9th, Saturday

Room D

15:00 - 16:00

Special Public Seminar

## **Solar Radiation Management — Buying Time to Avert Dangerous Global Heating —**



**Brian E. Launder**

Professor, ScD, DSc, DEng, Docteur (hc), FRAeS, FRS, FEng  
School of Mechanical, Aerospace and Civil Engineering  
The University of Manchester

### **Abstract**

As is widely known, global warming has been occurring since the industrialization of the world's economy. It has now reached a level where serious, difficult-to-reverse changes are occurring in our environment. Yet, while governments talk about the need to reduce carbon dioxide emissions – the principal cause of the rise in temperature - the level of CO<sub>2</sub> present in our atmosphere goes on increasing steadily with no sign of levelling out, still less of falling.

Thus, unless this pattern changes rapidly, emergency measures will be needed, at least for a few decades, until the world does figure out how to sustain a style of living without substantial CO<sub>2</sub> release. The lecture will focus mainly on a strategy known as Solar Radiation Management (i.e. reducing the amount of sunlight reaching the earth) and, within that group of approaches, on Marine Cloud Brightening. This entails the brightening of low-level marine stratus clouds by adding many additional cloud-condensation nuclei (CCN) to make the clouds more



reflective. The proposed route for doing this is by way of a fleet of unmanned ships powered by Flettner rotors with added performance achieved by adding discs to the rotors. Some of the details of these craft including the aerodynamic design of the thrust-producing Flettner rotors are examined. The author's team's computations, using Computational Fluid Dynamics (CFD) has shown that the proposed addition of discs to the rotors has a damaging effect on the ship's performance.

### **Professional biography of the speaker**

Professor Launder was appointed Professor of Mechanical Engineering at the University of California, Davis, in 1976, and stayed there four years until he accepted the Headship of the Thermo-Fluids Division at the University of Manchester Institute of Science and Technology, in 1980.

His research group, focusing on the mechanics and mathematical modelling of turbulent flows, particularly in the presence of strong buoyant or rotational forces, became internationally recognized. In particular, his group developed the commonly applied standard  $k-\epsilon$  turbulence and Reynolds stress transport models. In recognition of his many achievements, Professor Launder was admitted as a Fellow of the Royal Society and the Royal Academy of Engineering, and he has received many international honors, including honorary degrees from two European universities. He also served as the Regional Director of the Tyndall Centre for Climate Change Research, from its creation in 2000 until 2006.

While retaining his interests in fundamental turbulence modelling, much of his time nowadays is spent preparing biographical matter and in editorial work.

The special public seminar is to be held jointly with the Joule Energy Contest (JENECON) as the IHTC-15 public session, "Energy Revolution of the 21st Century," for which all are invited to attend free of charge.

Organized by  
The Heat Transfer Society of Japan; Science Council of Japan

Supported by  
Thermal Engineering Division of Japan Society of Mechanical Engineers;  
Japan Science and Technology Agency; Institute of National Colleges of  
Technology, Japan; Kyoto Prefecture; Kyoto City; Board of Education of Kyoto  
Prefecture; Board of Education of Kyoto City; Kyoto Convention Bureau;  
Kameyama Candle House.

9th, Saturday

Room D

**13:00 - 14:45**

Joule Energy Contest (JENECON)

***A scientific/technological contest  
for high school students and  
technical college students***



James P. Joule  
1818-1889

#### Abstract

An important mission of the 15th International Heat Transfer Conference organizing committee is to transcend the conventional framework of an academic conference, which mainly caters to professionals, by also focusing upon activities that engage the public at large. Naturally, “Energy” is one of the most important keywords in Heat Transfer. We are holding a contest, called the “Joule Energy Contest” (JENECON), for Japanese high school and technical college students, together with a public seminar on relevant topics, to raise young people’s awareness of energy and heat transfer issues.

The contest challenge is to elevate a 0.5 kg mass to a height of 10 meters by using only the thermal energy of a candle flame. Consequently, the participants must strive to maximize the thermal efficiency of their candle-powered lifting mechanism. Participants who have passed the preliminary round will make their final presentations on August 9th at the Kyoto International Conference Center, prior to IHTC-15. The “IHTC-15 Joule Prize” will be awarded to the team that achieves the highest thermal efficiency. We hope that this contest will help young students appreciate the difficulties of converting thermal energy to mechanical energy, and we are certain that overcoming these difficulties through their own originality and ingenuity will be deeply satisfying to the participants.

Seventeen teams from all over Japan applied in advance to participate in this contest. Among these, 11 teams entered the contest and 7 have passed the first screening. These teams are passionately committed to the contest and have already realized surprising ideas and impressive results. The finally selected teams will make roughly ten-minute oral presentations, starting at 13:00 on August 9th, in Room D of the Conference Center. This final stage is

open to the public, and we strongly hope that many people will attend the final presentation of the Joule Energy Contest.

Contest schedule on August 9, 2014:

13:00–13:15	Brief explanation of the contest scope
13:15–14:45	Final selection of presentations by the seven teams that passed the first screening
15:00–16:00	Special public seminar by Prof. B. E. Launder
16:15–17:00	Award Ceremony and Comments on the results

#### Executive Committee for the Joule Energy Contest

Hitoshi Asano	Kobe University
Masafumi Hirota	Mie University
Hiroshi Iwai	Kyoto University
Kosuke Nishida	Kyoto Institute of Technology
Motohiro Saito	Kyoto University
Masahiko Shibahara	Osaka University
Kazuhiko Suga	Osaka Prefecture University
Masato Tagawa	Nagoya Institute of Technology
Kazuya Tatsumi	Kyoto University
Yasutaka Yamaguchi	Osaka University
Hideo Yoshida	Kyoto University



## JENECON

Organized by  
The Heat Transfer Society of Japan      Science Council of Japan,

Supported by  
Thermal Engineering Division of the Japan Society of Mechanical Engineers;  
Japan Science and Technology Agency; Institute of National Colleges of  
Technology, Japan; Kyoto Prefecture; Kyoto City; Board of Education of Kyoto  
Prefecture; Board of Education of Kyoto City; Kyoto Convention Bureau;  
Kameyama Candle House.

# Young Researchers Meeting (YRM)

13th, Wednesday

Kyoto Imperial Palace, etc.

**13:30 - 20:00**

Young Researchers Meeting (YRM)



## **Networking events and activities for young researchers in the fields of thermal science and engineering**

The Young Researchers Meeting (YRM) is an event devoted to the casual interchange of research and ideas in thermal science and engineering, and aims to expand the international networks of young researchers who have gathered from all over the world to participate in IHTC-15. This meeting is primarily for research staff, postdocs, and PhD students younger than approximately 35. Originally, it was planned for 40–60 persons, but now we have 77 participants from 17 countries. For this international group of colleagues, we have planned an excursion to the imperial palace (a special reserved tour), stimulating networking activities, and a dinner party at the Kyoto International Community House.

### **Time schedule**

#### 12th (Tue)

12:30–12:45 Pre-meeting in room 104 (Opening and announcement)

#### 13th (Wed)

13:30 Meet at Kyoto Imperial Palace  
14:00–15:00 Special tour inside the Kyoto Imperial Palace  
15:00–15:30 Travel to Kyoto Int'l. Community House (by subway)  
15:30–18:00 Networking activities  
18:00–20:00 Dinner party

#### 14th (Thu)

12:30–13:50 Post-meeting in the lunch area

On the 12th, a pre-meeting is scheduled for the opening address, staff introductions, and some announcements. The pre-meeting will be held in room 104, using the latter half of our lunch time after we finish eating.

On the 13th, we will start the YRM with a special tour at Kyoto Imperial Palace. Afterwards, we will travel to an event site and enjoy networking activities and a buffet dinner, which may be the most important and exciting part of the YRM.

On the 14th, a post-meeting will be held at a reserved table in the lunch area to solicit feedback from attendees and discuss our prospects for the next YRM.



Kyoto Imperial Palace



Kyoto Int'l. Community House

### **NOTICE:**

The registration has been closed because the number of participants has reached the maximum, so on-site registration for YRM is not possible.

You can find the latest information on the EventMobile and the official website (<http://www.ihtc-15.org/YRM.shtml>)

The Facebook page is now open. Find and join “Young Researchers Meeting in IHTC” to chat, share photos, and organize casual meet-ups.

### **YRM Project Members**

Takuto Araki	Yokohama National University
Grzegorz Brus	AGH University of Science and Technology
Masashi Kishimoto	Imperial College London
Yutaka Oda	Kansai University
Motohiro Saito	Kyoto University
Kazuya Tatsumi	Kyoto University

### **Advisors**

Hiroshi Iwai	Kyoto University
Hideo Yoshida	Kyoto University

## Japanese: Integration from Three Countries

### Chinese characters

Chinese, Korean, and Japanese, share many Chinese characters.

	甲骨文 Oracle bone script from ca. 14th cent. BCE	金文 Chinese bronze inscriptions from ca. 13th cent. BCE	篆文 Seal script from ca. 4th cent. BCE
藝 芸 arbori- culture			
火 fire			
熱 heat	Phono-semantic compound characters (Radical-phonetic characters) Created by combining a rebus with a determinative, a character with approximately the correct pronunciation, joined with one of a limited number of determinative characters that supplies an element of meaning.		

The Chinese character corresponding to “heat” was developed because, for effective arboriculture, warm condition (fire) is necessary.



(Numbers indicate the stroke order.)

### Hiragana and Katakana in Japanese

In addition to Chinese characters, Japanese also uses Hiragana and Katakana syllabaries, as shown below.

#### Three representations in Japanese (characters and pronunciation)

	Japan	Heat transfer	
Kanji (Chinese characters)	日本	熱 伝達 <sup>†</sup>	伝 熱
Hiragana (Japan original)	にほん、にっぽん	ねつ でんたつ	でん ねつ
Katakana (Japan original)	ニホン、ニッポン	ネツ デンタツ	デン ネット
Japanese pronunciation	Nihon, Nippon	Netsu-dentatsu	Den-netsu

<sup>†</sup> In Japanese “Netsu-dentatsu” means “Convective heat transfer.”

#### Approximately 5x10 matrix for Hiragana and Katakana (& Original Kanji)

あア	かカ	さサ	たタ	なナ	はハ	まマ	やヤ	らラ	わワ
安 a	加 ka	左 sa	太 ta	奈 na	波 ha	末 ma	也 ya	良 ra	和 wa
いイ	きキ	しシ	ちチ	にニ	ひヒ	みミ	みミ	りリ	
以 i	幾 ki	之 si	知 ti	仁 ni	比 hi	美 mi	為 yi	利 ri	
うウ	くク	すス	つツ	ぬヌ	ふフ	むム	ゆユ	るル	んン
宇 u	久 ku	寸 su	川 tu	奴 nu	不 hu	武 mu	由 yu	留 ru	无 n
えエ	けケ	せセ	てテ	ねネ	へヘ	めメ	ゑエ	れレ	
衣 e	計 ke	世 se	天 te	称 ne	部 he	女 me	恵 ye	礼 re	
おオ	こコ	そソ	とト	のノ	ほホ	もモ	よヨ	ろロ	をヲ
於 o	己 ko	曾 so	止 to	乃 no	保 ho	毛 mo	与 yo	呂 ro	遠 wo

## Thermo-Fluid Phenomena in Japanese Classical Literature

The secretariat of IHTC-15 in Kyoto would like to present a few topics which have some relevance to heat and fluid flow in our daily life. Japanese people are very sensitive to the four seasons, their atmosphere, winds, and thermal characteristics, in addition to their visual aspects. Also, the flow of rivers is an essential element of the spiritual aspect of Nature for Japanese. Below are some typical examples, extracts from three famous essays in Japanese Classical literature, all based on lives in Kyoto.

### Makura no Sōshi (ca. 1000)

Makura no Sōshi (The Pillow Book) is a diary by a courtesan **Sei Shōnagon**.

*In spring, it is the dawn. (omit)*

*In summer, it is the night. (omit)*

*In autumn, it is the evening. (omit)*

*In winter, it is the early morning. (omit)*

(Translations by Ivan Morris and Meredith McKinney are available; note that the translation by Arthur Waley is just about a quarter of the original work, and the above famous sentences are not included.)

### Hōjōki (1212)

Hōjōki (The Ten Foot Square Hut) is a short work by **Kamo-no-Chōmei**. Its opening sentence is famous in Japanese literature as an expression of mujō, the transience of things.

*Ceaselessly the river flows, and yet the water is never the same, while in the still pools the shifting foam gathers and is gone, never staying for a moment. Even so is man and his habitation.*

(Translated by A. L. Sadler, 1928)

### Tsurezuregusa (1330-1332)

Tsurezuregusa (Essays in Idleness) is a collection of essays by **Yoshida Kenkō**.

*Section 55*

*A house should be built with the summer in mind. In winter it is possible to live anywhere, but a badly made house is unbearable when it gets hot. There is*

*nothing cool-looking about deep water; a shallow, flowing stream is far cooler. When you are reading fine print you will find that a room with sliding doors is lighter than one with hinged shutters. A room with a high ceiling is cold in winter and dark by lamplight. People agree that a house which has plenty of spare room is attractive to look at and may be put to many different uses.*

(Translated by Donald Keene, 1966)

## Scientific Quotes from Modern Japanese

The followings are the scientific quotes by two famous Japanese physicists in the 20th century and the National Diet Library.

**“Science and Brain,”** by **Torahiko Terada**<sup>[1]</sup> (1878-1935)

*A smart person cannot fall in love. Love is blind. To be scientist, you must be an ardent lover of nature. Also, nature opens its heart only to a lover. The history of science is the history of illusions and failures. It is the history of dull and plodding achievements made by individuals of great stupidity, but who have equally great patience.*

Scientist and Brain (Smart and Dull), original in Japanese (1933)

[1] Torahiko Terada was a professor at Tokyo Imperial University, and worked on a wide range of topics in physics. He also published many essays.

**“Exploring a Frontier,”** by **Hideki Yukawa**<sup>[2]</sup> (1907-1981)

*It is very important for you to consider the future state as that of the past when you explore a frontier.*

*[If you may be afraid when you step into an unknown world, you had better go further, considering the unknown world has been already well established.]*

from the memory of Dr. Taizo Muta, one of Yukawa's disciples (1977)

[2] Hideki Yukawa was a professor of theoretical physics at Kyoto (Imperial) University, and was the first Japanese Nobel laureate.

**“Truth,”** by **the National Diet Library, Japan** (since 1948)

*The National Diet Library is hereby established as a result of the firm conviction that truth makes us free and with the object of contributing to international peace and the democratization of Japan as promised in our Constitution.*

<http://www.ndl.go.jp/en/aboutus/outline/purpose.html>

## Heat and Mass Transfer in Computer Animation

Our age is making unprecedented advances not only in the sphere of natural science and engineering, but also in that of animation. **FROZEN**, produced by Walt Disney Animation Studios in 2013, is the latest supreme example. Furthermore, as the title indicates, this marvelous animation intimately deals with heat and mass transfer. (“Wow! So, this is heat. I love it.” by **Olaf** in front of a fireplace)

If you are curious about computer animation, be sure to explore “*Moving Innovation: A History of Computer Animation*,” by **Tom Sito**, a famous pioneer in this field [1]. Basic computer animation technology includes the following tools [2]:

- morph target animation,
- motion capture,
- ray tracing,
- rendering,
- wire-frame models.

In **FROZEN**, starting with highly developed implementations of the technologies listed above, “*The studio also developed several new tools to generate realistic and believable shots, particularly the heavy and deep snow and its interactions with the characters* [3].” One of the key papers for snow simulation is freely available from the website of Walt Disney Animation Studios [4].

Although most of us are amateurs at computer animation, there is likely much room for further research concerning the representation of heat and mass transfer.

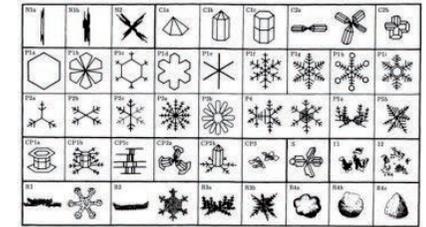
### References

- [1] Tom Sito, *Moving Innovation: A History of Computer Animation*, MIT Press, 2013 (<http://mitpress.mit.edu/books/moving-innovation>)
- [2] [http://en.wikipedia.org/wiki/Computer\\_animation](http://en.wikipedia.org/wiki/Computer_animation)
- [3] Technology development in FROZEN, [http://en.wikipedia.org/wiki/Frozen\\_\(2013\\_film\)](http://en.wikipedia.org/wiki/Frozen_(2013_film))
- [4] Alexey Stomakhin, Craig Schroeder, Lawrence Chai, Joseph Teran, Andrew Selle, *A material point method for snow simulation*, 2013 <http://www.disneyanimation.com/technology/publications>

## Ukichiro Nakaya

“Snow crystals are letters sent from heaven”

**Ukichiro Nakaya** (1900–1962) was a Japanese physicist and science essayist known for his work in glaciology and cryogenic sciences. He is credited with making the first artificial snow crystals. We would like to introduce him to you, in addition to **Wilson Bentley** (1865–1931), one of the first known photographers of snow crystals.



[http://en.wikipedia.org/wiki/Ukichiro\\_Nakaya](http://en.wikipedia.org/wiki/Ukichiro_Nakaya)  
[http://www.kagashi-ss.co.jp/yuki-mus/en\\_facilities.html](http://www.kagashi-ss.co.jp/yuki-mus/en_facilities.html)  
<http://www.its.caltech.edu/~atomic/snowcrystals/class/class.htm>  
 U. Nakaya, *Snow Crystals: Natural and Artificial*, Harvard Univ. Press, 1954.  
<http://snowflakebentley.com/>

© Rokuro Yoshida  
 Courtesy of Kazuko Yoshida  
 and Kenzo Kanda



## International Year of Crystallography 2014

The International Year of Crystallography 2014 (IYCr 2014) is a global event to celebrate the first 100 years of great achievements in crystallography and consequent contributions to human progress. Modern crystallography was born nearly one hundred years ago out of the efforts of three Nobel Laureates, **Max von Laue** (1914) and **W. H. and W. L. Bragg** (1915).

Based on [http://www.iycr2014.jp/preface\\_e.html](http://www.iycr2014.jp/preface_e.html)

Three Japanese pioneers, **Torahiko Terada** (see p.132), **Shoji Nishikawa** (1884–1952), and **Ukichiro Nakaya**, have website introductions:

[http://www.iycr2014.jp/introduction\\_e.html](http://www.iycr2014.jp/introduction_e.html)  
[http://www.iycr2014.jp/pioneer\\_e.html](http://www.iycr2014.jp/pioneer_e.html)



## “Yuki-Guni” Snow Country

**Snow Country** is a full-length novel by **Yasunari Kawabata** (1899-1972), a Japanese novelist who received the Nobel Prize for Literature in 1968. Its first sentence “*The train came out of the long tunnel into the snow country.*” (translated by E. G. Seidensticker) is very famous.

© Courtesy of Yukiguni-kan  
<http://www.e-yuzawa.gr.jp/yukigunikan/>

# Cold and/or Hot Breaks

## Kyoto International Conference Center (ICC Kyoto)

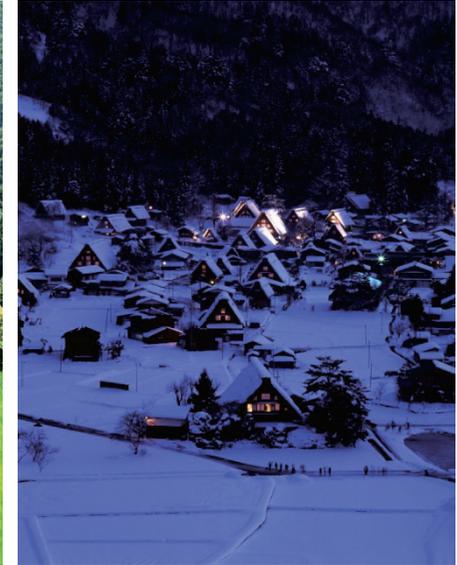
The ICC Kyoto, designed by architect Sachio Otani (1924-2013), opened in 1966. Current renovations limit the visual impact of its unique trapezoidal elevation. The design was inspired by Gasshou-zukuri, an architectural style based on the shape of hands held in prayer, the Buddhist mudra of veneration.



<http://www.icckyo.or.jp/en/construction/index.html>

## Gasshou-zukuri

The Historic Villages of Shirakawa-go and Gokayama were listed as World Heritage Sites in 1995, and exemplify the beauty of Gasshou-zukuri.



© Courtesy of the Shirakawa Village Office  
<http://shirakawa-go.org/english/> <http://whc.unesco.org/en/list/734>

# Committees, Author Index Statistics, End-Credit Rolls



From the "Choju Giga" (The Scrolls of Frolicking Animals)  
handed down for centuries at Kozanji Temple.

