

IFHT2012 PROGRAM

November 12, Monday

- 16:00–18:00 Registration
17:30–19:00 Reception
Chair: *Yasuyuki Takata (Kyushu University)*

November 13, Tuesday Morning

- 9:20–9:30 Opening
9:40–10:30 **Keynote Lecture 1**
“Nanoscale Heat Transfer for Energy Applications”
Gang Chen (Massachusetts Institute of Technology)
Chair: *Xing Zhang (Tsinghua University)*
- Break**
- 10:40–11:30 **Short Presentation 1**
11:30–12:30 **Poster Session 1**
Session Chair: *Koji Takahashi (Kyushu University)*

SESSION 1

Heat Transfer in Advanced Applications / Bio Thermal-Fluid Science and Engineering

- 011 Freeze proofing of water flowing down a vertical pipe
Yoshimi Komatsu, Makoto Tago (Akita University), Yoshihiro Yoshida (Yoshida ANNY Co., Ltd.)
- 019 Enhancement of nucleate pool boiling heat transfer in ammonia/water mixtures (effect of a surface-active agent)
Toshiaki Inoue (Kurume Institute of Technology), Masanori Monde (Saga University), Hiroshi Uemura (Kurume Institute of Technology)
- 037 A study of infrared nanosecond laser ablation of silicon carbide
Hong Duc Doan, Naoki Iwatani, Kazuyoshi Fushinobu (Tokyo Institute of Technology)
- 045 Effect of pressure and bubble on synthesis of tungsten trioxide nanoparticles by plasma in liquid
Yoshiaki Hattori, Tomoya Usui, Shinobu Mukasa, Toshihiro Kasahara, Hiromichi Toyota, Shinfuku Nomura (Ehime University)
- 086 Heat fluxes on condensation in porous media considering ambient temperatures
Eko Siswanto, Ryuichi Nagata, Hiroshi Katsurayama, Yasuo Katoh (Yamaguchi University)
- 096 Visualization of melting phenomenon of solder with a laser
Risako Kibushi, Masaru Ishizuka, Tomoyuki Hatakeyama (Toyama Prefectural University)
- 123 Demonstration test for evaluation of measuring accuracy of heat transferred by ground source heat pump system
Tetsuaki Takeda, Shumpei Funatani (University of Yamanashi), Toshio Hagihara, Toshio Ono (Hagihara Boring Co., Ltd.)
- 132 Numerical study of free convection in a tall enclosure with a porous wall
David Naylor, Seyed S. M. Foroushani, Daniel Zalcmán (Ryerson University)
- 146 Micro-scale measurement of saturated and subcooled nucleate boiling heat transfer
Tomohide Yabuki, Osamu Nakabeppu (Meiji University)
- 179 Correlation for forced convective heat transfer coefficient of ammonia flowing inside a horizontally internally spirally grooved tube
Satoru Momoki, Mitsutaka Ura, Katsuyuki Narumiya, Tetsuya Fukunaga, Toru Shigechi, Tomohiko Yamaguchi (Nagasaki University)
- 182 Study on drying behavior of wet powder materials under reduced pressure.
Yusuke Hosomi, Atsumasa Yoshida, Shinichi Kinoshita, Yohei Muroya (Osaka Prefecture University)
- 183 Numerical analysis on solar reflection characteristics of painted layer considering anisotropic scattering

Satoshi Nishimura, Shinichi Kinoshita, Atsumasa Yoshida (Osaka Prefecture University)