## Meetings

### The Assembly for International Heat Transfer Conferences (AIHTC)

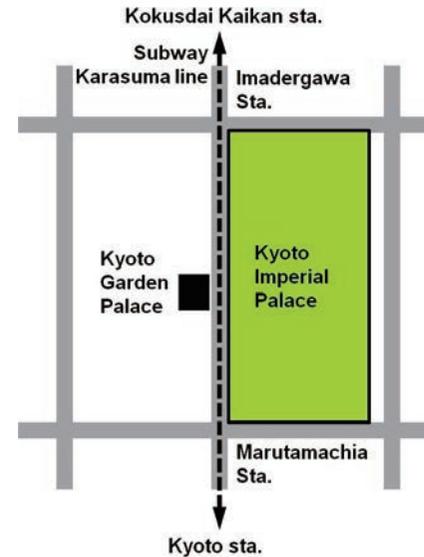
August 13, Wednesday at Room 104  
13:30-17:00

### International Centre for Heat and Mass Transfer (ICHMT)

August 10, Sunday  
10:00-12:00 General Assembly meeting at Room 104  
13:00-15:00 Scientific Council meeting at Room C2  
16:00-18:00 Executive Committee meeting at Room 104

### EUROTHERM Committee

August 12, Tuesday at Kyoto Garden Palace  
20.00-22.30



## The Assembly for International Heat Transfer Conferences (AIHTC)

### President

Avram Bar-Cohen

### Vice President

Nobuhide Kasagi

### Secretary

Hideo Yoshida

### Past President

Graham de Vahl Davis  
Jean-Marc Delhay  
Richard J. Goldstein  
Geoffrey F. Hewitt  
Frank C. Hooper  
Sung Tack Ro

### Delegates

Australia  
Steven Armfield  
John A. Reizes  
Brazil  
Luiz F. Milanez  
Helcio R. B. Orlande  
Canada  
Sylvain Coulombe  
Patrick H. Oosthuizen  
China  
Xing Zhang  
Chongfang Ma  
France  
Denis Maillet  
Sebastian Volz  
Germany  
Stephan Kabelac  
Ulrich Gross

### India

Ravi B. Grover  
S. Srinivasa Murthy

### Israel

Gad Hetsroni  
Neima Brauner

### Italy

Gian P. Celata  
Maurizio L. Cumo

### Japan

Shigenao Maruyama  
Hideo Yoshida

### Korea

Sung Jin Kim  
Goon-Cherl Park

### Portugal

Pedro Coelho  
Vitor A. F. Costa

### Russia

Alexander I. Leontiev  
Leonid A. Dombrovsky

### South Africa

Charl G. du Toit  
Josua P. Meyer

### Switzerland

John R. Thome  
Dimos Poulikakos

### The Netherlands

Theo H. van der Meer  
Anton A. van Steenhoven

### United Kingdom

Adrian Briggs  
Geoffrey F. Hewitt

### United States of America

Michael Jensen  
Mohamed S. El-Genk

## The 15th International Heat Transfer Conference (IHTC-15)

## Organizing Committee

Nobuhide Kasagi, *Chairman*, (Japan Sci. & Tech. Agency/Univ. of Tokyo)  
 Hideo Yoshida, *Vice Chairman*, (Kyoto University)  
 Shigenao Maruyama, *Vice Chairman*, (Tohoku University)  
 Keiko Fujioka (Functional Fluids Ltd.)  
 Yoshinori Hisazumi (Osaka University)  
 Masaru Ishizuka (Toyama Prefectural University)  
 Isao Kataoka (Osaka University)  
 Masafumi Katsuta (Waseda University)  
 Masahiro Kawaji (The City University of New York)  
 Toshiro Makino (Kyoto University)  
 Toshio Miyauchi (Tokyo Institute of Technology)  
 Masanori Monde (Saga University)  
 Hideki Nakagome (Chiba University)  
 Akira Nakayama (Shizuoka University)  
 Ken Okazaki (Tokyo Institute of Technology)  
 Mamoru Ozawa (Kansai University)  
 Kenichiro Takeishi (Osaka University)  
 Akira Takimoto (Kanazawa University)  
 Kazuo Tanishita (Keio University)  
 Toshihiro Tsuji (Nagoya Institute of Technology)  
 Yoshio Utaka (Yokohama National University)  
 Yukio Yamada (The University of Electro-Communications)  
 Seiichi Yokobori (Tokyo City University)

## Executive Committee

Hideo Yoshida, *Chairman*, (Kyoto University)  
 Tomoaki Kunugi, *Vice Chairman*, (Kyoto University)  
 Hiroshi Iwai, *Secretary General*, (Kyoto University)  
 Hitoshi Asano (Kobe University)  
 Takemi Chikahisa (Hokkaido University)  
 Yoshitaka Fukuyama (JAXA)  
 Yoshimichi Hagiwara (Kyoto Institute of Technology)  
 Ruri Hidema (Kobe University)  
 Eiji Hihara (The University of Tokyo)  
 Masafumi Hirota (Mie University)  
 Koichi Hishida (Keio University)  
 Kyoji Inaoka (Doshisha University)  
 Masaru Ishizuka (Toyama Prefectural University)  
 Yoshinori Itaya (Gifu University)  
 Tsuyoshi Kawanami (Kobe University)  
 Shigeo Maruyama (The University of Tokyo)  
 Mitsuhiro Matsumoto (Kyoto University)  
 Ryosuke Matsumoto (Kansai University)  
 Hisato Minagawa (The University of Shiga Prefecture)  
 Kazuyoshi Nakabe (Kyoto University)  
 Kosuke Nishida (Kyoto Institute of Technology)  
 Yutaka Oda (Kansai University)  
 Taku Ohara (Tohoku University)  
 Hajime Onishi (Kanazawa University)  
 Motohiro Saito (Kyoto University)  
 Masahiko Shibahara (Osaka University)  
 Kazuhiko Suga (Osaka Prefecture University)  
 Hiroshi Suzuki (Kobe University)  
 Masato Tagawa (Nagoya Institute of Technology)  
 Hiroshi Takamatsu (Kyushu University)  
 Nobuyuki Takenaka (Kobe University)  
 Kazuya Tatsumi (Kyoto University)  
 Hisashi Umekawa (Kansai University)  
 Yasutaka Yamaguchi (Osaka University)  
 Takehiko Yokomine (Kyoto University)

Hideo  
YoshidaTomoaki  
KunugiHiroshi  
IwaiShigenao  
MaruyamaYasuyuki  
TakataAtsuki  
Komiya**Executive Committee (EC)****Int. Scientific Committee (ISC)**

Special missions highly depending on limited individuals in EC and ISC:

Kazuya Tatsumi Artistic Design for IHTC Logo, Conf. Booklet Cover, Conf. Website  
 Satoru Momoki System Design for Paper-Submission Website

## International Scientific Committee

### Japanese Scientific Committee (JSC)

Shigenao Maruyama, *Chairman*, (Tohoku University)  
Yasuyuki Takata, *Vice Chairman*, (Kyushu University)  
Atsuki Komiya, *Secretary*, (Tohoku University)  
Katsunori Hanamura (Tokyo Institute of Technology)  
Yuji Nagasaka (Keio University)  
Masamichi Kohno (Kyushu University)  
Satoru Momoki (Nagasaki University)

### International Scientific Committee (ISC)

#### Australia

Steven Armfield (The University of Sydney)  
John A. Reizes (University of Technology, Sydney)

#### Brazil

Luiz F. Milanez (University of Campinas)  
Helcio R. B. Orlande (Federal University of Rio de Janeiro)

#### Canada

Sylvain Coulombe (McGill University)  
Patrick H. Oosthuizen (Queen's University)

#### China

Xing Zhang (Tsinghua University)  
Chongfang Ma (Beijing University of Technology)

#### France

Denis Maillet (University of Lorraine)  
Sebastian Volz (Ecole Centrale Paris)

#### Germany

Stephan Kabelac (Helmut Schmidt University)  
Ulrich Gross (TU Bergakademie Freiberg)

#### India

Ravi B. Grover (Bhabha Atomic Research Centre)  
S. Srinivasa Murthy (Indian Institute of Technology Madras)

#### Israel

Gad Hetsroni (Israel Institute of Technology)  
Neima Brauner (Tel Aviv University)

#### Italy

Gian P. Celata (ENEA)  
Maurizio L. Cumo (Sapienza University of Rome)

#### Korea

Sung Jin Kim (Korea Advanced Institute of Science and Technology)  
Goon-Cherl Park (Seoul National University)

#### Portugal

Pedro Coelho (University of Lisbon)  
Vitor A. F. Costa (University of Aveiro)

#### Russia

Alexander I. Leontiev (Moscow Power Engineering Institute)  
Leonid A. Dombrovsky (Russian Academy of Sciences)

#### South Africa

Charl G. du Toit (North-West University)  
Josua P. Meyer (University of Pretoria)

#### Switzerland

John R. Thome (Ecole polytechnique federale de Lausanne)  
Dimos Poulikakos (Swiss Federal Institute of Technology)

#### The Netherlands

Theo H. van der Meer (University of Twente)  
Anton A. van Steenhoven (Eindhoven University of Technology)

#### United Kingdom

Adrian Briggs (Queen Mary, University of London)  
Geoffrey F. Hewitt (Imperial College London)

#### United States of America

Michael Jensen (Rensselaer Polytechnic Institute)  
Mohamed S. El-Genk (University of New Mexico)

## Advisory Board

### Past Presidents of the Heat Transfer Society of Japan

Nobuyuki Araki (Shizuoka University)  
Shintaro Enya (IHI, Co.)  
Yasunobu Fujita (Kyushu University)  
Yujiro Hayashi (Kanagawa University)  
Hiroshi Kawamura (Tokyo University of Science)  
Sadanari Mochizuki (Tokyo University of Agriculture and Technology)  
Fumimaru Ogino (Kyoto University)  
Yasutaka Nagano (Nagoya Institute of Technology)  
Masahiro Shoji (The University of Tokyo)  
Ayao Tsuge (Mitsubishi Heavy Industries, Ltd.)

(Affiliations are based on the previous ones.)

Name	ID	p.
Abahri, Kamilia	PMD-I-422	75
Abdelaziz, Omar	EES-K-114	39
Abdelaziz, Omar	EES-K-123	39
Abdelmessih, Amanie	BMA-E-224	47
Abe, Fumiaki	CMB-J-521	91
Abe, Yutaka	CDS-J-225	54
Abiko, Kazusa	HPP-K-426	77
Abishek, Sridhar	EVP-B1-213	40
Abreu, Luiz	INV-E-214	47
Acharya, Sumanta	GTB-G-415	73
Adelaja, Adekunle O.	CDS-J-116	38
Adelaja, Adekunle O.	CDS-J-121	38
Adewumi, Olayinka O.	HEX-G-126	35
Adewumi, Olayinka O.	HTE-C2-534	83
Adio, Saheed Adewale	TPP-I-221	53
Adio, Saheed Adewale	TPP-I-222	53
Afroz, Hasan M. M.	CDS-J-211	54
Agbim, Kenechi	TEL-K-324	66
Agostini, Francesco	EEC-H-223	51
Agrawal, Ashish	HEX-G-123	35
Agrawal, Chitranjan	HTE-C2-531	83
Ahamed, Mohammad Shahed	HPP-K-412	77
Ahn, Tae-hwan	CDS-J-113	38
Ai, Qing	TPP-I-122	37
Ai, Qing	RAD-J-415	76
Aiguier, T.	EVP-B1-123	29
Ait Saada, Mebrouk	EVP-B1-214	40
Ajaev, Vladimir	EVP-B1-115	29
Akaiwa, Ryota	TTR-C2-124	32
Akamatsu, Masato	FCV-F-312	61
Akiyama, Sayaka	PBL-B1-421	67
Akiyama, Shinsaku	IPJ-C1-313	59
Akoshima, Megumi	MNF-E-123	33
Aksan, Alptekin	BMA-E-222	47
Aktas, Murat K.	NCV-F-416	72
Akwaboa, Stephen	FCV-F-323	61
Al Hadad, Waseem	INV-E-216	47
Al Qubeissi, Mansour	EVP-B1-122	29
Albare, Tristan	NMM-G-533	87
Alcalde, Diego	HEX-G-212	49
Alifanov, Oleg	INV-E-213	47
Alifanov, Oleg	RAD-J-421	76
Alimohammadi, Sajad	HTE-C2-523	83

Allain, Hervé	CPM-E-422	71
Allesina, Giulio	EES-K-116	39
Alsheghri, Ammar A.	FLM-H-531	88
Altemani, Carlos	CND-H-522	88
Altura, David	MIN-C1-224	43
Alvarado, Jorge	TPM-B2-522	80
Alves, Carlos	INV-E-214	47
Amber, Ityona	SOL-B2-225	42
Ameel, Bernd	HEX-G-222	50
Ameel, Bernd	PMD-I-323	64
Ami, Takeyuki	HEX-G-215	49
Ami, Takeyuki	TPF-B2-322	58
Amin Rana, Ruhul	CND-H-516	87
Amirfazli, Alidad	NMT-F-536	85
Ando, Jun	PBL-B1-511	78
André, Frédéric	CMB-J-532	91
Anno, Hiroaki	TEL-K-323	66
Antao, Dion	NMS-C2-215	44
Antao, Dion	FLM-H-534	88
Antoni, Thomas	TPP-I-214	52
Antonini Alves, Thiago	EEC-H-221	51
Antonini, Carlo	NMT-F-535	85
Antonini, Carlo	NMT-F-536	85
Antonsen, Nicolas	TPN-B2-421	68
Aoki, Kumi	EEC-H-222	51
Arakaki, Eisuke	MLT-H-112	36
Araki, Fuyuto	BMA-E-223	47
Araki, Takuto	FCL-H-122	36
Araneo, Lucio	TPA-B2-111	30
Aravinthan, Manoharan	FBL-B1-232	41
Arik, Mehmet	NCV-F-426	72
Arik, Mehmet	HTE-C2-515	82
Arima, Hirofumi	TPF-B2-313	58
Arima, Hirofumi	TPF-B2-321	58
Arimoto, Hidenobu	MIN-C1-234	44
Arimoto, Hidenobu	MIN-C1-236	44
Armfield, Steven	NCV-F-515	84
Armfield, Steven W.	NSM-H-322	63
Artemov, Valerij	CDS-J-114	38
Asano, Hitoshi	FCL-H-123	36
Asano, Hitoshi	FBL-B1-312	57
Asano, Motoharu	MNF-E-125	33
Asano, Motoharu	TEL-K-322	66
Ashraf, Awais	SOL-B2-211	41

Athavale, Jayati	HTE-C2-421	70
aus der Wiesche, Stefan	TDY-C1-516	81
Aute, Vikrant	EES-K-114	39
Ayres, Samantha	CNV-C1-524	81
Azulay, Asaf	TPM-B2-523	80
Azzolin, Marco	CDS-J-125	38
Baba, Shohei	FCL-H-121	36
Bacellar, Daniel	EES-K-114	39
Bader, Roman	PMD-I-314	64
Bae, Ji-Yeul	HTE-C2-412	70
Bae, Ju Chan	HTE-C2-412	70
Baek, Seung Wook	SOL-B2-215	41
Baelmans, Martine	EEC-H-234	52
Baelmans, Martine	OPT-F-526	85
Baelmans, Martine	PMD-I-524	89
Bai, Bofeng	EEC-H-212	51
Bai, Bofeng	TMG-K-534	93
Bai, Chao	TBF-D-225	46
Bai, Fang	NSM-H-315	63
Bai, Fengwu	PMD-I-312	64
Bai, Jia Xi	TDY-C1-423	69
Bai, Shiwu	CND-H-514	87
Balaji, C.	INV-E-211	47
Balaji, Chakravarthy	HTE-C2-231	45
Balaji, Chakravarthy	TMG-K-523	92
Balakrishnan, Arcot R.	FBL-B1-232	41
Baltis, Coen	TPB-B2-122	30
Bandara, Arunima	SOL-B2-211	41
Bandara, Thilaksiri	TPM-B2-525	80
Bandaru, Nanda Kishor	BMA-E-113	33
Bang, In Cheol	PBL-B1-523	78
Bannikov, Aleksey	SOL-B2-214	41
Bao, Hua	RAD-J-322	65
Bao, Hua	NMM-G-524	86
Bao, Jiajian	TPP-I-116	37
Baptista, João	CNV-C1-532	82
Barbosa, Jader	HEX-G-212	49
Bar-Cohen, Avram	EEC-H-214	51
Bar-Cohen, Avram	FCV-F-321	61
Barry, Matthew	TEL-K-324	66
Basak, Tanmay	NCV-F-413	72
Basak, Tanmay	MCV-D-512	84
Baskan, Özge	HTE-C2-525	83
Batzdorf, Stefan	TDY-C1-414	69

Baudin, Nicolas	EVP-B1-211	40
Baudouy, Bertrand	CPM-E-422	71
Bazile, Rudy	TPS-B2-512	79
Beale, Steven	FCL-H-124	36
Belarbi, Rafik	PMD-I-422	75
Bello-Ochende, Tunde	HEX-G-126	35
Bello-Ochende, Tunde	SOL-B2-235	42
Bello-Ochende, Tunde	RNE-C1-322	59
Bello-Ochende, Tunde	HTE-C2-534	83
Belyaev, Alexander	TPB-B2-124	30
Ben-Abdallah, Philippe	PPE-G-112	35
Ben-David, Ori	TPM-B2-523	80
Bennacer, Rachid	PMD-I-422	75
Benselama, Adel	MTR-F-122	34
Bergez, Wladimir	PBL-B1-524	78
Bertin, Yves	MTR-F-122	34
Betz, Amy	TPP-I-224	53
Beyne, Eric	EEC-H-234	52
Bhaumik, Swapan	PBL-B1-532	79
Bhavnani, Sushil	CDS-J-115	38
Bi, Cheng	CND-H-424	74
Bi, Jingliang	PBL-B1-425	67
Biegger, Christoph	HTE-C2-512	82
Biehs, Svend-Age	PPE-G-112	35
Bierman, David	SOL-B2-223	42
Birkett, Matthew	TST-I-234	53
Biswal, Pratibha	NCV-F-413	72
Biwole, Pascal Henry	TMG-K-531	93
Blakers, Andrew	SOL-B2-221	42
Blandre, Etienne	NMM-G-533	87
Bode, Florin	TTR-C2-125	32
Bode, Florin	NSM-H-326	63
Bodla, Karthik K.	PMD-I-411	75
Bohn, Dieter	HTE-C2-513	82
Boltenko, Eduard	HTE-C2-225	45
Borovoy, Wolf	FCV-C1-114	31
Bortolin, Stefano	CDS-J-124	38
Bortolin, Stefano	CDS-J-125	38
Bottarelli, Michele	PMD-I-534	90
Bouchenna, Chafea	EVP-B1-214	40
Bougher, Thomas	NMM-G-423	73
Boyard, Nicolas	MIN-C1-213	43
Brandon, Nigel	FCL-H-125	36
Brauner, Neima	MIN-C1-224	43

# Author Index

Brauner, Neima	HTE-C2-524	83
Brouilliot, Denis	HTE-C2-424	70
Brum, Fabio	TPM-B2-524	80
Brus, Grzegorz	PMD-I-426	75
Brutin, David	FCV-F-314	61
Buchlin, Jean-Marie	CND-H-513	87
Buckinx, Geert	PMD-I-524	89
Budnik, Sergey	INV-E-213	47
Budnik, Sergey	RAD-J-421	76
Bühler, Simon	PMD-I-515	89
Buonomo, Bernardo	MCV-D-513	84
Burger, Francois H.	CND-H-414	74
Burgers, John	TST-I-234	53
Burghold, Michael	MNF-E-124	33
Bykovskaya, Elena	EVP-B1-115	29
Caballina, Ophélie	MIN-C1-225	43
Cai, Jun	HTE-C2-535	83
Caliot, Cyril	PMD-I-316	64
Cannon, James	TDY-C1-411	69
Cao, Bing-Yang	TPP-I-215	52
Cao, Bing-Yang	CND-H-413	74
Cao, Jianping	TDY-C1-513	81
Cao, Zhi-Hong	FCV-F-326	61
Cao, Zhi-Hong	MCV-D-515	84
Carey, Van	EVP-B1-124	29
Carle, Florian	FCV-F-314	61
Carrington, David B.	CPM-E-413	71
Cartalade, Alain	CPM-E-421	71
Castanet, Guillaume	MIN-C1-225	43
Cavadini, Philipp	MTR-F-114	34
Cetindag, Semih	NCV-F-416	72
Cha, Minsuk	CMB-J-526	91
Chai, Zhiyong	NMM-G-522	86
Chalopin, Yann	TPP-I-214	52
Chandra, Sanjeev	MTR-F-111	34
Chandra, Sanjeev	FCV-F-232	49
Chang, Chao	HPP-K-424	77
Chang, Chao	HTE-C2-532	83
Chang, Siyuan	BMA-E-225	47
Chang, Xinyu	FCV-F-322	61
Chapuis, Pierre-Olivier	RAD-J-325	65
Chatterjee, Barun	HTE-C2-531	83
Che, Zhizhao	TBF-D-223	46
Cheaib, Farah	EEF-K-234	56

Chehayeb, Karim	EEF-K-234	56
Chen, Andrew	GTB-G-416	73
Chen, Baoming	PMD-I-413	75
Chen, Bin	HEX-G-121	35
Chen, Bin	PPE-G-113	35
Chen, Bin	BMA-E-221	47
Chen, Bin	SAT-J-511	90
Chen, Chien-Jen	TMG-K-521	92
Chen, Cong	NSM-H-325	63
Chen, Guidong	HEX-G-234	50
Chen, Hongyin	TPP-I-212	52
Chen, Ing Youn	TMG-K-521	92
Chen, Jian	FCV-C1-112	31
Chen, Jiannan	SAT-J-513	90
Chen, JinnKuen	INV-E-212	47
Chen, Kai	RNE-C1-321	59
Chen, Lifei	TPP-I-115	37
Chen, Lihong	FCV-F-322	61
Chen, Lin	FCV-F-223	48
Chen, Lin	EEF-K-221	56
Chen, Lin	NMM-G-526	86
Chen, Lingyu	PMD-I-326	64
Chen, Min	NMS-C2-213	44
Chen, Qin	RAD-J-424	76
Chen, Qun	TMG-K-535	93
Chen, Xiaoqing	PMD-I-532	90
Chen, Xingjian	EEF-K-223	56
Chen, Yan	EEF-K-223	56
Chen, Yan	HPP-K-421	77
Chen, Yanjun	TPS-B2-515	79
Chen, Yi-min	NMM-G-526	86
Chen, Ying	CND-H-425	74
Chen, Yitung	HTE-C2-321	60
Chen, Yong	RAD-J-326	65
Chen, Yong-Chang	PMD-I-313	64
Chen, Yongping	NMM-G-513	86
Chen, Yunfei	TPP-I-116	37
Chen, Zhihao	PBL-B1-324	57
Cheng, Chuanxiao	PMD-I-315	64
Cheng, Lin	HTE-C2-311	60
Cheng, Lin	HPP-K-421	77
Cheng, Lin	TMG-K-512	92
Cheng, Lin	TMG-K-525	92
Cheng, Ling	TPF-B2-324	58

Cheng, Wen-Long	TPP-I-111	37
Cheng, Xuetao	HTE-C2-511	82
Cheng, Yu-Chi	NMS-C2-212	44
Cheng, Ze-Dong	SOL-B2-224	42
Cheon, Jong	CDS-J-113	38
Cheung, Sherman C. P.	TPM-B2-525	80
Cheverda, Vyacheslav	FLM-H-533	88
Chiashi, Shohei	NMM-G-421	73
Chiashi, Shohei	NMM-G-424	73
Chiba, Takaaki	NMM-G-421	73
Chien, Kuo-Hsiang	NMS-C2-212	44
Chien, Liang-Han	CDS-J-212	54
Chien, Nguyen Ba	FBL-B1-233	41
Chikahisa, Takemi	PMD-I-425	75
Chikh, Salah	EVP-B1-214	40
Childs, Peter RN	EES-K-126	39
Chillà, Francesca	MIN-C1-226	43
Chilukoti, Hari Krishna	NMM-G-521	86
Chinige, Sampath Kumar	PMD-I-412	75
Cho, Hyung-Hee	HTE-C2-412	70
Cho, Keumnam	HEX-G-232	50
Choi, Kwang Il	FBL-B1-233	41
Chong, Kai-Leong	NCV-F-415	72
Chouffart, Quentin	MFP-G-314	62
Christophe, Batsale Jean	TPA-B2-113	30
Christophe, Pradere	TPA-B2-113	30
Christopher, David M.	PBL-B1-425	67
Christopher, David	CPM-E-415	71
Chu, Chen-Xi	HEX-G-122	35
Chu, Kuang-Han	NMS-C2-215	44
Chua, Kian Jon	CMB-J-536	91
Chua, Kian Yong	CMB-J-536	91
Chudnovsky, Yaroslav	HTE-C2-522	83
Chung, Sukho	CMB-J-526	91
Chyu, Minking K.	TEL-K-324	66
Cindy, Hany	TPA-B2-113	30
Clercx, Herman J. H.	HTE-C2-525	83
Coelho, Pedro J.	RAD-J-314	65
Coimbra, Carlos	SOL-B2-233	42
Cola, Baratunde	NMM-G-423	73
Colaco, Marcelo	INV-E-214	47
Colin, Catherine	EVP-B1-211	40
Colin, Catherine	FBL-B1-314	57
Colin, Catherine	PBL-B1-524	78

Collins, Michael	TPM-B2-522	80
Colombo, Luigi	HTE-C2-322	60
Combeau, Hervé	PBL-B1-424	67
Corberan, Jose	CDS-J-235	55
Corre, Yann	PLS-K-316	66
Corticelli, Mauro A.	EVP-B1-121	29
Cotta, Renato M.	NSM-H-323	63
Coyle, Tom	FCV-F-232	49
Crouseilles, Nicolas	RAD-J-314	65
Cruz, Carlos C. S.	FCV-C1-113	31
Cruz, Manuel Ernani	RNE-C1-324	59
Cui, Kehang	NMM-G-421	73
Cui, Wujun	TMG-K-513	92
Cui, Zhendong	TPN-B2-423	68
Cui, Zheng	TMG-K-512	92
Cui, Zheng	TMG-K-525	92
D'yachenko, Alex	TTR-C2-111	32
Dag, Yusuf	FCV-F-323	61
Dai, Ren	CNV-C1-525	81
Daiguji, Hirofumi	NMM-G-531	87
Daisho, Yasuhiro	CMB-J-531	91
Dalmas, Sergio	CND-H-412	74
Dang, Chaobin	FBL-B1-234	41
Dang, Chaobin	ADS-D-213	46
Dang, Guoxin	FCV-F-322	61
Darson Li, Dezheng	HTE-C2-232	45
Das, Apurba	CND-H-524	88
Das, Sarit Kumar	BMA-E-113	33
Das, Sarit Kumar	FBL-B1-232	41
Das, Sarit Kumar	NMM-G-514	86
Das, Sudev	PBL-B1-532	79
Davaa, Ganbat	CNV-C1-533	82
Daverat, Christophe	NCV-F-516	84
Dayal, Ram	TPM-B2-534	80
De Kerpel, Kathleen	TPF-B2-311	58
De Kerpel, Kathleen	PMD-I-324	64
de Marchi Neto, Ismael	CND-H-522	88
De Paepe, Michel	HEX-G-222	50
De Paepe, Michel	TPF-B2-311	58
De Paepe, Michel	RNE-C1-325	59
De Paepe, Michel	PMD-I-323	64
De Paepe, Michel	PMD-I-324	64
de Pinho, Jean	RNE-C1-324	59
De Salve, Mario	CDS-J-215	54

De Schampheleire, Sven	PMD-I-323	64
De Schampheleire, Sven	PMD-I-324	64
de Vahl Davis, Graham	NCV-F-512	84
De Wolf, Ingrid	EEC-H-234	52
Dedov, A.V.	TPB-B2-124	30
Dedov, Aleksey	HTE-C2-225	45
Defresne, Gérard	NCV-F-414	72
Degiovanni, Alain	MIN-C1-235	44
Degroote, Joris	HEX-G-222	50
Deguchi, Yoshihiro	MIN-C1-222	43
Deguchi, Yoshihiro	MIN-C1-223	43
Del Col, Davide	CDS-J-124	38
Del Col, Davide	CDS-J-125	38
Delaunay, Didier	MIN-C1-213	43
Delaunay, Didier	RAD-J-311	65
Delsipée, M.	CND-H-513	87
Deng, Zilong	NMM-G-513	86
Deppermann, Marc	MNF-E-124	33
Deppermann, Marc	CND-H-511	87
Derby, Melanie	CDS-J-123	38
Desgrosseilliers, Louis	CND-H-515	87
Dessiatoun, Serguei	HEX-G-124	35
Dezan, Daniel	OPT-F-524	85
Dhir, Vijay K.	HTE-C2-416	70
Di Federico, Vittorio	PMD-I-534	90
Di Marco, Paolo	TBF-D-221	46
Diani, Andrea	FBL-B1-235	41
Diao, Yanhua	HTE-C2-426	70
Dietl, Jochen	TPB-B2-123	30
Dietl, Jochen	PBL-B1-322	57
Dietrich, Benjamin	PMD-I-311	64
Ding, Jie	PBL-B1-516	78
Ding, Jing	ADS-D-216	46
Ding, Jing	TPP-I-212	52
Ding, Jing	PBL-B1-521	78
Ding, Yu-Dong	FLM-H-535	88
Dirker, Jaco	FCV-C1-111	31
Dirker, Jaco	CDS-J-116	38
Dirker, Jaco	CDS-J-121	38
Dirker, Jaco	FCV-F-212	48
Dirker, Jaco	FCV-F-215	48
Dirker, Jaco	CND-H-414	74
Do, Kyu Hyung	EVP-B1-112	29
Dogruoz, Baris	HTE-C2-515	82

Dombrovsky, Leonid	RAD-J-311	65
Dombrovsky, Leonid	RAD-J-312	65
Dombrovsky, Leonid	RAD-J-316	65
Dombrovsky, Leonid	RAD-J-421	76
Domingues, Gilberto	PMD-I-316	64
Dong, Bin	CDS-J-221	54
Dong, Wei	TBF-D-226	46
Dong, Wei	TPN-B2-422	68
Dong, Yuan	TPP-I-215	52
Donnelly, Brian	EEC-H-233	52
Donnelly, Brian	TPF-B2-314	58
Dorey, Luc-Henry	CMB-J-535	91
Drevillon, Jeremie	TMG-K-532	93
du Toit, C.G.	CPM-E-424	71
du Toit, Charl G	RAD-J-414	76
Du, Chun-Xu	PMD-I-313	64
Du, Jia-di	CDS-J-234	55
Du, Wenjing	HTE-C2-311	60
Du, Wenjing	HPP-K-421	77
Du, Xiaoze	TST-I-236	53
Du, Xiaoze	EEF-K-221	56
Du, Xiaoze	HTE-C2-313	60
Du, Xiaoze	FCV-F-315	61
Du, XiaoZe	CND-H-526	88
Duan, Fei	GTB-G-414	73
Duan, Xinyue	NSM-H-324	63
Dubrac, Benoît	PBL-B1-424	67
Duluc, Marie-Christine	NCV-F-414	72
Dumortier, Mikael	SOL-B2-226	42
Duran Medina, Olmo	HTE-C2-221	45
Duru, Paul	PBL-B1-413	67
Egami, Yasuhiro	FBL-B1-221	40
Eggers, Jan	TPP-I-223	53
Eggers, Jan	NMT-F-532	85
Egorov, Ivan	FCV-C1-114	31
Egorov, Kirill	FCV-C1-125	31
Ehrenpreis, Claas	FCV-F-311	61
Ehrlich, Leicester	TMG-K-526	92
Eigenfeld, Klaus	FCV-F-233	49
Ekaid, Ali L.	FCV-C1-123	31
Ekkad, Srinath	HTE-C2-421	70
Eliçabe, Guillermo E.	BMA-E-114	33
Elperin, Tov	TPM-B2-531	80
Endo, Akira	NMM-G-531	87

Enright, Ryan	FCV-F-222	48
Enright, Ryan	CDS-J-232	55
Enright, Ryan	CDS-J-236	55
Enright, Ryan	ECS-K-212	55
Errera, Marc	CND-H-421	74
Escudié, Dany	CMB-J-532	91
Esfarjani, Keivan	PPE-G-114	35
Eshima, Shotaro	ECS-K-211	55
Esmeelpanah, Javad	FCV-F-232	49
Estiot, Elise	HTE-C2-325	60
Eswaran, Viktor	HTE-C2-233	45
Eswaran, Vinayak	PLS-K-311	66
Everett, Vernie	SOL-B2-221	42
Everts, Marilize	CNV-C1-524	81
Ewim, Daniel R.E.	CDS-J-121	38
Ezzahri, Younes	TMG-K-532	93
Fan, H.	MTR-F-111	34
Fan, Li-Wu	PBL-B1-531	79
Fan, Xiao-wei	CDS-J-234	55
Fan, Yilin	TMG-K-511	92
Fang, Chiao-Li	EEC-H-232	52
Fang, Xing	RAD-J-322	65
Fariñas Alvariano, Pablo	NMM-G-422	73
Fedorets, Alexander	EVP-B1-116	29
Feng, Shiyu	ADS-D-213	46
Feng, Yanhui	PLS-K-312	66
Feng, Zaichun	INV-E-212	47
Feoktistov, Dmitry	EVP-B1-115	29
Ferret, Bernard	TPS-B2-512	79
Fichot, Florian	PBL-B1-413	67
Filippeschi, Sauro	TPA-B2-111	30
Fischedick, Thomas	PMD-I-311	64
Fischer, Sebastian	TDY-C1-414	69
Fisher, Timothy S.	TMG-K-522	92
Flamant, Gilles	PMD-I-316	64
Fly, Ashley	CDS-J-226	54
Fody, Josh	HEX-G-124	35
Fominykh, Andrew	TPM-B2-531	80
Fontanesi, Claudio	EES-K-116	39
Fornalik-Wajs, Elzbieta	HTE-C2-234	45
Foroushani, Seyed S. M.	NCV-F-422	72
Fossa, Marco	HTE-C2-422	70
Fraigneau, Yann	NCV-F-414	72
Fraigneau, Yann	NCV-F-513	84

France-Lanord, Arthur	NMM-G-533	87
Frekers, Yona	CND-H-511	87
Freko, Pascal	HEX-G-235	50
Freystein, Martin	TPB-B2-123	30
Frizzell, Ronan	ECS-K-212	55
Fronk, Brian M.	CDS-J-112	38
Fu, Benwei	HPP-K-425	77
Fu, Bo	CND-H-424	74
Fu, Dong	EEF-K-223	56
Fu, Po-Chin	RAD-J-422	76
Fu, Rong	BMA-E-116	33
Fu, RuiPeng	IPJ-C1-312	59
Fu, Yuan-Xiang	CND-H-512	87
Fujii, Hikari	PMD-I-534	90
Fujimoto, Shu	GTB-G-411	73
Fujimura, Hideo	MLT-H-112	36
Fujino, Hirokazu	ACR-G-324	62
Fujioka, Keiko	ECS-K-215	55
Fujioka, Ryota	MIN-C1-234	44
Fujisaki, Takashi	NCV-F-421	72
Fukai, Jun	ECS-K-211	55
Fukatani, Yuki	EVP-B1-114	29
Fukuda, Katsuya	HTE-C2-516	82
Fukunaga, Takano	BMA-E-222	47
Fukuyama, Yuta	PBL-B1-515	78
Fumeron, Sebastien	NMM-G-535	87
Funatani, Shumpei	ACR-G-322	62
Fushinobu, Kazuyoshi	ADS-D-214	46
Fustinoni, Damiano	HTE-C2-322	60
Gaeini, Mohammadreza	TST-I-231	53
Gajbhiye, N. L	HTE-C2-233	45
Gajbhiye, Narendra	PLS-K-311	66
Galizzi, Cédric	CMB-J-532	91
Gambaryan-Roisman, Tatiana	MTR-F-124	34
Gambaryan-Roisman, Tatiana	TDY-C1-414	69
Gambaryan-Roisman, Tatiana	TPM-B2-534	80
Gan, Lianghua	PLS-K-313	66
Gao, Dong-Dong	PMD-I-313	64
Gao, Hongtao	NSM-H-313	63
Gao, Jianmin	TDY-C1-426	69
Gao, Jianmin	HTE-C2-514	82
Gao, Tao	EEF-K-231	56
Gao, Tao	NMM-G-534	87
Gao, Tiewu	TDY-C1-426	69

# Author Index

Gao, Wei	FCV-C1-115	31
Gao, Wei	CMB-J-533	91
Gao, Xuan	GTB-G-414	73
Garach, Darshik V.	FCV-F-215	48
Garbrecht, Oliver	MIN-C1-233	44
Garbrecht, Oliver	FCV-F-311	61
García del Valle, Javier	NMM-G-422	73
García-Cascales, José Ramón	TPB-B2-121	30
García-Cascales, José Ramón	TPB-B2-125	30
García-Cascales, José Ramón	TPM-B2-521	80
Gardarein, Jean-Laurent	PLS-K-316	66
Garimella, Srinivas	CDS-J-112	38
Garimella, Suresh V.	PMD-I-411	75
Garnier, Charles	NCV-F-513	84
Gaspar, Jonathan	PLS-K-316	66
Gatapova, Elizaveta	EVP-B1-115	29
Ge, Minghui	CDS-J-221	54
Ge, Zhengwei	NMM-G-426	73
Gelfgat, Alexander	CPM-E-426	71
George, Pradeep	MFP-G-315	62
Georgoulas, Anastasios	TPM-B2-533	80
Ghaffari, Omidreza	HTE-C2-515	82
Ghajar, Afshin J.	NMM-G-511	86
Ghanta, Nikhilesh	PMD-I-412	75
Gharibdoust, Kiarash	EEF-K-222	56
Ghoshdastidar, Partha	HEX-G-123	35
Gilblas, Remi	MIN-C1-221	43
Giroux-Julien, Stéphanie	HTE-C2-422	70
Gnanasekaran, Nagarajan	INV-E-211	47
Goddard, Joe	TDY-C1-416	69
Goepper, Flora	PBL-B1-424	67
Goetze, Pitt	FCV-F-231	49
Goetze, Pitt	FCV-F-233	49
Goldstein, Richard	GTB-G-411	73
Gomyo, Taisaku	FBL-B1-312	57
Gong, Feifei	TPS-B2-513	79
Gong, Liang	NSM-H-324	63
Gong, Liang	PMD-I-423	75
González-Maciá, Jose	CDS-J-235	55
Gorecki, Grzegorz	HEX-G-224	50
Gorecki, Grzegorz	CPM-E-412	71
Goto, Seiji	CNV-C1-523	81
Gouriet, Jean-Baptiste	PLS-K-314	66
Gradeck, Michel	EVP-B1-123	29

Gradeck, Michel	MIN-C1-225	43
Gradinger, Thomas	EEC-H-223	51
Gramazio, Pasqualino	HTE-C2-322	60
Grenard, Philippe	CMB-J-535	91
Griffin, Justin	TMG-K-515	92
Gross, Ullrich	FCV-F-231	49
Gross, Ulrich	FCV-F-233	49
Groulx, Dominic	CND-H-515	87
Groulx, Dominic	TMG-K-531	93
Gu, Jingchen	CND-H-514	87
Gu, Xiaoguang	SOL-B2-216	41
Guan, Ning	NMM-G-515	86
Guevelou, Simon	PMD-I-316	64
Guo, Xiaofeng	TMG-K-511	92
Guo, Zengyuan	MLT-H-114	36
Guo, Zeng-Yuan	TPP-I-215	52
Guo, Zeng-Yuan	TMG-K-516	92
Guo, Zhen	FLG-H-126	36
Guo, Zhen	TMG-K-514	92
Gupta, Akhilesh	HTE-C2-531	83
Gustafsson, Andreas	EES-K-124	39
Gustavsen, Arild	EEF-K-231	56
Gustavsen, Arild	NMM-G-534	87
Hachiya, Kohei	HTE-C2-536	83
Haddada, Jalaluddin	HEX-G-125	35
Hafeez, Pakeeza	FCV-F-232	49
Haghighi, Ehsan B.	TMG-K-514	92
Hagino, Harutoshi	TEL-K-323	66
Hagiwara, Yoshimichi	TTR-C2-124	32
Haishi, Tomoyuki	MIN-C1-215	43
Hakoume, Donia	RAD-J-311	65
Hall, Wayne	MCV-D-511	84
Ham, Heecheol	HTE-C2-412	70
Hamamoto, Yoshinori	ADS-D-215	46
Hamamoto, Yoshinori	RAD-J-426	76
Han, Haoxue	NMM-G-425	73
Han, Je-Chin	GTB-G-416	73
Han, Kyu-Hyun	EES-K-125	39
Han, Sunwoo	TPP-I-211	52
Han, Wei	TPM-B2-532	80
Han, Youngbae	TBF-D-222	46
Hanazaki, Hideshi	IPJ-C1-313	59
Hanks, Daniel	FLM-H-534	88
Hanuskova, Miriam	EES-K-116	39

Hao, Min	EES-K-112	39
Hara, Shumpei	TTR-C2-123	32
Hara, Tomoko	PMD-I-521	89
Haramura, Yoshihiko	FCV-F-221	48
Haramura, Yoshihiko	PBL-B1-415	67
Harmand, Souad	HTE-C2-221	45
Haruki, Naoto	PMD-I-421	75
Haruki, Naoto	HTE-C2-536	83
Hasegawa, Daisuke	NMM-G-424	73
Hasegawa, Koji	PBL-B1-522	78
Hasegawa, Yosuke	TBF-D-222	46
Hasegawa, Yosuke	HTE-C2-316	60
Hasnady, Saiful	ADS-D-214	46
Hassel, Egon	HTE-C2-522	83
Hatakeyama, Tomoyuki	MIN-C1-216	43
Hatakeyama, Tomoyuki	EEC-H-211	51
Hattori, Yasuo	FCV-C1-124	31
Hattori, Yasuo	NCV-F-511	84
Hausseiner, Sophia	SOL-B2-226	42
Hausteiner, Herman	FCV-F-311	61
Hawkes, Evatt	SOL-B2-211	41
Hawkes, Evatt	SOL-B2-216	41
Hayashi, Kosuke	TBF-D-221	46
He, Sisi	TPP-I-116	37
He, Wangbo	TEL-K-325	66
He, Wei	TEL-K-326	66
He, Y L	PPE-G-113	35
He, Y L	BMA-E-221	47
He, Yaling	TST-I-236	53
He, YaLing	IPJ-C1-312	59
He, Ya-Ling	EVP-B1-111	29
He, Ya-Ling	MLT-H-115	36
He, Ya-Ling	SOL-B2-224	42
He, Ya-Ling	CDS-J-234	55
He, Yan	TPP-I-113	37
He, Yinghe	NSM-H-322	63
He, Zhenzong	INV-E-215	47
He, Zhen-zong	RAD-J-424	76
He, Zhiguang	EEF-K-224	56
He, Zhiguang	OPT-F-523	85
He, ZhongYang	RNE-C1-321	59
Heath, Melissa	MCV-D-511	84
Heidari, Mahbod	EEF-K-222	56
Heidemann, Wolfgang	EEF-K-233	56

Heikal, Morgan	EVP-B1-122	29
Helcig, Christian	TDY-C1-516	81
Hendricks, Terry	NMS-C2-215	44
Hensler, Thomas R.	EEF-K-223	56
Hernandez, Daniel	MIN-C1-221	43
Herwig, Heinz	TTR-C2-115	32
Herwig, Heinz	TDY-C1-421	69
Herwig, Heinz	TDY-C1-424	69
Herz, Fabian	MFP-G-311	62
Hetsroni, Gad	FCV-F-321	61
Hewitt, Geoffery	TPN-B2-424	68
Hewitt, Geoffrey F.	TPF-B2-323	58
Hey, Jonathan	ECS-K-214	55
Hidema, Ruri	FCV-F-214	48
Hidema, Ruri	HEX-G-236	50
Higurashi, Tomohiro	NMS-C2-211	44
Hihara, Eiji	FBL-B1-234	41
Hihara, Eiji	ADS-D-213	46
Hirahata, Hideto	BMA-E-222	47
Hirai, Shuichiro	ECS-K-213	55
Hirai, Shuichiro	PMD-I-531	90
Hirasawa, Shigeki	OPT-F-525	85
Hirata, Katsuya	NCV-F-514	84
Hirata, Takuya	EEC-H-222	51
Ho, Jin Yao	PBL-B1-535	79
Hodes, Marc	FCV-F-222	48
Hodson, Stephen L.	TMG-K-522	92
Hoelzl, Reinhold	HEX-G-235	50
Hokazono, Masahiro	TEL-K-323	66
Hokoi, Shuichi	HTE-C2-521	83
Holfeld, Anna	HTE-C2-315	60
Holfeld, Anna	HTE-C2-323	60
Holloway, Caleb	EEC-H-214	51
Honda, Itsuro	FBL-B1-221	40
Hong, Chungpyo	FCV-F-224	48
Hong, Chungpyo	PBL-B1-511	78
Hong, Jiaju	TPN-B2-414	68
Hori, Takuma	PPE-G-114	35
Horibe, Akihiko	PMD-I-421	75
Horibe, Akihiko	HTE-C2-536	83
Horiki, Sachiyo	TPF-B2-312	58
Hosoda, Masaya	NMM-G-523	86
Hossain, MD. Anowar	CDS-J-211	54
Hotta, Ryutaro	HPP-K-413	77