- 186 Size classification of CNTs in gas flow with differential mobility analyzer (DMA)
Kazuhide Shibata, Yohei Tasaki, Yasuyuki Takata (Kyushu University), Makoto Hirasawa (National Institute of Advanced Industrial Science and Technology), Takafumi Seto (Kanazawa University), Masamichi Kohno (Kyushu University)
- 075 Effects of amplitude-modulated ultrasonic vibration on supercooling of water
Yukio Tada, Yohei Yoshida, Akira Takimoto, Hajime Onishi (Kanazawa University)
- 090 Dehydration/water-absorption behavior in tissues during freezing and thawing processes
Yuichiro Oku, Hirofumi Tanigawa, Takaharu Tsuruta (Kyushu Institute of Technology)
- 097 Voxel-based simulation of air-conditioning in the human nasal cavity
Gaku Tanaka (Chiba University, RIKEN), Kazuki Ohta, Fuyuto Araki (Chiba University), Toshihiro Sera (Osaka University), Hideo Yokota (RIKEN), Kenji Ono (University of Tokyo), Shu Takagi (RIKEN)
- 174 Development of biochemical calorimeter with MEMS thermopile sensor
Masataka Saito, Jun Takeuchi, Osamu Nakabeppu (Meiji University)
- 176 Transition of bacteria flora and its relation to generated product in refused derived fuel
Yuta Kawamura, Takako Ninagawa, Akira Narumi (Kanagawa Institute of Technology), Tadashi Konishi (Oita National College of Technology)
- 101 Optical properties of wavelength-selective radiator with periodic microcavities
Tsuyoshi Totani, Naoyuki Ishikawa (Hokkaido University), Minoru Iwata (Kyushu Institute of Technology), Masashi Wakita, Harunori Nagata (Hokkaido University)
- 158 Optical properties of multi-layer cermet solar selective absorber
Atsushi Sakurai, Hiroya Tanikawa (Niigata University)
- 061 The feature and technology of geothermal power plant as an environmental-benign energy
Norito Katsuki, Norihiro Fukuda, Shojiro Saito (Mitsubishi Heavy Industries, Ltd.)
- 171 Visualization experiments of a vapor chamber (effect of liquid volume)
Yasushi Koito, Yusaku Nonaka, Akira Sato, Toshio Tomimura (Kumamoto University), Masataka Mochizuki (Fujikura Ltd.)
- 205 New local heat transfer correlation for air-assisted liquid impinging jets
Daniel Trainer, Sung Jin Kim (Korea Advanced Institute of Science and Technology)
- 206 Cases of transport phenomena modeling for iron and steel-making processes
Sung-Min Choi (Korea Advanced Institute of Science and Technology)
- 110 Effects of schmidt number on turbulent mass transfer in pipe flow
Changwoo Kang, Kyung-Soo Yang (Inha University)

November 13, Tuesday Afternoon

- 13:30–14:20 **Keynote Lecture 2**
“Recent Advances in Impinging Jets”
Sung Jin Kim (Korea Advanced Institute of Science and Technology)
Chair: *Juergen J Brandner (Karlsruhe Institute of Technology)*
- Break**
- 14:50–15:40 **Short Presentation 2**
15:40–16:40 **Poster Session 2**
Session Chair: *Taku Ohara (Tohoku University)*
- Break**
- 16:50–17:40 **Short Presentation 3**
17:40–18:40 **Poster Session 3**
Session Chair: *Keumnam Cho (Sungkyunkwan University)*

SESSION 2 Fundamentals of Heat Transfer
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- 009 Heat transfer characteristics of multi-walled carbon nanotubes in the transitional flow regime

Josua P. Meyer, Kerstin Grote (University of Pretoria), Tom McKrell (Massachusetts Institute of Technology)

- 010 Parameter extension method (PEM): An asymptotic extension of numerical and experimental flow and heat transfer results to further values of the inherent parameters
Heinz Herwig, Yan Jin (Hamburg University of Technology)
- 014 Analyses and optimizations of the Rankine cycle by entropy and entransy
Wang Wenhua, Cheng Xuetao, Liang Xingang (Tsinghua University)
- 026 Individual measurement of thermal conductivity of damaged MWCNT