Hou, Xiao-Huang	PMD-I-313	64
Houra, Tomoya	TTR-C2-112	32
Hsieh, Yuan-Ta	EEC-H-232	52
Hu, Dinghua	EVP-B1-126	29
Hu, Guo-Jie	MLT-H-114	36
Hu, Jibin	TPN-B2-413	68
Hu, Ya-Cai	PBL-B1-531	79
Hu, Yuanchen	HTE-C2-416	70
Hua, Yu-Chao	CND-H-413	74
Huai, Xiulan	TPN-B2-423	68
Huai, Xiulan	HTE-C2-535	83
Huang, Baoling	PPE-G-115	35
Huang, Baoling	TPP-I-225	53
Huang, Lingyan	PBL-B1-536	79
Huang, Shanbo	PMD-I-423	75
Huang, Shi-Di	NCV-F-415	72
Huang, Simin	FCV-F-313	61
Huang, Suyi	EES-K-115	39
Huang, Yichuan	TPN-B2-411	68
Huang, Yong-Hua	TPP-I-111	37
Huang, Zheng	PMD-I-415	75
Huisseune, Henk	HEX-G-222	50
Huisseune, Henk	PMD-I-323	64
Huisseune, Henk	PMD-I-324	64
Huo, Yongzhan	TEL-K-325	66
Huxtable, Scott	HTE-C2-421	70
Hwang, Seongwon	HEX-G-213	49
Hwang, Seyun	TPN-B2-412	68
Iacovides, Hector	HEX-G-233	50
Ichikawa, Takahiro	HPP-K-415	77
Ichimiya, Koichi	ACR-G-322	62
Ihara, Takeshi	EEF-K-231	56
Iida, Oaki	TTR-C2-121	32
Ikegami, Yasuyuki	TPF-B2-313	58
Ikuta, Tatsuya	CDS-J-223	54
Ikuta, Tatsuya	NMM-G-532	87
Illán-Gómez, Fernando	TPB-B2-121	30
Illán-Gómez, Fernando	TPB-B2-125	30
Illán-Gómez, Fernando	TPM-B2-521	80
Illias, Suhaimi	MIN-C1-212	43
Im, Ik-Tae	BMA-E-111	33
Imae, Tomohiko	NMS-C2-214	44
Imai, Keita	HTE-C2-411	70
Inam, Mohammad Ilias	NSM-H-322	63

Inaoka, Kyoji	HEX-G-223	50
Inaoka, Kyoji	HTE-C2-411	70
Inoue, Gen	FCL-H-121	36
Inoue, Satoshi	ACR-G-324	62
Inoue, Shuhei	MNF-E-121	33
Inoue, Taiki	NMM-G-424	73
Irokawa, Toshio	RAD-J-321	65
Isaev, Sergey	HTE-C2-522	83
Ishiguro, Syuhei	ACR-G-322	62
Ishizaki, Takuya	MNF-E-122	33
Ishizuka, Masaru	MIN-C1-216	43
Ishizuka, Masaru	EEC-H-211	51
Ito, Daisuke	HEX-G-215	49
Ito, Daisuke	PBL-B1-325	57
Ito, Kohei	MIN-C1-215	43
Ito, Yasumasa	TTR-C2-113	32
Ivanov, Nikolay	HEX-G-231	50
Iwai, Hiroshi	PMD-I-426	75
Iwai, Hiroshi	PMD-I-511	89
Iwaki, Chikako	NCV-F-412	72
Iwamoto, Kaoru	GTB-G-412	73
Iwamoto, Kaoru	HPP-K-426	77
Iwata, Minoru	RAD-J-321	65
Jackson, Matthew	PMD-I-523	89
Jacques, Lionel	RAD-J-423	76
Jadhav, Ravi S.	HTE-C2-231	45
Jäeckel, Eva	FCV-F-233	49
Jaluria, Yogesh	MFP-G-315	62
Jaluria, Yogesh	CNV-C1-533	82
Jambal, Odgerel	CNV-C1-533	82
Jang, Seok Pil	RNE-C1-326	59
Jannot, Y.	INV-E-216	47
Jarrahi, Mojtaba	NCV-F-414	72
Jean, Adrien	TPS-B2-512	79
Jean, Toutain	TPA-B2-113	30
Jean, Valentin	NMM-G-533	87
Jean, Valentin	NMM-G-535	87
Jeffers, Nicholas	TPA-B2-114	30
Jeffers, Nicholas	TMG-K-526	92
Jeffers, Nick	EEC-H-233	52
Jeffers, Nick	TMG-K-533	93
Jegla, Zdenek	EES-K-111	39
Jelle, Bjørn Petter	EEF-K-231	56
Jelle, Bjørn Petter	NMM-G-534	87

Jeng, Ming-Shan	NMS-C2-212	44
Jensen, Michael K.	CDS-J-123	38
Jeong, Jae Jun	HEX-G-213	49
Jeong, Jae-jun	CDS-J-113	38
Jeong, Ji-Hwan	HEX-G-213	49
Ji, Wen-Tao	EVP-B1-111	29
Ji, Wen-tao	CDS-J-234	55
Ji, Yingying	HPP-K-422	77
Ji, Yulong	HPP-K-424	77
Ji, Yulong	HTE-C2-532	83
Jia, Hui	HTE-C2-414	70
Jia, Lisi	CND-H-425	74
Jia, Mingxing	SOL-B2-234	42
Jia, Teng	INV-E-215	47
Jiang, Dongyue	CMB-J-536	91
Jiang, Fangming	MTR-F-121	34
Jiang, Guilin	NMM-G-515	86
Jiang, Lanlan	TPP-I-121	37
Jiang, Lanlan	TPP-I-213	52
Jiang, Lanlan	PMD-I-326	64
Jiang, Peixue	PMD-I-415	75
Jiang, Peixue	SAT-J-513	90
Jiang, Pei-Xue	CND-H-423	74
Jiang, Shengyao	TPN-B2-411	68
Jiang, Yi	MTR-F-112	34
Jiang, Yu Yan	FBL-B1-315	57
Jiao, Kui	TEL-K-325	66
Jiao, LiFang	MIN-C1-232	44
Jiao, Yafei	CND-H-525	88
Jiao, Yuhe	EES-K-124	39
Jige, Daisuke	EEC-H-231	52
Jin, Shiping	EES-K-115	39
Jin, Yan	TTR-C2-115	32
Jones, Barclay	TPM-B2-522	80
Joshi, Yogendra	PBL-B1-321	57
Joulain, Karl	TMG-K-532	93
Ju, Xing	TST-I-236	53
Ju, Yongh S.	HTE-C2-416	70
Juang, Ying-Zong	EEC-H-232	52
Jun, Jisu	CPM-E-424	71
Jung, Satbyoul	PBL-B1-512	78
Kabelac, Stephan	TPP-I-223	53
Kabelac, Stephan	NMT-F-532	85
Kabov, Oleg	EVP-B1-115	29

Kabov, Oleg	EVP-B1-116	29
Kabov, Oleg	FLM-H-533	88
Kabova, Yulia	FLM-H-533	88
Kaczorowski, Matthias	NCV-F-415	72
Kagawa, Masaru	MLT-H-112	36
Kajishima, Takeo	CDS-J-213	54
Kajita, Yasushi	MIN-C1-216	43
Kakuta, Naoto	MIN-C1-234	44
Kakuta, Naoto	MIN-C1-236	44
Kamada, Toshimitsu	ACR-G-324	62
Kamimoto, Takahiro	MIN-C1-222	43
Kamimoto, Takahiro	MIN-C1-223	43
Kaneda, Masayuki	NMS-C2-214	44
Kaneda, Masayuki	FCV-F-312	61
Kaneko, Akiko	CDS-J-225	54
Kaneko, Toshihiro	FCV-F-234	49
Kaneko, Toshihiro	PBL-B1-511	78
Kang, Kyong-ho	CDS-J-113	38
Kang, Yoon Goo	HTE-C2-412	70
Kannengieser, Olivier	PBL-B1-524	78
Kara, Sami	NSM-H-311	63
Kariya, Keishi	FBL-B1-311	57
Karlov, Sergey	TDY-C1-413	69
Karnauhova, Ekaterina	EVP-B1-115	29
Kataoka, Isao	NCV-F-421	72
Kato, Taro	HPP-K-413	77
Kato, Yohei	FCV-F-221	48
Kato, Yukitaka	ECS-K-215	55
katsuki, Ryoji	NCV-F-412	72
Katsuta, Masafumi	HPP-K-413	77
Kauppinen, Esko	NMM-G-421	73
Kawada, Shoko	TTR-C2-123	32
Kawaguchi, Tatsuya	MFP-G-312	62
Kawaguchi, Tohru	TDY-C1-411	69
Kawaguchi, Yasuo	TTR-C2-123	32
Kawai, Akio	MLT-H-113	36
Kawaji, Masahiro	TST-I-234	53
Kawakami, Ryoichi	TPF-B2-324	58
Kawamura, Yosuke	TPA-B2-115	30
Kawanami, Osamu	FBL-B1-221	40
Kawanami, Tsuyoshi	OPT-F-525	85
Kawasaki, Hiroki	FCV-F-234	49
Kawashima, Daisuke	MIN-C1-236	44
Kazari, Masahide	HTE-C2-513	82

# Author Index

Kearney, Daniel	TMG-K-515	92
Keinath, Brendon L.	CDS-J-112	38
Kempers, Roger	HPP-K-411	77
Kenig, Eugeny Y.	HEX-G-214	49
Kenjereš, Sasa	HTE-C2-234	45
Kenjereš, Saša	CNV-C1-531	82
Kennof, Gerben	PMD-I-324	64
Kerschen, Gaetan	RAD-J-423	76
Keshmiri, Amir	TTR-C2-114	32
Kessal, Mohand	PBL-B1-424	67
Khodakov, Konstantin	PBL-B1-411	67
Khramtsov, Dmitry	TPN-B2-425	68
Kikugawa, Gota	NMM-G-521	86
Kikusato, Akira	CMB-J-531	91
Kilkovsky, Bohuslav	EES-K-111	39
Kim, Beomjoon	TPP-I-214	52
Kim, Hyun Jin	RNE-C1-326	59
Kim, Hyungdae	PBL-B1-512	78
Kim, Hyunho	ADS-D-211	46
Kim, HyunSoo	CDS-J-233	55
Kim, Jeongkeun	HEX-G-232	50
Kim, Jungho	EVP-B1-114	29
Kim, Jungho	FBL-B1-314	57
Kim, Kwang-Yong	EEC-H-224	51
Kim, Kyu Han	RNE-C1-326	59
Kim, Min Soo	ACR-G-321	62
Kim, Moohwan	HTE-C2-314	60
Kim, Ook Joong	TPP-I-125	37
Kim, Seong Jung	IPJ-C1-311	59
Kim, Sung Jin	TPA-B2-112	30
Kim, Sun-Min	EEC-H-224	51
Kim, Taeho	HTE-C2-314	60
Kim, Tae-Ho	EES-K-125	39
Kim, Taehoon	EVP-B1-112	29
Kim, Tongbeum	TDY-C1-423	69
Kim, Won-Seok	CDS-J-233	55
Kim, Yeong Hwan	IPJ-C1-311	59
Kim, Yong Woo	SOL-B2-212	41
Kim, Yoon Jo	TPN-B2-412	68
Kim, Young Hyung	SOL-B2-212	41
Kimijima, Shinji	CND-H-415	74
Kimura, Yu	TTR-C2-116	32
Kind, Matthias	PMD-I-311	64
Kinoshita, Shinichi	RAD-J-412	76

Kirkpatrick, Michael	NCV-F-515	84
Kishimoto, Masashi	FCL-H-125	36
Kishimoto, Masashi	PMD-I-511	89
Kita, Shota	PBL-B1-515	78
Kitagawa, Yoshihiko	TPF-B2-312	58
Kitamura, Nobuki	FCL-H-123	36
Kitano, Tomoaki	CMB-J-523	91
Kiyota, Yusuke	MIN-C1-222	43
Kiyota, Yusuke	MIN-C1-223	43
Klein, Peter	SOL-B2-213	41
Klocke, Fritz	MNF-E-124	33
Kneer, Reinhold	MNF-E-124	33
Kneer, Reinhold	MIN-C1-233	44
Kneer, Reinhold	TPP-I-226	53
Kneer, Reinhold	FCV-F-311	61
Kneer, Reinhold	TDY-C1-415	69
Kneer, Reinhold	CND-H-511	87
Knikker, Ronnie	CNV-C1-525	81
Knupp, Diego C.	NSM-H-323	63
Ko, Dong Guk	BMA-E-111	33
Kobayashi, Kenichi	TTR-C2-116	32
Kobayashi, Shunsuke	ECS-K-211	55
Kobayashi, Takashi	EEC-H-222	51
Kodama, Shigeo	NCV-F-421	72
Koehler, Timothy P.	TMG-K-522	92
Kohno, Masamichi	EVP-B1-114	29
Kohno, Masamichi	NMM-G-532	87
Koito, Yasushi	TMG-K-524	92
Koizumi, Yasuo	PBL-B1-412	67
Kolenda, Zygmunt	CND-H-415	74
Komatsu, Yosuke	CND-H-415	74
Komiya, Atsuki	BMA-E-112	33
Komiya, Atsuki	RAD-J-325	65
Komoda, Yoshiyuki	FCV-F-214	48
Komoda, Yoshiyuki	HEX-G-236	50
Komori, Satoru	CMB-J-523	91
Komossa, Hendrik	MFP-G-311	62
Komov, A.T.	TPB-B2-124	30
Komov, Alexander	HTE-C2-225	45
Kondo, Fumiya	ECS-K-213	55
Kondo, Katsuya	MIN-C1-234	44
Kondo, Katsuya	MIN-C1-236	44
Kondo, Yoshiyuki	TPF-B2-324	58
Kong, Xin	PBL-B1-516	78

Kono, Takahiro	RAD-J-425	76
Kornev, Nikolai	HTE-C2-522	83
Kornfeld, Bernard J.	NSM-H-311	63
Kortsenshteyn, Naum	CDS-J-224	54
Koşar, Ali	FCV-F-235	49
Kosevich, Yuriy	NMM-G-425	73
Koshiji, Taichi	CDS-J-225	54
Kotze, Nicola M.	CNV-C1-524	81
Koyama, Kohei	TPF-B2-313	58
Koyama, Shigeru	EEC-H-231	52
Koyano, Takehiro	ADS-D-213	46
Kozak, Yoram	HEX-G-221	50
Krainova, Irina	RAD-J-421	76
Kraneborg, Jurjen	EES-K-124	39
Krasovitov, Boris	TPM-B2-531	80
Krishnan, Swaminathan G.	PMD-I-411	75
Kristiawan, Magdalena	TTR-C2-125	32
Kruger, Sunita	EES-K-113	39
Kuang, Youdi	TPP-I-225	53
Kubo, Keisuke	NMM-G-532	87
Kühni, Manuel	CMB-J-532	91
Kuk, Keon	ACR-G-321	62
Kumar, Prashant	PMD-I-325	64
Kumar, Ravi	HTE-C2-531	83
Kunugi, Tomoaki	PBL-B1-323	57
Kunugi, Tomoaki	PBL-B1-512	78
Kurata, Kosaku	BMA-E-222	47
Kurimoto, Ryo	TBF-D-221	46
Kuroda, Koji	MLT-H-112	36
Kurose, Ryoichi	CMB-J-523	91
Kusaba, Akira	CDS-J-223	54
Kusaka, Hideyuki	HPP-K-423	77
Kusaka, Jin	CMB-J-531	91
Kusterer, Karsten	HTE-C2-513	82
Kuwata, Yusuke	TTR-C2-126	32
Kuzenov, Victor V.	CPM-E-425	71
Kuzma-Kichta, Yuri	FBL-B1-313	57
Kuzma-Kichta, Yury	PBL-B1-514	78
Kuznetsov, Denis	EVP-B1-212	40
Kuznetsov, Genii	EVP-B1-115	29
Kuznetsov, Vladimir V.	FBL-B1-231	41
Kuznik, Frédéric	NSM-H-321	63
Kwon, Jingyu	HTE-C2-314	60
La Cava, Emma	EES-K-116	39

Labergue, Alexandre	EVP-B1-123	29
Labergue, Alexandre	MIN-C1-225	43
Lacroix, David	NMM-G-533	87
Lacroix, David	NMM-G-535	87
Lai, Chi-ming	HTE-C2-521	83
Lam, Lisa	FCV-F-222	48
Lamien, Bernard	BMA-E-114	33
Lamige, Sylvain	CMB-J-532	91
Lamperth, Michael	ECS-K-214	55
Lan, Shuiquan	NMM-G-525	86
Lan, Zhong	CDS-J-222	54
Laneryd, Tor	EES-K-124	39
Lapene, Alexandre	PMD-I-523	89
Lau, Ghar Ek	HTE-C2-232	45
Lau, Wei L.	NSM-H-311	63
Launay, Stéphane	EES-K-121	39
Launay, Stéphane	CDS-J-231	55
Lauder, Brian	HEX-G-233	50
Lavielle, Pascal	PBL-B1-423	67
Lavrikov, Aleksandr	FBL-B1-313	57
Lavrikov, Alexander	PBL-B1-514	78
Le Maout, Yannick	MIN-C1-221	43
Le Nilot, Christophe	PLS-K-316	66
Le Quere, Patrick	NCV-F-513	84
Leal, Laetitia	PBL-B1-423	67
Leão, Hugo L. S. L.	FBL-B1-236	41
Lecki, Marcin	CPM-E-412	71
Lecompte, Steven	RNE-C1-325	59
Lee, Ann	HTE-C2-232	45
Lee, Ann	HTE-C2-324	60
Lee, Bong Jae	TPP-I-211	52
Lee, Dae Hee	IPJ-C1-311	59
Lee, Dong Il	SOL-B2-215	41
Lee, Hee Won	CND-H-523	88
Lee, Jae Young	PBL-B1-525	78
Lee, Jang Hyun	TPN-B2-412	68
Lee, Jong-Wook	CDS-J-233	55
Lee, Jungho	EVP-B1-112	29
Lee, Jungseok	TPA-B2-112	30
Lee, Namkyu	HTE-C2-412	70
Lee, Seung-Hyun	RNE-C1-326	59
Lee, Suvit	HTE-C2-533	83
Lee, Szu-Hung	EES-K-126	39
Lee, Wonchul	EVP-B1-216	40

Lee, Wooram	PBL-B1-525	78
Lehmacher, Axel	HEX-G-235	50
Lei, Chengwang	NCV-F-411	72
Lei, Guilin	TBF-D-226	46
Lei, Shenghui	ECS-K-212	55
Lei, Shijun	CND-H-425	74
Lei, Yuan	EEC-H-212	51
Lei, Yuan	TMG-K-534	93
Leiroz, Albino	RNE-C1-324	59
Lemoine, Fabrice	EVP-B1-123	29
Lemoine, Fabrice	MIN-C1-225	43
Lenert, Andrej	SOL-B2-223	42
Lenkov, Viktor	PBL-B1-514	78
Leong, Kai Choong	PBL-B1-535	79
Leonov, Victor	SOL-B2-214	41
Leont'ev, Alexander I.	TDY-C1-422	69
Leontiev, Alexander I.	HTE-C2-522	83
Leontyev, Aleksandr	FBL-B1-313	57
Levy, Avi	TPM-B2-523	80
Li, Bing-xi	HTE-C2-312	60
Li, Dan-Yang	PBL-B1-531	79
Li, Deying	TMG-K-513	92
Li, Dong	PPE-G-113	35
Li, Dong	BMA-E-221	47
Li, Gen	HPP-K-424	77
Li, Gen	HTE-C2-532	83
Li, Guang-Cheng	FBL-B1-222	40
Li, Hongqi	EEF-K-232	56
Li, Jiang	ADS-D-216	46
Li, Jia-Qi	PBL-B1-531	79
Li, Jie	RAD-J-426	76
Li, Lan	MFP-G-313	62
Li, Lan	OPT-F-521	85
Li, Lei	HTE-C2-321	60
Li, Lei	NSM-H-315	63
Li, Ling	TPS-B2-513	79
Li, Ming	TST-I-235	53
Li, Ming-Jia	SOL-B2-224	42
Li, Perry	PMD-I-533	90
Li, Qiang	PBL-B1-513	78
Li, Qiang	NMT-F-531	85
Li, Qianshan	TEL-K-325	66
Li, Qin-yi	TPP-I-123	37
Li, Qiyuan	SOL-B2-216	41

Li, Ri	CND-H-516	87
Li, Shiou-Jiuan	GTB-G-416	73
Li, Tao	TPM-B2-532	80
Li, Wei	TPP-I-113	37
Li, Wei	TBF-D-225	46
Li, Wenhao	PMD-I-321	64
Li, Wenhao	HTE-C2-413	70
Li, Xiansen	ADS-D-211	46
Li, Xiaowei	PMD-I-512	89
Li, Xuefang	PBL-B1-425	67
Li, Xuefang	CPM-E-415	71
Li, Xueyuan	TPN-B2-413	68
Li, Xunfeng	TPN-B2-423	68
Li, Yafei	PLS-K-312	66
Li, Yan	PLS-K-312	66
Li, Yang	TPP-I-115	37
Li, Yanzhe	TEL-K-326	66
Li, Yao	NMT-F-533	85
Li, Yiqin	NCV-F-516	84
Li, Yuanyang	TPS-B2-515	79
Li, Yuanyuan	TST-I-236	53
Li, Zengyao	CPM-E-411	71
Li, Zeng-Yao	SOL-B2-232	42
Li, Zhen	EEF-K-224	56
Li, Zhen	OPT-F-523	85
Li, ZhiGang	FCV-F-221	48
Li, Zhixin	HTE-C2-222	45
Li, Zhixin	OPT-F-523	85
Liang, Fei	BMA-E-115	33
Liang, J. G.	NMM-G-512	86
Liang, Jiangtao	EEF-K-221	56
Liang, Kunfeng	CDS-J-221	54
Liang, Xingang	HTE-C2-511	82
Liang, Yuming	EES-K-115	39
Liao, Qiang	FLM-H-535	88
Liberzon, Alex	MIN-C1-224	43
Lienhard V, John	EEF-K-234	56
Lienhard V, John H.	MTR-F-123	34
Lienhard V, John H.	TBF-D-224	46
Ligrani, Phillip	IPJ-C1-311	59
Lim, Sengchuan	GTB-G-414	73
Lin, Gang	HTE-C2-513	82
Lin, Tsing-Fa	FBL-B1-223	40
Lin, Wamei	HEX-G-211	49

Lin, Wenxian	NSM-H-322	63
Lin, Wenxian	NCV-F-515	84
Lin, Xipeng	PBL-B1-425	67
Lin, Yueh-Hung	FBL-B1-222	40
Lin, Yur-Tsai	HEX-G-122	35
Ling, Jiazhen	EES-K-114	39
Lipinski, Tom	EES-K-126	39
Lipinski, Wojciech	SOL-B2-231	42
Lipinski, Wojciech	PMD-I-314	64
Lipinski, Wojciech	RAD-J-316	65
Lipstein, Itay	HTE-C2-524	83
Liu, Bin	NSM-H-325	63
Liu, Bin	PMD-I-422	75
Liu, Bin	HTE-C2-535	83
Liu, Chaopeng	ACR-G-323	62
Liu, Cheng-Sheng	CDS-J-212	54
Liu, Chunlin	EEC-H-213	51
Liu, Cong	TDY-C1-513	81
Liu, Di	PMD-I-315	64
Liu, Di	PMD-I-532	90
Liu, Fang	CPM-E-423	71
Liu, Fang	PMD-I-413	75
Liu, Hongzhi	TST-I-232	53
Liu, Ji-Ping	TPM-B2-532	80
Liu, Jun	PLS-K-313	66
Liu, Linhua	RAD-J-315	65
Liu, Linhua	RAD-J-324	65
Liu, Meng	MIN-C1-214	43
Liu, Naian	FCV-C1-115	31
Liu, Naian	CMB-J-533	91
Liu, Ni	SAT-J-512	90
Liu, Qiusheng	HTE-C2-516	82
Liu, Qixin	NMM-G-522	86
Liu, Shanwei	TMG-K-513	92
Liu, Shixian	PMD-I-512	89
Liu, Wei	MIN-C1-232	44
Liu, Wei	HTE-C2-414	70
Liu, Wei	PMD-I-525	89
Liu, Weiguo	TPP-I-114	37
Liu, Xiaohua	MTR-F-112	34
Liu, Yu	TPP-I-114	37
Liu, Yu	TPP-I-213	52
Liu, Yu	PMD-I-326	64
Liu, Zhenhua	TPS-B2-515	79

Liu, Zhenyu	EVP-B1-126	29
Liu, Zhi	PMD-I-413	75
Liu, Zhichun	HTE-C2-414	70
Liu, Zhichun	PMD-I-525	89
Liu, Zhigang	NMM-G-515	86
Liu, Zhongliang	PBL-B1-536	79
Liu, Zhuowei	CND-H-425	74
Liu, Zuodong	NMT-F-534	85
Lloyd, Derrick	HTE-C2-416	70
Lo Jacono, David	HTE-C2-424	70
Lomborg, Marina	FCL-H-125	36
Longo, Giovanni A.	CDS-J-214	54
Lopes, Sylvania	PLS-K-314	66
Lopez-Belchí, Alejandro	TPB-B2-125	30
Lopez-Belchi, Alejandro	TPM-B2-521	80
Lu, Chi	TEL-K-326	66
Lu, Jianfeng	TPP-I-212	52
Lu, Jianfeng	PBL-B1-521	78
Lu, Mei	TPS-B2-513	79
Lu, Shu-Shen	CND-H-512	87
Lu, Tian Jian	TDY-C1-423	69
Lu, Zhengmao	FLM-H-534	88
Luan, Hui-bao	HEX-G-121	35
Lukashov, Vladimir	CMB-J-522	91
Luo, Feng	TMG-K-512	92
Luo, Kang	FCV-F-326	61
Luo, Kang	MCV-D-515	84
Luo, Lincong	TBF-D-225	46
Luo, Lingai	TMG-K-511	92
Luo, Xiaobing	MFP-G-313	62
Luo, Xiaobing	OPT-F-521	85
Luo, Yafei	MIN-C1-216	43
Lyons, Kevin M.	CMB-J-532	91
Ma, Chongfang	TMG-K-513	92
Ma, Chong-Fang	NSM-H-325	63
Ma, Hongbin	HPP-K-424	77
Ma, Hongbin	HPP-K-425	77
Ma, Hongbin	HTE-C2-532	83
Ma, Jia	TDY-C1-425	69
Ma, Lianxiang	TPP-I-113	37
Ma, Ting	HTE-C2-321	60
Ma, Weigang	NMM-G-532	87
Ma, Xuehu	CDS-J-222	54
Ma, Yong	TPP-I-124	37

# Author Index

Ma, Yong	NMM-G-512	86
Macêdo, Emanuel	FCV-C1-113	31
MacLachlan, Scott	FCV-F-222	48
Maes, Julien	PMD-I-523	89
Maggioni, Federica Lidia Teresa	EEC-H-234	52
Mahdavi, Mostafa	NSM-H-314	63
Mahmood, Gazi	GTB-G-415	73
Mahmood, Gazi	CNV-C1-522	81
Maillet, D.	INV-E-216	47
Makarov, Maksim	FCV-F-213	48
Malloy, Adam	ECS-K-214	55
Mameli, Mauro	TPA-B2-111	30
Manca, Oronzio	MCV-D-513	84
Manchanda, Parth	TPN-B2-424	68
Mancin, Simone	FBL-B1-235	41
Manning, Jonathan	TPF-B2-323	58
Manzoni, Miriam	TPA-B2-111	30
Marchuk, Igor	EVP-B1-116	29
Marengo, Marco	TPA-B2-111	30
Marengo, Marco	TPM-B2-533	80
Marengo, Marco	NMT-F-535	85
Marengo, Marco	NMT-F-536	85
Marinelli, Lorenzo	MCV-D-513	84
Marsh, Charles	TPM-B2-522	80
Marta, Romano	TPA-B2-113	30
Martinez-Botas, Ricardo	ECS-K-214	55
Maruyama, Shigenao	BMA-E-112	33
Maruyama, Shigenao	RAD-J-325	65
Maruyama, Shigeo	NMM-G-421	73
Maruyama, Shigeo	NMM-G-424	73
Masset, Luc	RAD-J-423	76
Matar, Omar	TPN-B2-424	68
Matsuda, Yu	FBL-B1-221	40
Matsumoto, Mitsuhiro	NMM-G-523	86
Matsumoto, Naoko	TMG-K-524	92
Matsumoto, Ryosuke	HEX-G-215	49
Matsumoto, Sohei	NMS-C2-211	44
Matsumoto, Wataru	PMD-I-511	89
Matsumura, Yukihiko	MNF-E-121	33
Matsuo, Takuya	HTE-C2-223	45
Matsuyama, Ken	FCV-C1-124	31
Matuszewski, Lionel	CMB-J-535	91
Maurente, André J.	BMA-E-114	33
Mawatari, Takashi	FBL-B1-311	57

McKay, Ian	ADS-D-211	46
Mehendale, Sunil	FBL-B1-224	40
Mehrabi, Mehdi	FCV-F-324	61
Ménézo, Christophe	MIN-C1-226	43
Ménézo, Christophe	HTE-C2-422	70
Ménézo, Christophe	NCV-F-516	84
Meng, Ji'an	HTE-C2-222	45
Meng, Jiandong	MFP-G-315	62
Meng, Qiang	TMG-K-513	92
Mensah, Patrick	FCV-F-323	61
Merabia, Samy	NMM-G-533	87
Meslem, Amina	TTR-C2-125	32
Meslem, Amina	NSM-H-326	63
Metcalfe, Guy	HTE-C2-525	83
Meyer, Josua P.	FCV-C1-111	31
Meyer, Josua P.	HEX-G-126	35
Meyer, Josua P.	CDS-J-116	38
Meyer, Josua P.	CDS-J-121	38
Meyer, Josua P.	SOL-B2-235	42
Meyer, Josua P.	MIN-C1-231	44
Meyer, Josua P.	FCV-F-212	48
Meyer, Josua P.	FCV-F-215	48
Meyer, Josua P.	FCV-F-216	48
Meyer, Josua P.	TPP-I-221	53
Meyer, Josua P.	TPP-I-222	53
Meyer, Josua P.	RNE-C1-322	59
Meyer, Josua P.	FCV-F-324	61
Meyer, Josua P.	NSM-H-314	63
Meyer, Josua P.	CND-H-414	74
Meyer, Josua P.	CNV-C1-522	81
Meyer, Josua P.	CNV-C1-524	81
Meyer, Josua P.	HTE-C2-534	83
Michii, Kizuku	NCV-F-421	72
Miguel, Alberto	CNV-C1-532	82
Mikhailovich, Boris	TPM-B2-523	80
Milanez, Luiz Fernando	CND-H-412	74
Milani, Davide	CDS-J-215	54
Miljkovic, Nenad	CDS-J-232	55
Miljkovic, Nenad	CDS-J-236	55
Milkie, Jeffrey A.	CDS-J-112	38
Min, Hao	TPP-I-213	52
Min, Qi	PMD-I-512	89
Ming, Pingjian	CND-H-525	88
Ming, Tingzhen	NSM-H-312	63

Minko, Konstantin	CDS-J-114	38
Miscevic, Marc	PBL-B1-423	67
Mishima, Fumiya	TPF-B2-313	58
Mishra, Subhash	CND-H-422	74
Mitrovic, Jovan	PBL-B1-533	79
Mitsutake, Yuichi	MIN-C1-212	43
Miura, Kensuke	TTR-C2-113	32
Miyara, Akio	HEX-G-125	35
Miyara, Akio	CDS-J-211	54
Miyawaki, Kosuke	PMD-I-426	75
Miyazaki, Koji	TEL-K-323	66
Miyoshi, Koji	MIN-C1-211	43
Miyoshi, Kota	PMD-I-511	89
Mizutani, Masaki	CDS-J-126	38
Mo, Dong-Chuan	CND-H-512	87
Mo, Songping	CND-H-425	74
Mochizuki, Masataka	FCL-H-126	36
Mochizuki, Masataka	HPP-K-412	77
Mochizuki, Masataka	HPP-K-414	77
Mochizuki, Masataka	TMG-K-514	92
Mochizuki, Sadanari	HPP-K-412	77
Moiseev, Mikhail	EVP-B1-212	40
Moita, Ana	PBL-B1-534	79
Mojiri, Ahmad	SOL-B2-221	42
Momoki, Satoru	TPF-B2-321	58
Monde, Masanori	MIN-C1-212	43
Monde, Masanori	MCV-D-511	84
Montagné, Brice	TTR-C2-125	32
Moreira, Antonio	PBL-B1-534	79
Moreira, Debora	TPP-I-112	37
Mori, Ena	GTB-G-412	73
Mori, Hideo	ADS-D-215	46
Mori, Hideo	FBL-B1-311	57
Mori, Hideo	RAD-J-426	76
Mori, Shoji	HPP-K-415	77
Morimatsu, Yuki	FCL-H-126	36
Morimoto, Kenichi	OPT-F-522	85
Morini, Gian Luca	FCV-F-224	48
Morokuma, Takayuki	FLM-H-532	88
Morrison, Karl	SOL-B2-211	41
Mostaghimi, Javad	MTR-F-111	34
Mostaghimi, Javad	FCV-F-232	49
Motegi, Kosuke	FCV-F-234	49
Muggeridge, Ann	PMD-I-523	89

Mukasa, Shinobu	PLS-K-315	66
Mulock Houwer, Franscois	CNV-C1-524	81
Mun, Iiju	ACR-G-321	62
Murakami, Mutsuaki	MNF-E-123	33
Murakami, Sho	MLT-H-111	36
Murakami, Takuru	PPE-G-114	35
Murakami, Yoichi	MLT-H-113	36
Murakawa, Hideki	FCL-H-123	36
Muramatsu, Kenshiro	TBF-D-222	46
Murata, Akira	GTB-G-412	73
Murata, Akira	HPP-K-426	77
Murray, Darina	TPF-B2-314	58
Murray, Darina	SAT-J-515	90
Murray, Darina B.	HTE-C2-523	83
Mutailipu, Meiheryayi	PMD-I-326	64
Mwesigye, Aggrey	SOL-B2-235	42
Næss, Erling	HTE-C2-315	60
Næss, Erling	HTE-C2-323	60
Nafsun, Aainaa Izyan	MFP-G-311	62
Nagai, Niro	EVP-B1-125	29
Nagai, Niro	HPP-K-422	77
Nagano, Hosei	MNF-E-122	33
Nagano, Katsunori	TST-I-232	53
Nagano, Yasutaka	TTR-C2-112	32
Nagare, Yutaka	BMA-E-222	47
Nagasaka, Wataru	HTE-C2-223	45
Nagase, Fumihisa	MIN-C1-232	44
Nagata, Harunori	RAD-J-321	65
Nagata, Kouji	TTR-C2-113	32
Nagatake, Taku	MIN-C1-232	44
Nagayama, Gyoko	CDS-J-126	38
Nakabe, Kazuyoshi	HTE-C2-223	45
Nakagaki, Takao	PMD-I-424	75
Nakagawa, Masafumi	TPA-B2-115	30
Nakagawa, Naoki	ADS-D-213	46
Nakagawa, Shinji	MIN-C1-216	43
Nakagawa, Shinji	EEC-H-211	51
Nakahara, Daisuke	MNF-E-121	33
Nakahara, Masaya	CMB-J-521	91
Nakaharai, Hiroyuki	EES-K-122	39
Nakaharai, Hiroyuki	CNV-C1-523	81
Nakajima, Shota	TTR-C2-116	32
Nakajima, Tadashi	MLT-H-112	36
Nakamata, Chiyuki	GTB-G-411	73

Nakamura, Akira	MIN-C1-211	43
Nakamura, Hajime	FCV-C1-121	31
Nakamura, Hajime	CND-H-521	88
Nakamura, Makoto	TST-I-232	53
Nakamura, Shota	IPJ-C1-313	59
Nakano, Ryota	PMD-I-513	89
Nakano, Yuta	FCL-H-126	36
Nakaso, Koichi	ECS-K-211	55
Nakayama, Akira	PMD-I-321	64
Nakayama, Akira	HTE-C2-413	70
Nakayama, Akira	PMD-I-421	75
Nam, Youngsuk	EVP-B1-216	40
Narasimhan, Arunn	BMA-E-113	33
Narayanan, Shankar	ADS-D-211	46
Narayanan, Shankar	FLM-H-534	88
Narayanan, Vinod	CDS-J-115	38
Narayanan, Vinod	EVP-B1-213	40
Narayanawamy, Ramesh	EVP-B1-213	40
Narcy, Marine	FBL-B1-314	57
Nardini, Sergio	MCV-D-513	84
Nasim Hasan, Mohammad	MIN-C1-212	43
Nastase, Ilinca	TTR-C2-125	32
Nastase, Ilinca	NSM-H-326	63
Natesh, Shashank	CDS-J-115	38
Naumkin, Viktor	FCV-F-213	48
Navarro-Peris, Emilio	CDS-J-235	55
Naveira-Cotta, Carolina Palma	NSM-H-323	63
Naveira-Cotta, Carolina Palma	PMD-I-522	89
Naylor, David	NCV-F-422	72
Nedea, Silvia	TDY-C1-412	69
Nefzaoui, Elyes	TMG-K-532	93
Nekrasov, Dmitry	TPN-B2-425	68
Nenarokomov, Aleksey	INV-E-213	47
Nenarokomov, Aleksey	RAD-J-421	76
Netelev, Andrey	INV-E-213	47
Ng, Wa San	NMM-G-511	86
Ngo, Lloyd C.	RNE-C1-322	59
Nguyen, Nam Trung	TBF-D-223	46
Nguyen, Thang	HPP-K-412	77
Nguyen, Thang	HPP-K-414	77
Nguyen, Thang	TMG-K-514	92
Nguyen, Thien Duy	HTE-C2-221	45
Nguyen, Tien	TMG-K-514	92
Nian, Yong-Le	TPP-I-111	37

Nieckele, Angela	TPM-B2-524	80
Niezgoda, Mathieu	MIN-C1-235	44
Niimi, Tomohide	FBL-B1-221	40
Nikaido, Hitoshi	EVP-B1-125	29
Niki, Yuta	EEC-H-222	51
Niro, Alfonso	HTE-C2-322	60
Nishi, Koji	EEC-H-211	51
Nishida, Atsushi	TTR-C2-124	32
Nishida, Felipe Baptista	EEC-H-221	51
Nishida, Robert	FCL-H-124	36
Nishida, Shogo	MLT-H-112	36
Nishimura, Satoshi	RAD-J-412	76
Nishio, Jun	CMB-J-523	91
Nishiyama, Takashi	CDS-J-223	54
Nithin	INV-E-211	47
Niu, Zhiqiang	TEL-K-325	66
Noda, Atsuto	PMD-I-531	90
Noh, Jae-Man	CPM-E-424	71
Nomura, Shinfuku	PLS-K-315	66
Noto, Kensuke	TTR-C2-121	32
Nunes, Luiz Carlos	TPP-I-112	37
Nuntadusit, Chayut	IPJ-C1-314	59
Obadina, Sarah	HEX-G-124	35
Obrecht, Christian	NSM-H-321	63
Oda, Manabu	CNV-C1-523	81
Oda, Yutaka	TTR-C2-122	32
O'Donovan, Tadhg S	SOL-B2-222	42
O'Donovan, Tadhg S	SOL-B2-225	42
Oga, Yosuke	MNF-E-121	33
Ogawa, Kuniyasu	MIN-C1-215	43
Ogushi, Tetsuro	EEC-H-222	51
Oh, Dong-Wook	EVP-B1-112	29
Oh, Dong-Wook	TPP-I-125	37
Oh, Jong-Taek	FBL-B1-233	41
Ohadi, Michael	HEX-G-124	35
Ohara, Taku	MLT-H-111	36
Ohara, Taku	NMM-G-521	86
Ohashi, Akio	ACR-G-322	62
Ohashi, Masakazu	FCL-H-126	36
Ohashi, Masakazu	TMG-K-514	92
Ohliger, Andreas	TPP-I-226	53
Ohliger, Andreas	TDY-C1-415	69
Ohshima, Tsubasa	CDS-J-213	54
Ohta, Haruhiko	PBL-B1-515	78

Ohtake, Hiroyasu	PBL-B1-522	78
Okabe, Takahiro	BMA-E-112	33
Okada, Takuya	RNE-C1-323	59
Okafor, Izuchukwu Francis	FCV-C1-111	31
Okajima, Junnosuke	BMA-E-112	33
Okajima, Junnosuke	RAD-J-325	65
Okazaki, Ken	RNE-C1-323	59
Okazaki, Ken	PMD-I-513	89
Okazaki, Ken	CMB-J-524	91
Okinaga, Seiji	FCV-C1-124	31
Okino, Shinya	IPJ-C1-313	59
Okitsu, Taku	FCV-F-312	61
Okosun, Anfani	EEF-K-223	56
Okumura, Yukihiko	RNE-C1-323	59
Okuno, Eiichi	TDY-C1-411	69
Okutucu-Özyurt, Tuba	TPM-B2-526	80
Okuyama, Kunito	HPP-K-415	77
Oliveira, Antonio	CPM-E-414	71
Oliveira, Ricardo	CNV-C1-532	82
Onishi, Hajime	CNV-C1-521	81
Onishi, Hiroki	EVP-B1-125	29
Onishi, Shunsuke	PBL-B1-515	78
Ono, Kenji	BMA-E-223	47
Ono, Naoki	NMS-C2-211	44
Onuma, Eiji	FCV-C1-124	31
Oosterhuis, Joris	PMD-I-515	89
Oosthuizen, Patrick H.	FCV-C1-122	31
Oosthuizen, Patrick H.	NCV-F-424	72
Oprins, Herman	EEC-H-234	52
Ordonez-Miranda, Jose	TPP-I-214	52
O'Reilly Meehan, Rudi	TPF-B2-314	58
Orlande, Helcio R. B.	BMA-E-114	33
Orlande, Helcio R. B.	INV-E-214	47
Orlandi, Michele	EES-K-116	39
Osakabe, Masahiro	TPF-B2-312	58
Osawa, Tomohiro	PBL-B1-511	78
Ose, Yasuo	PBL-B1-323	57
Ose, Yasuo	PBL-B1-512	78
Otanicar, Todd	EES-K-123	39
Otsuka, Keigo	NMM-G-424	73
Ouchi, Takafumi	ADS-D-215	46
Ouyang, Xiao-Long	CND-H-423	74
Ozawa, Mamoru	TPF-B2-322	58
Pabiou, Hervé	MIN-C1-226	43