Hiroyuki Hayashi, Tatsuya Ikuta, Takashi Nishiyama, Koji Takahashi (Kyushu University)
- 033 Flow and heat transfer characteristics of viscoelastic fluid flow in a serpentine channel – influences of the fluid properties on the performance –
Wataru Nagasaka, Kazuya Tatsumi, Osamu Nakajima, Kazuyoshi Nakabe (Kyoto University)
- 041 An MD-like simulation on mechanism of coherency of emitted thermal radiation
Toshiro Makino, Tatsuya Uno, Hidenobu Wakabayashi, Mitsuhiro Matsumoto (Kyoto University)
- 052 CHF enhancement in pool boiling of nanofluids
Hiroto Sakashita (Hokkaido University)
- 056 Thermal boundary resistance of nanoscale van der Waals contacts between a carbon nanotube end and solid surfaces
Jun Hirotani, Tatsuya Ikuta, Takashi Nishiyama, Koji Takahashi (Kyushu University)
- 059 Measurement of critical heat flux and heat transfer parameters in pool boiling using infrared thermometry
Jaehoon Jung (Korea Advanced Institute of Science and Technology), Jungho Kim (University of Maryland), Sung Jin Kim (Korea Advanced Institute of Science and Technology)
- 083 Visualization study of difference between superfluid helium and normal-fluid helium film boiling under microgravity condition
Suguru Takada (University of Tsukuba), Nobuhiro Kimura (High Energy Accelerator Research Organization), Mikito Mamiya (National Institute of Advanced Industrial Science and Technology), Takahiro Okamura (High Energy Accelerator Research Organization), Masakazu Nozawa (Akita National College of Technology), Masahide Murakami (University of Tsukuba)
- 100 A method for accurate temperature measurement for GFRP thermal conductivity in cryogenic region
Takayoshi Inoue, Kazuki Hayakawa, Satoshi Tanaka, Yuji Suzuki (Tokyo Institute of Technology)
- 102 Hydrodynamic stability of film boiling in subcooled superfluid liquid helium
Masakazu Nozawa, Takato Saito (Akita National College of Technology), Masahide Murakami (University of Tsukuba), Nobuhiro Kimura (High Energy Accelerator Research Organization), Suguru Takada (University of Tsukuba)
- 106 Growth of precursor film at an early stage of spreading of droplet on smooth surface
Ichiro Ueno, Shota Hashimoto, Chungpyo Hong (Tokyo University of Science)
- 108 Study on elementary process of nucleate boiling through measuring local and instantaneous surface temperature and bubble/liquid fluid behavior
Kenta Hayashi, Yasuo Koizumi (Shinshu University)
- 122 A validation of the classical mixing rule using an calculation of the thermophysical properties applying an *ab-initio* potential
Katsunori Kamakura, Shin-ichi Tsuda (Shinshu University), Mitsuo Koshi (University of Tokyo)
- 127 Effects of bottom and top configurations of a vertical finite-length cylinder on the lower limit of film boiling
Satoru Momoki, Shuya Handa, Tomohiko Yamaguchi, Toru Shigechi, Takashi Yamada (Nagasaki University), Kaoru Toyoda (Maizuru National College of Technology)
- 133 Mechanism of polariton resonance of metal/insulator/metal structure with grating patterns
Yutao Zhang (Nanjing University of Science and Technology), Yimin Xuan (Nanjing University of Aeronautics and Astronautics), Qiang Li (Nanjing University of Science and Technology)
- 137 Experimental proof of energy-mass duality of heat
Hai Dong Wang, Bing Yang Cao, Xing Zhang, Zeng Yuan Guo (Tsinghua University)
- 149 Theoretical investigation of phonon boundary scattering from one-dimensional rough surfaces
Hyun Jin Lee (Korea Institute of Energy Research), Jae Sik Jin, Bong Jae Lee (Korea Advanced Institute of Science and Technology)
- 164 Dispersion relation of a surface phonon polariton propagating in a cylindrical micrometric glass waveguide
Laurent Tranchant (Ecole Centrale Paris), Takuro Tokunaga, Beomjoon Kim (University of Tokyo), Sebastian Volz (Ecole