Pabiou, Hervé	NCV-F-516	84
Padilla, Jorge	EVP-B1-124	29
Pakhomov, Maksim	TPS-B2-514	79
Palchekovskaya, Natalia	FCV-C1-114	31
Palchekovskaya, Natalia	TDY-C1-511	81
Pandit, Jaideep	HTE-C2-421	70
Panella, Bruno	CDS-J-215	54
Panigrahy, Snehasish	CND-H-422	74
Pansang, Rattanakorn	IPJ-C1-314	59
Park, Hanvit	HTE-C2-326	60
Park, Hyun Jin	IPJ-C1-311	59
Park, Hyunsun	HTE-C2-314	60
Park, Il Seouk	CND-H-523	88
Park, Jang Min	TPP-I-125	37
Park, Jang-Min	EVP-B1-112	29
Park, Sang Hee	SOL-B2-212	41
Park, Sang Jin	TPP-I-125	37
Park, Yong-Jun	RNE-C1-326	59
Pattamatta, Arvind	TPB-B2-123	30
Pattamatta, Arvind	PMD-I-412	75
Pattanotai, Teeranai	PMD-I-513	89
Patterson, John	NCV-F-411	72
Paul, Anup	BMA-E-113	33
Pavithran, S.	MCV-D-514	84
Pavlenko, Aleksandr	EVP-B1-212	40
Pavlenko, Aleksandr	EVP-B1-215	40
Pedrazzi, Simone	EES-K-116	39
Peles, Yoav	CDS-J-123	38
Pellé, Julien	HTE-C2-221	45
Peng, Benli	CDS-J-222	54
Peng, Peng	MTR-F-121	34
Pepper, Darrell W.	CPM-E-413	71
Pereira, Luiz M.	FCV-C1-113	31
Persoons, Tim	TPF-B2-314	58
Persoons, Tim	HTE-C2-523	83
Persoons, Tim	SAT-J-515	90
Phan, Thanh-Long	HPP-K-412	77
Pharoah, Jon	FCL-H-124	36
Phelan, Bernadette	EES-K-123	39
Phelan, Patrick	EES-K-123	39
Pignon, Baptiste	MIN-C1-213	43
Piper, Mark	HEX-G-214	49
Pirmez, Pieter	PMD-I-324	64
Planquart, Ph.	CND-H-513	87

# Author Index

Pleskacz, Łukasz	HTE-C2-234	45
Pokusaev, Boris	TPN-B2-425	68
Pokusaev, Boris	TDY-C1-413	69
Popovich, Sergey	FCV-C1-125	31
Pranoto, Indro	PBL-B1-535	79
Prasher, Ravi	EES-K-123	39
Prat, Marc	PBL-B1-413	67
Preston, Daniel J.	CDS-J-232	55
Preston, Daniel J.	CDS-J-236	55
Pretorius, Leon	EES-K-113	39
Prinsloo, Francois P.A	FCV-F-212	48
Proulx, Pierre	PLS-K-314	66
Puls, Hendrik	MNF-E-124	33
Punch, Jeff	TMG-K-526	92
Punch, Jeff	TMG-K-533	93
Qi, Hong	INV-E-215	47
Qi, Hong	RAD-J-424	76
Qian, Xiaodong	OPT-F-523	85
Qian, Xin	EES-K-115	39
Qin, Frank G.F.	FCV-F-313	61
Qiu, Chen-Hui	NMT-F-533	85
Qiu, Lin	MIN-C1-214	43
Qiu, Lin	PMD-I-322	64
Qu, Zhiguo	ADS-D-212	46
Qu, Zhiguo	IPJ-C1-312	59
Quaresma, João N. N.	FCV-C1-113	31
Queeney, John	CDS-J-236	55
Quinn, Cian	SAT-J-515	90
Quintard, Michel	PBL-B1-413	67
Quintard, Michel	CPM-E-421	71
Quintard, Michel	CPM-E-422	71
Quintard, Michel	PMD-I-523	89
Radermacher, Reinhard	EES-K-114	39
Rahim, Ismail	PLS-K-315	66
Raj, Rishi	EVP-B1-113	29
Raj, Rishi	FLM-H-534	88
Raj, Uday	CND-H-524	88
Rambaud, Patrick	PLS-K-314	66
Ramirez-Rivera, Francisco	TPB-B2-121	30
Ramirez-Rivera, Francisco	TPB-B2-125	30
Ramos, Juan	FCV-F-325	61
Ramos, Juan	CMB-J-525	91
Randrianalisoa, Jaona	RAD-J-316	65
Ranjan, Devesh	HTE-C2-423	70

Reddy, B. V. Krishna	TEL-K-324	66
Redecker, Christoph	TDY-C1-424	69
Reich, Leanne	PMD-I-314	64
Reizes, John A.	NSM-H-311	63
Reizes, John A.	NCV-F-512	84
Rémy, B.	INV-E-216	47
Remy, Benjamin	MIN-C1-235	44
Ren, Ya-tao	RAD-J-424	76
Renard, M.	CND-H-513	87
Reviznikov, Dmitry	RAD-J-312	65
Ribatski, Gherhardt	FBL-B1-236	41
Richardt, Carsten	HTE-C2-325	60
Rietz, Manuel	MIN-C1-233	44
Righetti, Giulia	CDS-J-214	54
Rigollet, Fabrice	PLS-K-316	66
Rindt, Camilo	TST-I-231	53
Rindt, Camilo	NMM-G-525	86
Rindt, Camilo C. M.	TDY-C1-412	69
Ris, Vladimir	HEX-G-231	50
Rivière, Philippe	RAD-J-411	76
Rivière, Philippe	RAD-J-413	76
Robinson, Anthony	HPP-K-411	77
Rodiet, Christophe	MIN-C1-235	44
Rodrigues, Nelson	CNV-C1-532	82
Roger, Maxime	RAD-J-314	65
Rohlf, Wilko	MIN-C1-233	44
Rohlf, Wilko	FCV-F-311	61
Roisman, Ilia	NMT-F-535	85
Roos, Thomas	SOL-B2-213	41
Rosengarten, Gary	SOL-B2-216	41
Rosengarten, Gary	SOL-B2-221	42
Rosengarten, Gary	TPM-B2-525	80
Rossetto, Luisa	FBL-B1-235	41
Rouizi, Y.	INV-E-216	47
Rousseau, Benoit	PMD-I-316	64
Rousseau, Benoit	RAD-J-311	65
Rousseau, Pieter	CPM-E-424	71
Rousseau, Pieter	RAD-J-414	76
Roux, Jean-Jacques	NSM-H-321	63
Roux, Stephan	CNV-C1-522	81
Roveta, Guido	CDS-J-215	54
Roy, Monisha	MCV-D-512	84
Roy, Satyajit	MCV-D-512	84
Roychowdhury, Somasree	NMM-G-514	86

Rozenfeld, Tomer	HEX-G-221	50
Ruan, Liming	INV-E-215	47
Ruan, Li-ming	RAD-J-424	76
Rufer, Alfred	EEF-K-222	56
Ruiz-Trejo, Enrique	FCL-H-125	36
Rusauouën, Gilles	NSM-H-321	63
Ruyer, Pierre	EVP-B1-211	40
Ryu, Seunggeol	EVP-B1-216	40
Ryzhkov, Sergei V.	CPM-E-425	71
Saccone, Giacomo	TBF-D-221	46
Sack, Jean	CDS-J-236	55
Sadr, Reza	HTE-C2-423	70
Saiki, Takahito	PBL-B1-511	78
Saito, Hiroshi	HPP-K-426	77
Saito, Motohiro	PMD-I-426	75
Saito, Motohiro	PMD-I-511	89
Saito, Takushi	MFP-G-312	62
Saito, Yasushi	FCL-H-123	36
Saito, Yasushi	HEX-G-215	49
Saito, Yasushi	PBL-B1-325	57
Saito, Yuji	HPP-K-412	77
Saito, Yuji	HPP-K-414	77
Saito, Yuji	TMG-K-514	92
Sáiz Jabardo, José María	NMM-G-422	73
Sakagami, Masaaki	HTE-C2-411	70
Sakai, Fumika	PMD-I-321	64
Sakai, Yasuhiko	TTR-C2-113	32
Sakashita, Hiroto	PBL-B1-414	67
Sakurai, Atsushi	RAD-J-313	65
Sakurai, Yota	TTR-C2-126	32
Salavati, Saeid	FCV-F-232	49
Salort, Julien	MIN-C1-226	43
Salviano, Leandro	OPT-F-524	85
Sampath, Sanjay	SAT-J-514	90
Samy, Alagiru	CND-H-524	88
Sandberg, Linn Ingunn	NMM-G-534	87
Sane, Narayan	MCV-D-514	84
Sano, Yoshihiko	PMD-I-421	75
Sano, Yoshihiko	HTE-C2-536	83
Santangelo, Paolo E.	EVP-B1-121	29
Sapin, Paul	PBL-B1-413	67
Saranjam, Nazli	MTR-F-111	34
Sarraf, Kifah	CDS-J-231	55
Sasaki, Sho	ECS-K-213	55

Sasaki, Soichi	TPF-B2-321	58
Satake, Shin-ichi	MNF-E-125	33
Satake, Shin-ichi	TEL-K-322	66
Sathyanarayana, Aravind	PBL-B1-321	57
Sato, Daiki	PMD-I-425	75
Satoh, Isao	MFP-G-312	62
Satoh, Koyu	FCV-C1-115	31
Satoh, Koyu	CMB-J-533	91
Sayer, Robert A.	TMG-K-522	92
Sazhin, Sergei	TPS-B2-511	79
Sazhin, Sergei S.	EVP-B1-122	29
Scammell, Alexander	FBL-B1-314	57
Schabel, Wilhelm	MTR-F-114	34
Scharfer, Philip	MTR-F-114	34
Scherer, Viktor	MFP-G-311	62
Schmandt, Bastian	TDY-C1-421	69
Sciazko, Anna	CND-H-415	74
Sebilleau, Julien	EVP-B1-211	40
Sefiane, Khellil	EVP-B1-114	29
Segev, Reuven	TDY-C1-416	69
Segond, Guillaume	EES-K-121	39
Seki, Takashi	BMA-E-112	33
Selle, Laurent	CMB-J-535	91
Semenov, Andrey	EVP-B1-115	29
Senda, Mamoru	HTE-C2-411	70
Sentenac, Thierry	MIN-C1-221	43
Seo, Han	PBL-B1-523	78
Sera, Toshihiro	BMA-E-223	47
Sergent, Anne	NCV-F-513	84
Serizawa, Yoshihiro	EVP-B1-125	29
Shah, Mirza	CDS-J-122	38
Shah, Mirza	FBL-B1-225	40
Shah, Mirza	FBL-B1-226	40
Shakouri, Ali	TDY-C1-512	81
Shamirzaev, Alisher S.	FBL-B1-231	41
Shan, Xiaodong	CND-H-411	74
Shan, Yanguang	TPS-B2-513	79
Shao, Cheng	NMM-G-524	86
Shao, Wei	HTE-C2-312	60
Shao, Xuefeng	CND-H-425	74
Sharar, Darin	EEC-H-214	51
Sharifpur, Mohsen	MIN-C1-231	44
Sharifpur, Mohsen	TPP-I-221	53
Sharifpur, Mohsen	TPP-I-222	53

Sharifpur, Mohsen	FCV-F-324	61
Sharifpur, Mohsen	NSM-H-314	63
Sheer, John	SOL-B2-213	41
Shekrladze, Irakli G.	PBL-B1-326	57
Shen, Chun	NSM-H-316	63
Shen, Cuihong	TPS-B2-513	79
Shen, Dan	TST-I-233	53
Shen, Jun	PMD-I-525	89
Sheremet, Mikhail	NCV-F-423	72
Shete, Jayanti	MCV-D-514	84
Shevchuk, Igor V.	TDY-C1-516	81
Shi, Bo	PPE-G-111	35
Shi, Lin	BMA-E-225	47
Shi, Xiaojun	HTE-C2-514	82
Shi, Yanping	TBF-D-225	46
Shibahara, Masahiko	MLT-H-111	36
Shibahara, Masahiko	NMM-G-521	86
Shiga, Takuma	PPE-G-114	35
Shigenaga, Ryosuke	EES-K-122	39
Shih, Duke Po-Chen	TST-I-234	53
Shiibara, Naoki	CND-H-521	88
Shikazono, Naoki	TBF-D-222	46
Shikazono, Naoki	HTE-C2-316	60
Shimamura, Kengo	TPF-B2-324	58
Shimizu, Shun	BMA-E-223	47
Shiomi, Junichiro	PPE-G-114	35
Shiomi, Junichiro	TDY-C1-411	69
Shioyama, Tsutomu	NCV-F-412	72
Shirai, Katsuaki	OPT-F-525	85
Shiratori, Kosuke	HPP-K-423	77
Shishkin, Andrey	TPF-B2-315	58
Shishkova, Irina	TPS-B2-511	79
Shojaeian, Mostafa	FCV-F-235	49
Shooshtari, Amir	HEX-G-124	35
Shu, Liangshuo	EES-K-115	39
Shustov, Mikhail	FBL-B1-313	57
Shustov, Mikhail	PBL-B1-514	78
Shyu, Jin-Cherng	NMS-C2-212	44
Sian, Rony	HEX-G-122	35
Siedel, Samuel	HPP-K-411	77
Sielaff, Axel	PBL-B1-422	67
Simmer, J.	MTR-F-111	34
Simon, Philippe	MFP-G-314	62
Simon, Terrence	PMD-I-314	64

Simon, Terrence	GTB-G-411	73
Simon, Terrence	PMD-I-533	90
Singh, Randeep	HPP-K-414	77
Singh, Randeep	TMG-K-514	92
Smeulders, David M. J.	TDY-C1-412	69
Smirnov, Evgueni M.	HEX-G-231	50
Smith, Kate	HPP-K-411	77
Smulsky, Yaroslav	TTR-C2-111	32
Sobotka, Vincent	MIN-C1-213	43
Sodjavi, Kodjovi	TTR-C2-125	32
Sodjavi, Kodjovi	NSM-H-326	63
Son, Jong Hyeon	CND-H-523	88
Song, Gan	FLM-H-535	88
Song, Hang	ACR-G-323	62
Song, Jiwei	TMG-K-525	92
Song, Jiwoon	HTE-C2-412	70
Song, Junping	TPP-I-113	37
Song, MengXuan	RNE-C1-321	59
Song, Yongchen	TPP-I-114	37
Song, Yongchen	TPP-I-121	37
Song, Yongchen	EES-K-112	39
Song, Yongchen	TPP-I-213	52
Song, Yongchen	PMD-I-315	64
Song, Yongchen	PMD-I-326	64
Song, Yongchen	PMD-I-532	90
Soto, Ana	NMM-G-422	73
Soucasse, Laurent	RAD-J-411	76
Soufiani, Anouar	RAD-J-411	76
Soufiani, Anouar	RAD-J-413	76
Soulaine, Cyprien	CPM-E-422	71
Specht, Eckehard	MFP-G-311	62
Speetjens, Michel F. M.	HTE-C2-525	83
Sphaier, Leandro	TPP-I-112	37
Spindler, Klaus	CDS-J-111	38
Spindler, Klaus	EEF-K-233	56
Srikanth, Rangarajan	TMG-K-523	92
Stafford, Jason	TPA-B2-114	30
Stafford, Jason	EEC-H-233	52
Stafford, Jason	TMG-K-526	92
Stafford, Jason	TMG-K-533	93
Stanley, C.	SOL-B2-221	42
Starodubtseva, Irina	EVP-B1-215	40
Staub, Christian	EEF-K-233	56
Steffen, Paul-Martin	TPP-I-226	53

Stehlik, Petr	EES-K-111	39
Stephan, Peter	TPB-B2-123	30
Stephan, Peter	MTR-F-124	34
Stephan, Peter	PBL-B1-322	57
Stephan, Peter	PBL-B1-422	67
Stephan, Peter	TDY-C1-414	69
Steyn, Madder	FCV-F-216	48
Still, Martin	MTR-F-124	34
Stinson, Matthew	GTB-G-411	73
Stuckenbruck, Sidney	TPM-B2-524	80
Su, Bo	TPP-I-213	52
Su, Dan	FCV-C1-112	31
Su, HsienChin	EEC-H-213	51
Suga, Kazuhiko	TTR-C2-126	32
Suga, Kazuhiko	NMS-C2-214	44
Suga, Takafumi	NCV-F-421	72
Sugai, Shunsuke	CMB-J-524	91
Sugaya, Kazuhiro	HPP-K-413	77
Sugimoto, Katsumi	FCL-H-123	36
Sugimoto, Takao	HTE-C2-513	82
Sugimoto, Toshiki	FCL-H-122	36
Sugiura, Tessai	BMA-E-112	33
Sugiyama, Daichi	TST-I-232	53
Suleman, Omar	TMG-K-515	92
Sun, Chuang	NCV-F-425	72
Sun, Fengxian	NSM-H-316	63
Sun, Menghe	TDY-C1-515	81
Sun, Qie	TMG-K-525	92
Sun, Yingying	EEF-K-221	56
Sun, Yuqing	HTE-C2-532	83
Sundararajan, Thirumalachari	NMM-G-514	86
Sunden, Bengt	HEX-G-211	49
Sunden, Bengt	HTE-C2-425	70
Surblys, Donatas	MLT-H-112	36
Surtaev, Anton	EVP-B1-215	40
Suto, Hitoshi	FCV-C1-124	31
Suto, Hitoshi	NCV-F-511	84
Suzuki, Hiroshi	FCV-F-214	48
Suzuki, Hiroshi	HEX-G-236	50
Suzuki, Kengo	PMD-I-425	75
Suzuki, Koichi	FBL-B1-313	57
Suzuki, Yuji	RAD-J-323	65
Suzuki, Yuji	OPT-F-522	85
Suzuki, Yutaka	CDS-J-225	54

Swaminathan, Jaichander	MTR-F-123	34
Swaminathan, Prasanna	RAD-J-413	76
Swanson, Scot E.	TMG-K-522	92
Szmyd, Janusz	HTE-C2-234	45
Szmyd, Janusz	CND-H-415	74
Tabe, Yutaka	PMD-I-425	75
Tachibana, Masamitsu	MNF-E-123	33
Tada, Yukio	CNV-C1-521	81
Tadano, Yara de Souza	EEC-H-221	51
Tadrist, Lounès	EES-K-121	39
Tadrist, Lounès	EVP-B1-214	40
Tadrist, Lounès	CDS-J-231	55
Tadrist, Lounès	PBL-B1-423	67
Tadrist, Lounès	PBL-B1-424	67
Tagawa, Masato	TTR-C2-112	32
Tagawa, Toshio	HTE-C2-224	45
Takahashi, Kazuki	PBL-B1-412	67
Takahashi, Koji	CDS-J-223	54
Takahashi, Koji	NMM-G-532	87
Takamatsu, Hiroshi	BMA-E-222	47
Takano, Kohei	HPP-K-422	77
Takase, Kazuyuki	MIN-C1-232	44
Takashiba, Yasuto	TPF-B2-321	58
Takata, Yasuyuki	EVP-B1-114	29
Takata, Yasuyuki	CDS-J-223	54
Takata, Yasuyuki	NMM-G-532	87
Takeda, Tetsuaki	ACR-G-322	62
Takeishi, Kenichiro	TTR-C2-122	32
Takenaka, Nobuyuki	FCL-H-123	36
Takenaka, Nobuyuki	MIN-C1-211	43
Takimoto, Akira	CNV-C1-521	81
Talukdar, Prabal	CND-H-524	88
Tam, Hou Kuan	NMM-G-511	86
Tam, Lap Mou	NMM-G-511	86
Tamdogan, Enes	NCV-F-426	72
Tan, Heping	RAD-J-415	76
Tan, He-Ping	FCV-F-326	61
Tan, He-Ping	NCV-F-425	72
Tan, He-Ping	MCV-D-515	84
Tan, Jianyu	RAD-J-324	65
Tan, Jinyi	EES-K-115	39
Tan, Kai	EES-K-115	39
Tanaka, Chitose	FBL-B1-234	41
Tanaka, Gaku	BMA-E-223	47

# Author Index

Tanaka, Gaku	HPP-K-423	77
Tanaka, Ryoza	HTE-C2-513	82
Tanaka, Takahiro	PMD-I-424	75
Tang, D. W.	NMM-G-512	86
Tang, Dawei	TPP-I-124	37
Tang, Dawei	MIN-C1-214	43
Tang, Dawei	FCV-F-221	48
Tang, Dawei	FBL-B1-315	57
Tang, Dawei	PMD-I-322	64
Tang, Guihua	CND-H-424	74
Tang, Lingyue	TPP-I-213	52
Tang, Tsz Kit	HTE-C2-324	60
Tang, Yi-Chun	HEX-G-122	35
Tang, Zhen	SOL-B2-232	42
Tanigawa, Hirochika	NCV-F-514	84
Tanigawa, Hirofumi	MTR-F-113	34
Taniguchi, Jun	MNF-E-125	33
Taniguchi, Jun	TEL-K-322	66
Tanimizu, Katsuyoshi	HTE-C2-423	70
Tano, Takuya	FCV-F-214	48
Tao, Wenquan	ADS-D-212	46
Tao, Wenquan	CPM-E-411	71
Tao, Wen-Quan	EVP-B1-111	29
Tao, Wen-Quan	HEX-G-121	35
Tao, Wen-Quan	MLT-H-115	36
Tao, Wen-Quan	SOL-B2-224	42
Tao, Wen-Quan	SOL-B2-232	42
Tao, Wen-Quan	CDS-J-234	55
Tao, Yong X.	NSM-H-312	63
Tarasevich, Stanislav	TPF-B2-315	58
Tardif, Xavier	MIN-C1-213	43
Tartarini, Paolo	EVP-B1-121	29
Tartarini, Paolo	EES-K-116	39
Tatami, Atsushi	MNF-E-123	33
Tatasumoto, Keisuke	NCV-F-514	84
Tatsumi, Junichi	NMM-G-523	86
Tatsumi, Kazuya	HTE-C2-223	45
Taylor, Robert	EES-K-123	39
Taylor, Robert	SOL-B2-211	41
Taylor, Robert	SOL-B2-216	41
Teixeira, Jose	CPM-E-414	71
Teixeira, Jose	CNV-C1-532	82
Teixeira, Senhorinha	CPM-E-414	71
Teixeira, Senhorinha	CNV-C1-532	82

Telles, Mariana Cristina	TPP-I-112	37
Tembhurne, Saurabh	SOL-B2-226	42
Teodori, Emanuele	PBL-B1-534	79
Terashima, Osamu	TTR-C2-113	32
Terekhov, Victor	TTR-C2-111	32
Terekhov, Victor I.	FCV-C1-123	31
Terekhov, Viktor I.	TPS-B2-514	79
Terekhov, Vladimir	CMB-J-522	91
Termentzidis, Konstantinos	NMM-G-533	87
Termentzidis, Konstantinos	NMM-G-535	87
Terrapon, Vincent E.	MFP-G-314	62
Theristis, Marios	SOL-B2-222	42
Thomas, Ingo	HEX-G-235	50
Thome, John R.	TPN-B2-421	68
Thome, John Richard	EEF-K-222	56
Thomsen, Elizabeth	SOL-B2-221	42
Thring, Rob	CDS-J-226	54
Throvagunta, Praveen	HTE-C2-233	45
Throvagunta, Praveen	PLS-K-311	66
Tian, Chengcheng	EEF-K-232	56
Tian, Hao	EEF-K-224	56
Tian, Maocheng	TBF-D-225	46
Tian, X.	TPP-I-124	37
Timchenko, Victoria	NSM-H-311	63
Timchenko, Victoria	RAD-J-316	65
Timchenko, Victoria	HTE-C2-422	70
Timchenko, Victoria	NCV-F-512	84
Timchenko, Victoria	CMB-J-534	91
Titov, Alexander	FCV-F-211	48
Tkachenko, Oxana A.	NCV-F-512	84
Tkachenko, Svetlana	NCV-F-512	84
Toda, Ryohei	MLT-H-111	36
Togawa, Junya	TST-I-232	53
Tokunaga, Atsushi	CDS-J-126	38
Tokunaga, Kenichi	CMB-J-521	91
Tomimura, Toshio	TMG-K-524	92
Tomiyaama, Akio	TBF-D-221	46
Tong, LiGe	NSM-H-315	63
Tong, Lige	CND-H-514	87
Tong, Zi-Xiang	MLT-H-115	36
Topin, Frederic	PMD-I-325	64
Topin, Frédéric	PBL-B1-423	67
Torii, Shuichi	HTE-C2-415	70
Toshima, Naoki	TEL-K-323	66

Totani, Tsuyoshi	RAD-J-321	65
Tow, Emily W.	TBF-D-224	46
Toyota, Hiromichi	PLS-K-315	66
Tran, Honghi	TST-I-234	53
Tran, Julian M.	HEX-G-214	49
Tranchant, Laurent	TPP-I-214	52
Trenkinshu, Sergey	EEF-K-223	56
Trevizoli, Paulo	HEX-G-212	49
Trifonova, Tatyana	NCV-F-423	72
Tsai, Hann-Huei	EEC-H-232	52
Tschur, Nikolay	HEX-G-231	50
Tshimanga, Ntumba	MIN-C1-231	44
Tsukahara, Takahiro	TTR-C2-123	32
Tsurimaki, Yoichiro	RAD-J-325	65
Tsuruta, Takaharu	MTR-F-113	34
Tsuruta, Takaharu	CDS-J-126	38
Tsushima, Shohji	ECS-K-213	55
Tsushima, Shohji	PMD-I-531	90
Tu, Jiyuan	TPN-B2-411	68
Turek, Vojtech	EES-K-111	39
Türkakar, Göker	TPM-B2-526	80
Twomey, Alan	BMA-E-222	47
Tyagi, Himanshu	EES-K-123	39
Uemura, Suguru	PMD-I-531	90
Ueno, Ai	RAD-J-323	65
Ueno, Ichiro	FCV-F-234	49
Ueno, Ichiro	PBL-B1-511	78
Ueno, Takashi	TPF-B2-324	58
Ullmann, Amos	HTE-C2-524	83
Umekawa, Hisashi	HEX-G-215	49
Umekawa, Hisashi	TPF-B2-322	58
Unno, Noriyuki	MNF-E-125	33
Unno, Noriyuki	TEL-K-322	66
Ustinov, Alexander	PBL-B1-533	79
Utaka, Yoshio	PBL-B1-324	57
Utaka, Yoshio	FLM-H-532	88
Utsumi, Seiho	TPF-B2-324	58
Vadasz, Peter	PMD-I-414	75
Vaillon, Rodolphe	RAD-J-325	65
van Buren, Simon	CND-H-511	87
Van de Ven, James	PMD-I-533	90
van den Broek, Martijn	RNE-C1-325	59
van der Geld, Cees W. M.	TPB-B2-122	30
van der Meer, Theo	PMD-I-515	89

van der Walt, Stefan	RAD-J-414	76
Van Dyke, Alexander	TPP-I-224	53
Van Oevelen, Tijs	OPT-F-526	85
van Weelderen, Rob	CPM-E-422	71
Vanderwagen, Calvin	CNV-C1-524	81
Varava, A.N.	TPB-B2-124	30
Varava, Alexander	HTE-C2-225	45
Vasquez, Cristal	NMM-G-423	73
Vera-García, Francisco	TPB-B2-121	30
Vera-García, Francisco	TPB-B2-125	30
Vera-García, Francisco	TPM-B2-521	80
Verissimo, Gabriel	RNE-C1-324	59
Vessakosol, Passakorn	IPJ-C1-314	59
Vicente, Jerome	PMD-I-316	64
Vieler, Sarah	CND-H-511	87
Vierendeels, Jan	HEX-G-222	50
Vigdorovich, Igor I.	TDY-C1-422	69
Vijay, Dig	FCV-F-231	49
Vijay, Dig	FCV-F-233	49
Villa, Fabio	NMT-F-535	85
Vinogradov, Urii	FCV-C1-125	31
Vinogradov, Urii	FCV-F-211	48
Voirand, Antoine	MTR-F-122	34
Volz, Sebastian	TPP-I-214	52
Volz, Sebastian	NMM-G-425	73
Vu, Pham Quang	FBL-B1-233	41
Waddell, Alistair	TMG-K-533	93
Wae-hayee, Makatar	IPJ-C1-314	59
Wakita, Masashi	RAD-J-321	65
Wako, Takahiro	NMS-C2-211	44
Walker, Simon	TPF-B2-323	58
Wallenstein, Martin	PMD-I-311	64
Wan, Qian	TPN-B2-414	68
Wang, Chao	NSM-H-325	63
Wang, Chenglong	HTE-C2-425	70
Wang, Chi-Chuan	HEX-G-122	35
Wang, Chi-Chuan	TMG-K-521	92
Wang, Dayong	TPP-I-114	37
Wang, Dongdong	PMD-I-525	89
Wang, Evelyn	SOL-B2-223	42
Wang, Evelyn	NMS-C2-215	44
Wang, Evelyn	ADS-D-211	46
Wang, Evelyn N.	EVP-B1-113	29
Wang, Evelyn N.	CDS-J-232	55

Wang, Evelyn N.	CDS-J-236	55
Wang, Evelyn N.	FLM-H-534	88
Wang, Guo-xiang	PPE-G-113	35
Wang, Guo-xiang	BMA-E-221	47
Wang, Guo-Xiang	SAT-J-511	90
Wang, Hai-Dong	MLT-H-114	36
Wang, Hai-Dong	TMG-K-516	92
Wang, Han	NCV-F-425	72
Wang, Hong	FLM-H-535	88
Wang, Hongfu	HTE-C2-311	60
Wang, Hui	ADS-D-212	46
Wang, Jianli	TPP-I-116	37
Wang, Jiaqi	TPP-I-114	37
Wang, Jiaqi	PMD-I-315	64
Wang, Jiaqi	PMD-I-532	90
Wang, Jingfu	SOL-B2-234	42
Wang, Kun	SOL-B2-224	42
Wang, Kun	TMG-K-525	92
Wang, Le	GTB-G-413	73
Wang, Lei	HTE-C2-425	70
Wang, Li	NSM-H-315	63
Wang, Li	PBL-B1-536	79
Wang, Li	CND-H-514	87
Wang, Lijuan	HEX-G-223	50
Wang, Lixin	CND-H-526	88
Wang, Moran	CND-H-411	74
Wang, Moran	PMD-I-514	89
Wang, Naihua	TMG-K-512	92
Wang, Naihua	TMG-K-525	92
Wang, Qian	TST-I-233	53
Wang, Qiuwang	HEX-G-211	49
Wang, Qiuwang	HEX-G-234	50
Wang, Qiuwang	HTE-C2-321	60
Wang, Rui	TPN-B2-422	68
Wang, Shenglong	TPP-I-121	37
Wang, Shixue	CDS-J-221	54
Wang, Shixue	TEL-K-326	66
Wang, Shu-Lei	FBL-B1-223	40
Wang, Song	HEX-G-121	35
Wang, Tao	FBL-B1-315	57
Wang, Wei	TDY-C1-426	69
Wang, Wei	HTE-C2-514	82
Wang, Wei-Hsiang	GTB-G-416	73
Wang, Weilong	ADS-D-216	46

Wang, Weilong	TPP-I-212	52
Wang, Wenhua	HTE-C2-511	82
Wang, Xiao-Ming	CND-H-512	87
Wang, Xinjiang	PPE-G-115	35
Wang, Xiuling	CPM-E-413	71
Wang, Xiyun	EES-K-115	39
Wang, Yabo	BMA-E-115	33
Wang, Yi-Fei	TMG-K-535	93
Wang, Yuanyuan	TEL-K-321	66
Wang, Zhaoliang	TPP-I-124	37
Wang, Zhaoliang	NMM-G-512	86
Wang, Zhicheng	FBL-B1-315	57
Wang, Zhiyun	FCV-C1-112	31
Warrier, Gopinath R.	HTE-C2-416	70
Warsinger, David E. M.	MTR-F-123	34
Watanabe, Hirotatsu	PMD-I-513	89
Watanabe, Hirotatsu	CMB-J-524	91
Watanabe, Takumi	FCV-F-234	49
Wei, Gaosheng	CND-H-526	88
Wei, Guanghua	SAT-J-514	90
Wei, Jinjia	PBL-B1-516	78
Wei, Xiaolan	TPP-I-212	52
Weibel, Justin A.	PMD-I-411	75
Weigand, Bernhard	HTE-C2-512	82
Wen, Chang-Da (Alex)	RAD-J-422	76
Wen, Rongfu	CDS-J-222	54
West, Alastair	HEX-G-233	50
White, Mary Anne	CND-H-515	87
Wilcox, Douglas	PMD-I-515	89
Williamson, Nicholas	NCV-F-515	84
Wilson, Mike	GTB-G-413	73
Wirtz, Siegmur	MFP-G-311	62
Woffenden, Albert	SOL-B2-216	41
Woitalka, Alexander	HEX-G-235	50
Wong, Teck Neng	TBF-D-223	46
Woodfield, Peter	MCV-D-511	84
Wrobel, Witold	HTE-C2-234	45
Wu, Bangxian	HTE-C2-533	83
Wu, Bin	EEF-K-223	56
Wu, BingHeng	RNE-C1-321	59
Wu, Choi Keng	NMM-G-511	86
Wu, Chuansong	PLS-K-312	66
Wu, Hao	HTE-C2-312	60
Wu, Huiying	EVP-B1-126	29

Wu, Jian-Fu	EEC-H-232	52
Wu, Jianghong	ACR-G-323	62
Wu, Jing	TDY-C1-514	81
Wu, L.	NMT-F-534	85
Wu, Ming	TST-I-236	53
Wu, Wei	MTR-F-121	34
Wu, Wei	TPN-B2-413	68
Wu, Wenjuan	PPE-G-113	35
Wu, Wenjuan	BMA-E-221	47
Wu, Xinxin	PMD-I-512	89
Wu, Yuting	TMG-K-513	92
Wu, Yu-Ting	NSM-H-325	63
Wu, Zihua	PLS-K-313	66
Wulf, Rhena	FCV-F-231	49
Wulf, Rhena	FCV-F-233	49
Wuttijumnong, Vijit	TMG-K-514	92
Xi, Guannan	HEX-G-223	50
Xi, Guannan	CNV-C1-534	82
Xi, Guan-Nan	EVP-B1-111	29
Xi, Xinming	FCV-F-315	61
Xia, Ke-Qing	NCV-F-415	72
Xia, Xinlin	NSM-H-316	63
Xia, Xin-Lin	TPP-I-122	37
Xia, Xin-Lin	NCV-F-425	72
Xiao, Liehui	FCV-F-315	61
Xiao, Rong	FLM-H-534	88
Xiao, Xin	TST-I-235	53
Xie, Gongnan	HEX-G-211	49
Xie, Huaqing	TPP-I-115	37
Xie, Huaqing	PLS-K-313	66
Xie, Huaqing	TEL-K-321	66
Xie, Ming	RAD-J-415	76
Xie, Xiaochen	RAD-J-415	76
Xie, Xiaodong	FCV-C1-115	31
Xie, Xiaodong	CMB-J-533	91
Xin, Fang	TPN-B2-423	68
Xin, Feng	PMD-I-313	64
Xin, Gongming	HTE-C2-311	60
Xin, Gongming	HPP-K-421	77
Xin, Shihe	CNV-C1-525	81
Xin, Shihe	NCV-F-516	84
Xing, Yunfei	FCV-F-322	61
Xiong, Yanbin	PMD-I-415	75
Xiong, Yaxuan	TMG-K-513	92

Xiong, Yuan	CMB-J-526	91
Xu, Chao	TST-I-236	53
Xu, Feng	TDY-C1-425	69
Xu, Gang	EEF-K-221	56
Xu, Hui	HEX-G-223	50
Xu, Hujin	PMD-I-423	75
Xu, Liang	TDY-C1-426	69
Xu, Liang	HTE-C2-514	82
Xu, Min	TPN-B2-423	68
Xu, Pengfei	PBL-B1-513	78
Xu, Rui-Na	CND-H-423	74
Xu, Shuhong	PMD-I-424	75
Xu, Wei	CDS-J-222	54
Xu, Xiangyang	HTE-C2-321	60
Xu, Yongjun	FCV-F-313	61
Xu, Zhi	HTE-C2-312	60
Xu, Zhiming	NMT-F-534	85
Xuan, Yimin	PPE-G-111	35
Xuan, Yimin	RAD-J-326	65
Xuan, Yimin	PBL-B1-513	78
Xuan, Yimin	NMT-F-531	85
Yagi, Takashi	MNF-E-123	33
Yagov, Victor V.	PBL-B1-526	78
Yakovlev, Anatoly	TPF-B2-315	58
Yamada, Akira	EES-K-122	39
Yamada, Akira	CNV-C1-523	81
Yamada, Jun	RAD-J-425	76
Yamada, Kenta	MIN-C1-234	44
Yamada, Shunsuke	FCV-C1-121	31
Yamada, Shunsuke	CND-H-521	88
Yamada, Yukio	MIN-C1-234	44
Yamada, Yukio	MIN-C1-236	44
Yamada, Yutaka	CDS-J-223	54
Yamaguchi, Hiroki	FBL-B1-221	40
Yamaguchi, Tomohiko	TPF-B2-321	58
Yamaguchi, Tomohiko	TPN-B2-414	68
Yamaguchi, Yasutaka	MLT-H-112	36
Yamamoto, Akihiro	CNV-C1-521	81
Yamamoto, Mami	HTE-C2-411	70
Yamashina, Goshi	TPF-B2-322	58
Yamashita, Kyohei	NMM-G-531	87
Yamashita, Seiya	EEC-H-231	52
Yan, Hong Bin	TDY-C1-423	69
Yan, Jun-Jie	TPM-B2-532	80

# Author Index

Yan, Yuying	BMA-E-116	33
Yan, Yuying	NSM-H-313	63
Yan, Yuying	TPN-B2-414	68
Yanagihara, Hideki	NMM-G-531	87
Yanagihara, Jurandir	OPT-F-524	85
Yanazawa, Tadamichi	NCV-F-412	72
Yang, Charles	PBL-B1-535	79
Yang, Chien-Yuh	FBL-B1-222	40
Yang, Chun	NMM-G-426	73
Yang, Jianfeng	HEX-G-234	50
Yang, Jiayue	RAD-J-315	65
Yang, Jiayue	RAD-J-324	65
Yang, Jinguo	HTE-C2-414	70
Yang, Juekuan	TPP-I-116	37
Yang, Junfeng	TPN-B2-424	68
Yang, Kai-Shing	NMS-C2-212	44
Yang, Lei	TPP-I-114	37
Yang, Lei	PMD-I-315	64
Yang, Lei	PMD-I-532	90
Yang, Lijun	EEF-K-221	56
Yang, Lijun	HTE-C2-313	60
Yang, Lijun	FCV-F-315	61
Yang, Lin	HTE-C2-416	70
Yang, Liu	RAD-J-415	76
Yang, Mingjun	TPP-I-114	37
Yang, Mingjun	TPP-I-121	37
Yang, Minlin	FCV-F-313	61
Yang, Mo	FCV-C1-112	31
Yang, Moucun	SOL-B2-211	41
Yang, Moucun	SOL-B2-216	41
Yang, Qianpeng	BMA-E-225	47
Yang, Sungwoo	ADS-D-211	46
Yang, Wei-Wei	MLT-H-115	36
Yang, Wenming	CMB-J-536	91
Yang, Xiao Hu	TDY-C1-423	69
Yang, Xiao-Ping	TPM-B2-532	80
Yang, Xiaoxi	FCV-F-313	61
Yang, Xingtuan	TPN-B2-411	68
Yang, Yahui	FCV-F-224	48
Yang, Yongping	HTE-C2-313	60
Yang, Yongping	CND-H-526	88
Yankov, Georgij	CDS-J-114	38
Yao, Chun-Wei	TPM-B2-522	80
Yao, G.	TPP-I-124	37

Yao, Shichune	TPP-I-113	37
Yarygina, Nadezhda	TTR-C2-111	32
Yastrebov, Arseniy	CDS-J-224	54
Yasumi, Keisuke	PBL-B1-421	67
Yasuoka, Haruka	NMS-C2-214	44
Yazawa, Kazuaki	TDY-C1-512	81
Yeo, Jiwon	EEC-H-231	52
Yeoh, Guan Heng	HTE-C2-232	45
Yeoh, Guan Heng	HTE-C2-324	60
Yeoh, Guan Heng	NCV-F-512	84
Yeoh, Guan Heng	CMB-J-534	91
Yi, Hong-Liang	FCV-F-326	61
Yi, Hong-Liang	MCV-D-515	84
Yin, Shaowu	NSM-H-315	63
Yin, Shaowu	CND-H-514	87
Ying, Zhaoxia	BMA-E-221	47
Yip, Meesin	GTB-G-414	73
Yokobori, Seiichi	PBL-B1-421	67
Yokota, Hideo	BMA-E-223	47
Yokouchi, Yasuo	MIN-C1-215	43
Yokoyama, Daiki	ACR-G-322	62
Yokoyama, Keishi	TBF-D-222	46
Yong, Qingqing	FCV-C1-112	31
Yoo, Seong-Yeon	EES-K-125	39
Yoon, Sungho	HTE-C2-314	60
Yoshida, Atsumasa	RAD-J-412	76
Yoshida, Hideo	PMD-I-426	75
Yoshida, Hideo	PMD-I-511	89
Yoshida, Hiroyuki	MIN-C1-232	44
Yoshida, Kenji	NCV-F-421	72
Yoshidome, Junpei	FBL-B1-312	57
Yoshimura, Tomoya	HEX-G-215	49
Yoshinaga, Takao	PMD-I-521	89
Yoshino, Hajime	HTE-C2-415	70
You, Wei	CPM-E-411	71
Youn, Suk Bum	BMA-E-111	33
Youn, Youngjik	TBF-D-222	46
Younsi, Amina	CPM-E-421	71
Yu, Hai-Yan	NMT-F-533	85
Yu, Wei	TPP-I-115	37
Yu, Xingjian	MFP-G-313	62
Yu, Yan	CND-H-525	88
Yu, Zi-Tao	PBL-B1-531	79
Yuan, Chao	MFP-G-313	62

Yuan, Chao	OPT-F-521	85
Yuan, Shihua	TPN-B2-413	68
Yuan, Yinnan	CNV-C1-534	82
Yuan, Zhong-Xian	PMD-I-313	64
Yue, Lindsey	SOL-B2-231	42
Yue, Peng	MIN-C1-214	43
Yue, Peng	PMD-I-322	64
Yue, Yujin	HTE-C2-313	60
Yuen, Chun	CMB-J-534	91
Yuen, Richard Kwok Kit	CMB-J-534	91
Yuguchi, Seiichiro	HPP-K-423	77
Yun, Byong-jo	CDS-J-113	38
Yun, Rin	HTE-C2-326	60
Zaitsev, Dmitry	EVP-B1-115	29
Zaitsev, Dmitry	FLM-H-533	88
Zakharenkov, Alexander	HTE-C2-225	45
Zakharov, Nikolay	TDY-C1-413	69
Zalcaran, Daniel	NCV-F-422	72
Zamarian, Rahim	FCV-F-235	49
Zamengo, Massimiliano	ECS-K-215	55
Zamora, Miguel	CDS-J-235	55
Zamoum, Mohammed	PBL-B1-424	67
Zditovets, Andrey	FCV-F-211	48
Zeigarnik, Yury	PBL-B1-411	67
Zeng, Jianbang	MTR-F-121	34
Zeng, Miao	SOL-B2-234	42
Zeng, Miao	FCV-F-221	48
Zeng, Min	HEX-G-234	50
Zeng, Min	HTE-C2-321	60
Zhang, Baowen	EEC-H-212	51
Zhang, Baowen	TMG-K-534	93
Zhang, Biao	INV-E-215	47
Zhang, Chao	PMD-I-533	90
Zhang, Chengbin	NMM-G-513	86
Zhang, Cheng-Mei	TPP-I-111	37
Zhang, Chengwu	NMM-G-515	86
Zhang, Chong	HPP-K-421	77
Zhang, Ding-cai	CDS-J-234	55
Zhang, Fang-Fang	FLM-H-535	88
Zhang, Guangmeng	PBL-B1-536	79
Zhang, Guanmin	TBF-D-225	46
Zhang, Guoqing	PMD-I-413	75
Zhang, Hao-Chun	NMT-F-533	85
Zhang, Huaichen	TDY-C1-412	69

Zhang, Hui	HTE-C2-313	60
Zhang, Ji	HTE-C2-426	70
Zhang, JiaJie	IPJ-C1-312	59
Zhang, Jin	PPE-G-111	35
Zhang, Le	CND-H-423	74
Zhang, Li	PMD-I-514	89
Zhang, Liang	PBL-B1-531	79
Zhang, Lun	MTR-F-112	34
Zhang, Peng	TST-I-235	53
Zhang, Ping	NMT-F-531	85
Zhang, Shuai	TDY-C1-426	69
Zhang, Shun-De	TPP-I-122	37
Zhang, Shusheng	HTE-C2-311	60
Zhang, TieJun	FLM-H-531	88
Zhang, Wen	ADS-D-212	46
Zhang, Wenjie	RAD-J-315	65
Zhang, Xiang-Xiong	NMS-C2-213	44
Zhang, Xing	TPP-I-116	37
Zhang, Xing	TPP-I-123	37
Zhang, Xing	RNE-C1-321	59
Zhang, Xing	TEL-K-326	66
Zhang, Xing	NMM-G-532	87
Zhang, Xing	TMG-K-516	92
Zhang, Xin-Rong	FCV-F-223	48
Zhang, Xin-Rong	TDY-C1-515	81
Zhang, Xin-Rong	NMM-G-526	86
Zhang, Xinxin	SOL-B2-234	42
Zhang, Xinxin	PLS-K-312	66
Zhang, Xinyu	CND-H-525	88
Zhang, Yamin	BMA-E-115	33
Zhang, Ya-ning	HTE-C2-312	60
Zhang, Yanni	HTE-C2-426	70
Zhang, Yi	TPP-I-114	37
Zhang, Yilong	NMT-F-534	85
Zhang, Yinping	TDY-C1-513	81
Zhang, Yonghai	PBL-B1-516	78
Zhang, Yuwen	FCV-C1-112	31
Zhang, Yuwen	INV-E-212	47
Zhang, Z.	NMT-F-534	85
Zhang, Zhen	CDS-J-234	55
Zhang, Zhen	SAT-J-513	90
Zhang, Zhuomin	RAD-J-313	65
Zhao, Bo	RAD-J-313	65
Zhao, Changying	TST-I-233	53

Zhao, Changying	RAD-J-322	65
Zhao, Changying	SAT-J-514	90
Zhao, Chuang-Yao	EVP-B1-111	29
Zhao, Jiafei	TPP-I-114	37
Zhao, Jiafei	TPP-I-121	37
Zhao, Jiafei	PMD-I-315	64
Zhao, Jiafei	PMD-I-532	90
Zhao, Jingde	SAT-J-512	90
Zhao, Jun	CDS-J-221	54
Zhao, Nannan	HPP-K-425	77
Zhao, Tianshou	EEC-H-212	51
Zhao, Tianshou	TMG-K-534	93
Zhao, Xin-Peng	SOL-B2-232	42
Zhao, Yang	NMT-F-533	85
Zhao, Yaohua	HTE-C2-426	70
Zhao, Yongling	NCV-F-411	72
Zhao, Yuechao	TPP-I-121	37

Zhao, Yuechao	EES-K-112	39
Zhao, Yuechao	TPP-I-213	52
Zhao, Yulong	CDS-J-221	54
Zhao, Zhou	HTE-C2-516	82
Zharenov, Igor	SOL-B2-214	41
Zheng, Cheng	SOL-B2-216	41
Zheng, Huai	MFP-G-313	62
Zheng, Lili	SAT-J-514	90
Zheng, Mei	TBF-D-226	46
Zheng, Mei	TPN-B2-422	68
Zheng, Wentian	TPN-B2-424	68
Zheng, Xinghua	MIN-C1-214	43
Zheng, Xinghua	PMD-I-322	64
Zheng, Xinghua	FCV-F-322	61
Zhong, Fengquan	FCV-F-322	61
Zhong, Minho	CNV-C1-534	82
Zhou, Bo	CND-H-423	74
Zhou, Chenn Q.	EEF-K-223	56

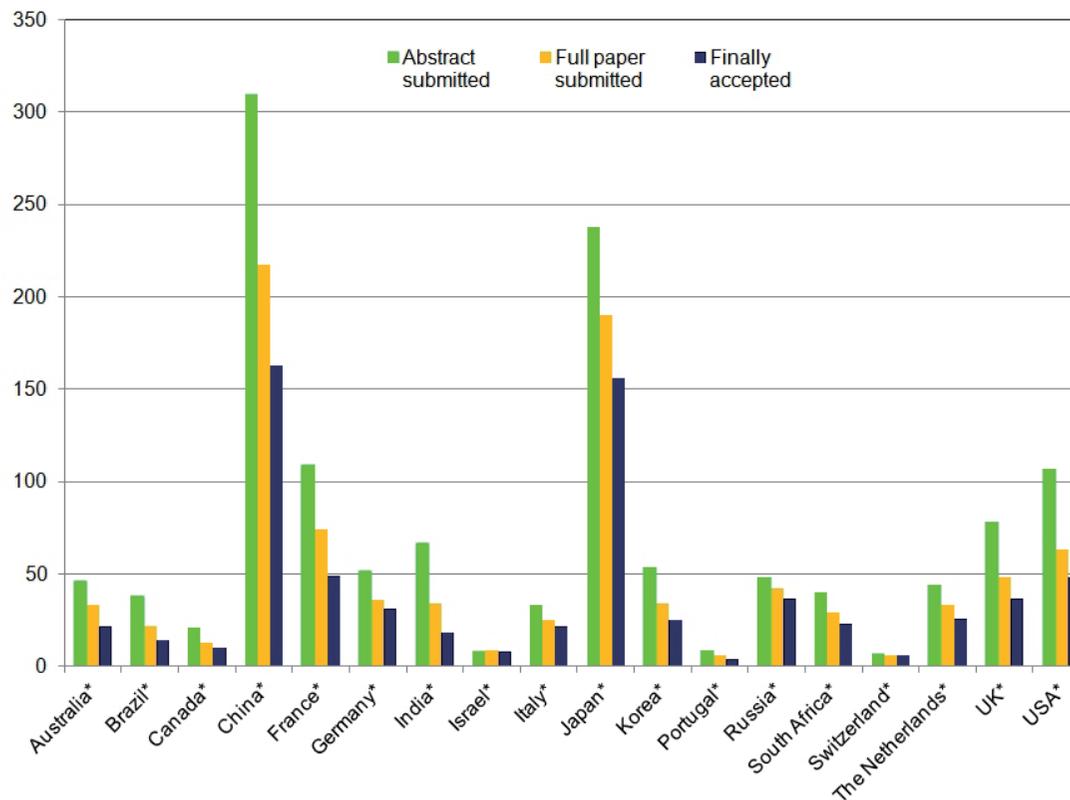
Zhou, Haocheng	HTE-C2-313	60
Zhou, Hong	HTE-C2-222	45
Zhou, Jia-Wei	NMS-C2-213	44
Zhou, Xiaofeng	TPP-I-115	37
Zhou, Xinhuan	TPP-I-213	52
Zhou, Xinhuan	PMD-I-326	64
Zhou, Zhi-Fu	SAT-J-511	90
Zhu, Beibei	NSM-H-313	63
Zhu, Guo-Qing	HEX-G-121	35
Zhu, Hongye	TPN-B2-411	68
Zhu, Jianjun	TBF-D-226	46
Zhu, Jianjun	TPN-B2-422	68
Zhu, Kai	BMA-E-115	33
Zhu, Xiaolei	HTE-C2-222	45
Zhu, Xun	FLM-H-535	88
Zhu, Yangying	NMS-C2-215	44
Zhu, Yin Hai	PMD-I-415	75

Zhu, Zihao	PMD-I-315	64
Zhu, Zihao	PMD-I-532	90
Zhukov, Vladimir	EVP-B1-212	40
Zhukov, Vladimir	PBL-B1-514	78
Zibart, Alexander	HEX-G-214	49
Zilio, Claudio	CDS-J-125	38
Zilio, Claudio	CDS-J-214	54
Ziskind, Gennady	HEX-G-221	50
Zondag, Herbert	TST-I-231	53
Zondag, Herbert	NMM-G-525	86
Zondag, Herbert A.	TDY-C1-412	69
Zong, Xiao	TPM-B2-532	80
Zou, Shuai	CNV-C1-534	82
Zuke, Donald	EEF-K-223	56
Zuo, Yuanzhi	FCV-F-313	61

## Statistics

**World Total** Abstract submitted: 1308, Full paper submitted: 914 (70%), Finally accepted: 699 (53%)

Region	Member(s)
Australia*	Australia, New Zealand, Indonesia, Malaysia, Singapore
Brazil*	Brazil, Other South American countries not specified elsewhere
Canada*	Canada
China*	China
France*	France, African countries not specified elsewhere
Germany*	Germany, Austria
India*	India, Other South Asian countries not specified elsewhere
Israel*	Israel
Italy*	Italy, Spain
Japan*	Japan, Taiwan, Pakistan, Other East Asian countries not specified elsewhere
Korea*	Korea
Portugal*	Portugal
Russia*	Russia, Ukraine, Republic of Belarus, Moldova, Georgia, Armenia, Azerbaijan
South Africa*	South Africa
Switzerland*	Switzerland
The Netherlands*	The Netherlands, Benelux countries and Scandinavia
UK*	UK, Ireland, Greece, Turkey, Egypt, Other Middle East countries not specified elsewhere, Serbia, Croatia, Slovenia, Bosnia and other Balkan countries, Estonia, Latvia and Lithuania, Czech republic and Slovakia, Hungary, Romania, Poland, Bulgaria and Albania
USA*	United States of America, Mexico, Other Central American countries



In addition to the committee members and the authors listed above, we extend our sincere thanks to the following contributors.

**Heat Transfer Community**

John Rose  
Jungho Kim  
Peter Woodfield  
Laurent-Emmanuel Brizzi

**Ex-Mayer of Kyoto City**

Yorikane Masumoto

**Governor of Kyoto Pref.**

Keiji Yamada

**Heat Transfer Society of Japan**

Ken Ishizuka  
Takeshi Osawa  
Hiroko Kuramizu

**Science Council of Japan**

Masaya Naruse  
Misa Sato  
Yuuhei Shikata  
Ren Shimada  
Gou Suga  
Asuka Umeno

**International Centre for Heat and Mass Transfer**

Faruk Arinç  
Tuğba Gün

**Begell House**

Yelena Shafeyeva  
Andrey Kuchinsky  
Vicky Lipowski  
Anastasia Matskovich  
Meghan Rohrmann  
Craig Weidner

**Tanaka Print**

Hironobu Matsumoto

**Art Tourist**

Masahiro Tachi

**JTB Western Japan**

Hirotsugu Hosokawa  
Ichiro Nakamura  
Ken Maehara

**Kyoto Convention Bureau**

Masako Yamazaki  
Teruhisa Yamauchi

**Kyoto International Conference Center**

Kazuo Inamori  
Hiroo Kinoshita  
Yoshiko Namura  
Shin-ichi Kotera  
Takeshi Takahashi  
Yuji Ueda  
Naoki Hirose  
Yuko Sakaguchi  
Koji Tanaka  
Shuji Ishii  
Toshitaka Funai  
Masnori Fujimi  
Hiroaki Kubo  
Ryojo Imae  
Kiyomi Kawamata  
Yumi Yanase

**Kyocera**

Ai Komaki

**Kyoto City Archeological Research Institute**

Toshio Kajikawa

**Koto (Ikuta-ryu)**

Yoshiko Kawamoto  
Rikako Hayashi  
Noriko Kawamoto  
Megumi Yamashita

**Suntory Holdings**

Hiroaki Hata  
Kyoichi Higuchi  
Kazuhiko Eto  
Takashi Kawamura

**Kitagawahonke Sake Brewery**

Yukihiro Kitagawa

**Ikenobo**

Katsuhito Kurata  
Katsushi Fujioka

**The Kyoto Shimbun Newspaper**

Risako Inoue

**Eizan Electric Railway**

Yasushi Matsushita

**Benikoya**

Masahiro Okabe  
Harumi Katsu

**Kawashima Selkon Textiles**

Mari Iwami

**Kyoto Univ. COOP**

Hitomi Kawaguchi

**Kameyama Candle House**

Mari Miura

**Walt Disney Animation Studios**

Rasmus Tamstorf  
Christine Chrisman

**Nakaya Ukichiro Museum of Snow and Ice**

Kenzo Kanda

**Yukiguni-kan**

Kenta Kaise

**Shirakawa Village Office**

Tamao Ozawa

**Sendai Kyodo Printing**

Susumu Hasegawa  
Takeshi Hasegawa  
Yohei Fujiyama  
Koichiro Sasaki  
Satoshi Kanomata

**Tokyo Creative**

Yukihiko Takahashi  
Hiroki Takahashi

**Tohoku University**

Junnosuke Okajima  
Hitomi Kobayashi  
Yuta Aizawa  
Ryoji Banba  
Teppey Furusawa  
Yuki Kanda  
Shun Kashiwada  
Tatsuya Kobari  
Takuma Kogawa  
Takahiro Okabe  
Shingo Nakamura

**Ryota Nakaoku**

Toru Saito  
Jun Sasaki  
Tessai Sugiura  
Yuya Takahashi  
Yoichiro Tsurimaki  
Yuki Yamaguchi

**Kyoto Institute of Technology**

Tomohiro Goto  
Toshihiro Horii  
Tadashi Kaijima  
Ryota Kimura  
Yukihiro Kimura  
Teruhiko Kinoshita  
Keisuke Maeda  
Ryo Morimoto  
Naoto Nishi  
Atsushi Nishida  
Takato Tabuchi  
Kazuya Taira  
Yuki Tanaka  
Ko Terai

**Doshisha University**

Hironobu Itakura  
Toshiki Mori  
Kenji Ono  
Satoru Tsutsumi  
Naoki Wada  
Yuki Yamamoto

**Kansai University**

Ikki Yumoto

**Kanazawa University**

Mami Kurokawa

**Kyoto University**

Akiko Kosaka  
Kazuko Noro  
Seiko Sato  
Mika Yamaguchi  
John Goodman  
Shingo Yonezawa  
Miki Noda  
Tomomi Kaneko  
Hiroko Ohmori  
Osamu Sato  
Kota Miyoshi  
Nurul Zieyana M. Annuar  
Takafumi Fujii  
Naoto Furukawa  
Tetsushi Isomoto  
Kotaro Itakura  
Kisen Jo  
Ken Kawaharada  
Koki Kawano  
Ryuichi Kimura  
Tatsuya Kume  
Koji Kusumi  
Michito Matsuoka  
Takahiro Miyamoto  
Shusuke Mori  
Shunsuke Mukai  
Kai Nakayama  
Daiki Saisho  
Syogo Sakurai  
Kojiro Sano  
Satoshi Seo  
Kosuke Sugimoto  
Shoki Takehisa  
Yuuki Tanaka  
Atsushi Ueyama  
Kotaro Yamaguchi  
Yuji Yamaguchi  
Saho Yoshida

**Special Thanks**

We are deeply grateful to the late Professor Kenjiro Suzuki, Professor Emeritus of Kyoto University, for his warm encouragement and support that in 2006 laid the groundwork for holding IHTC-15 in Kyoto this year. (cf. *Int. J. Heat and Mass Transfer*, Vol. 51, 13–14, 2008, pp. 3257–3258)

**IHTC-15 Program Booklet**

Edited by IHTC-15 Executive Committee, Kyoto, Japan  
Printed by Sendai Kyodo Printing, Sendai, Japan  
Published on July 24, 2014 ©2014 IHTC-15 Executive Committee  
<http://www.ihtc-15.org> info@ihtc-15.org















# The 16<sup>th</sup> International Heat Transfer Conference

10-15 August 2018, Beijing, China

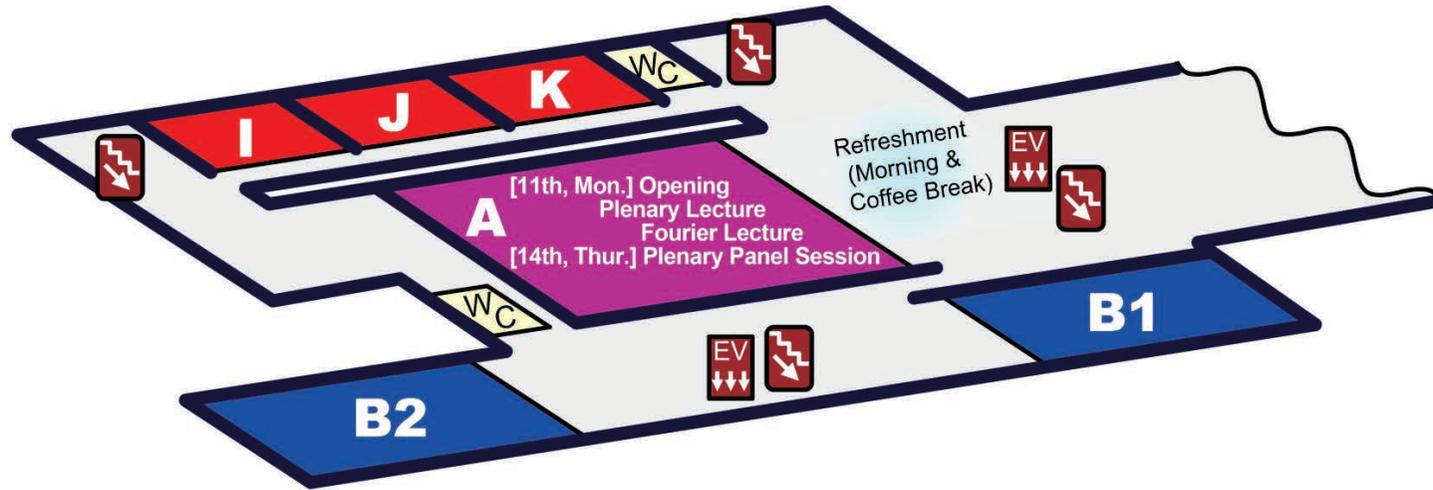
Organizing Committee Chair: Ping Cheng

Executive Committee Chair: Xing Zhang

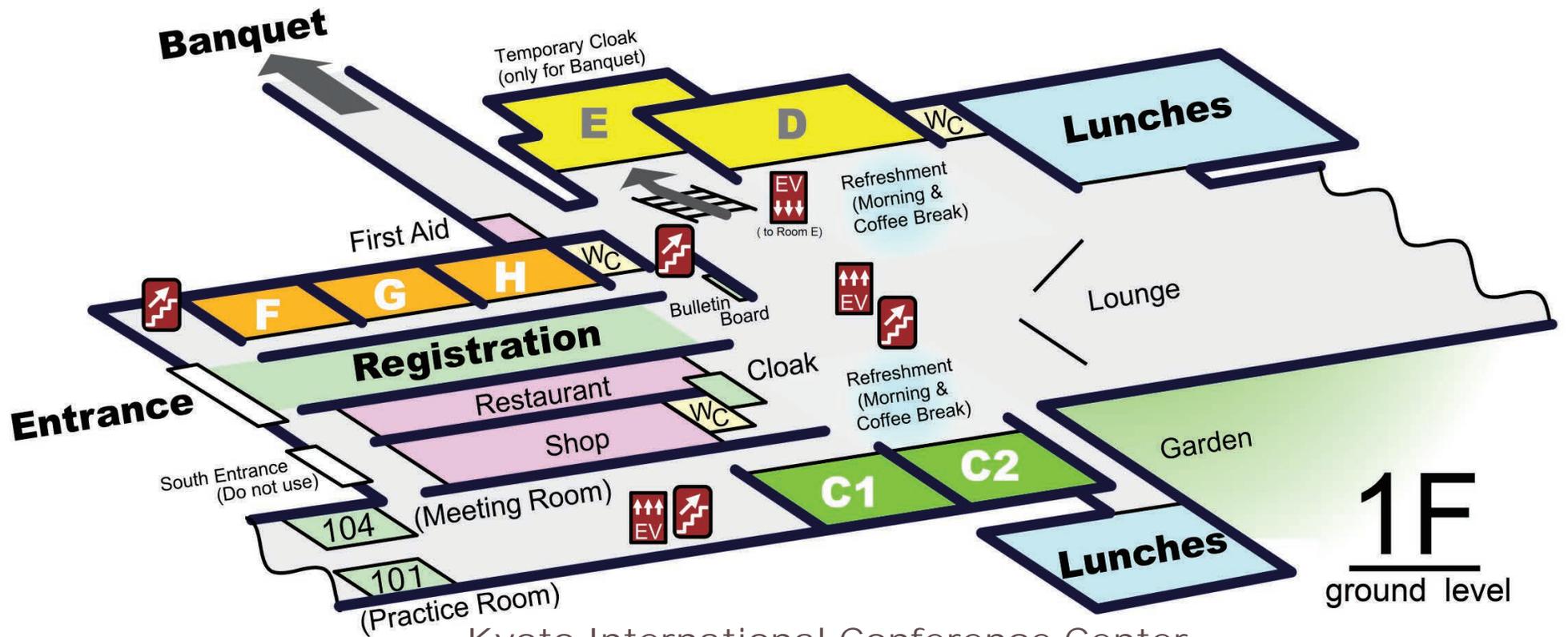
Int. Scientific Committee Chair: Z Y Guo

<http://www.ihtc16.org/>

Under the auspices of The Heat Transfer Society of China



**2F**  
upper level



**1F**  
ground level

Kyoto International Conference Center  
 Takaragaike, Sakyo-ku, Kyoto 606-0001 Japan  
 Phone 81-75-705-1229, Fax 81-75-705-1100, <http://www.icckyo.or.jp/en/>