Centrale Paris)

- 173 The effect of nanocarbon materials on surface wettability
Takashi Nishiyama, Takanori Nakayama, Koji Takahashi, Yasuyuki Takata (Kyushu University)
- 193 Boiling heat transfer and pressure drop of a refrigerant flowing in small horizontal tubes
Koji Enoki, Hideo Mori (Kyushu University), Kazushi Miyata (Tohoku University), Keishi Kariya, Yoshinori Hamamoto (Kyushu University)
- 195 Study on critical heat flux at near-critical pressure
Takashi Mawatari (Kyushu University), Ken Yoshizumi (J-POWER), Hideo Mori, Keishi Kariya, Masaki Ohno (Kyushu University)

SESSION 3

Cooling, Refrigeration and Heat Transfer Devices I

- 103 Design of a thin-film micro thermoelectric cooler based on numerical simulation
Chin-Hsiang Cheng, Hsiu-Wen Chang (National Cheng Kung University)
- 104 Performance evaluation of enhanced two-phase vapor chamber heat sinks
Wai Soong Loh (National University of Singapore), Joseph Su Hui Ng (Gatekeeper Laboratories Pte. Ltd.), Ang Li, Kim Choon Ng (National University of Singapore)
- 112 Pool boiling heat transfer of mini-heat transfer surfaces
Yoshiki Morita, Yasuo Koizumi (Shinshu University)
- 113 Temperature dependent thermal conductivity increase of aqueous nanofluid with single walled carbon nanotube inclusions
Sivasankaran Harish, Kei Ishikawa, Erik Einarsson, Junichiro Shiomi, Shigeo Maruyama (University of Tokyo)
- 116 Single-phase convective heat transfer in microchannels with functional surface wettability
Gyoko Nagayama, Yoshinori Motonishi, Takaharu Tsuruta (Kyushu Institute of Technology)
- 128 Effect of endwall film cooling on horseshoe vortex formation near the vane/endwall junction in a linear turbine cascade
Warot Wongphan, Kenichiro Takeishi, Yutaka Oda, Shintaro Kozono (Osaka University)
- 150 Optimization of heat sinks with plate fins in air jet cooling
Takayuki Atarashi (Hitachi, Ltd.), Tetsuya Tanaka (Hitachi Plant Technologies, Ltd.), Shigeyasu Tsubaki (Hitachi, Ltd.)
- 154 Heat transfer and pressure drop of flow boiling zeotropic mixture R32/ R1234ze(E) in horizontal microfin tubes
Daisuke Baba, Chieko Kondou, Shigeru Koyama (Kyushu University)
- 156 Heat exchange performance of CPU cooler using R1234ze(E) as working fluid
Seiya Yamashita, Kazuya Watanabe, Ji-won Yeo, Shigeru Koyama (Kyushu University)
- 162 Experimental study on heat transfer in gas-cooler for CO₂ heat pump water heater
Yoshimi Matsuo, Shigeru Koyama, Masaya Ichihara (Kyushu University), Kazuhiko Machida (Appliances Company, Panasonic Corporation)
- 163 Experimental study on flow boiling of R1234ze(E) and R32 in horizontal rectangular mini channels
Daisuke Jige, Hiroyuki Kawashima, Chieko Kondou, Shigeru Koyama (Kyushu University)
- 167 Nanomaterial coatings for the enhancement of copper porous media in miniature loop heat pipes
Minseok Ha (Georgia Institute of Technology), Jeehoon Choi (Zalman Tech Co., Ltd.), Samuel Graham (Georgia Institute of Technology)
- 168 Control of two-phase flow distribution in multi-channel evaporators in conjunction with external thermal load
Joohan Bae, Seok Kim, Woo Shik Kim, Sang Yong Lee (Korea Advanced Institute of Science and Technology)
- 175 Development of oblique wavy fin heat exchanger
Naoki Shikazono, Mitsuru Inoue (University of Tokyo), Tsunehito Wake, Yasuhito Wake, Shiro Ikuta (Waki Factory, Inc.)
- 194 Measurement and prediction of the thermal resistance of a thin film adsorbent coated on a heat transfer plate
Takafumi Ouchi, Yoshinori Hamamoto, Hideo Mori, Atsuroh Etoh (Kyushu University)
- 197 Frosting behaviors of micro-channel parallel flow heat exchangers
Kyoungmin Kim, Hisuk Kim, Kwan-Soo Lee (Hanyang University)
- 198 Natural convection and radiation heat transfer around a radial heat sink with fin-height profile for LED lighting applications
Daeseok Jang, Seung-Jae Park, Kwan-Soo Lee (Hanyang University)

- 200 Experimental study on the thermal performance of a pulsating heat pipe
Jungseok Lee, Young Jik Youn, Sung Jin Kim (Korea Advanced Institute of Science and Technology)
- 201 A flow modeling for a piezoelectric heat sink
Heeseung Park, Sung Jin Kim (Korea Advanced Institute of Science and Technology)
- 161 Performance of heat pump cycle using zeotropic mixtures of R1234ze(E) and R32
Shotaro Yamamoto, Sho Fukuda, Shigeru Koyama (Kyusyu University)
- 084 Prediction of flow boiling heat transfer coefficient of binary mixture (HFO1234yf +R32) in a horizontal smooth tube
Minxia Li (Tianjin University), Chaobin Dang, Eiji Hihara (University of Tokyo)
- 111 Effect of lubricating oil on flow boiling heat transfer of low GWP refrigerant HFO-1234yf in a horizontal small-diameter tube
Shizuo Saitoh, Chaobin Dang, Eiji Hihara (University of Tokyo)
- 204 Speed of sound measurement in HFO-1234yf liquid phase using a sound velocity sensor
Lei Gao, Takuro Shibasaki, Tomohiro Honda, Hiroyuki Asou (Fukuoka University)

November 14, Wednesday Morning

- 8:50–9:40 **Keynote Lecture 3**
“Entropy and Entransy”
Zeng-Yuan Guo (Tsinghua University)
Chair: *Shigenao Maruyama (Tohoku University)*
- 9:40–10:30 **Keynote Lecture 4**
“Multi-Dimensional/Multi-Variable Laser Diagnostics and DNS in Turbulent Combustion Research”
Mamoru Tanahashi (Tokyo Institute of Technology)
Chair: *Sangmin Choi (Korea Advanced Institute of Science and Technology)*
- Break**
- 10:40–11:30 **Short Presentation 4**
- 11:30–12:30 **Poster Session 4**
Session Chair: *Katsunori Hanamura (Tokyo Institute of Technology)*

SESSION 4

Combustion / Visualization and Measurement Techniques

- 020 Experimental study of fuel-lean reburning/SNCR system for NO_x reduction in LPG flame
Jung Min Yu, Seung Wook Baek (Korea Advanced Institute of Science and Technology)
- 030 Buoyancy effect on microflame
Yusuke Kakizaki, Yuto Onodera, Kazunori Kuwana (Yamagata University)
- 046 Study on the N₂O formation under low temperature condition in pulverized biomass combustion
Yukihiko Okumura (Maizuru National College of Technology), Hirotatsu Watanabe, Ken Okazaki (Tokyo Institute of Technology)
- 139 Stability limits and behaviors of micro flames for methane, hydrogen and diluted fuel with nitrogen
Kentaro Takatera, Ryuji Takashima, Kentaro Sakamoto, Takamitsu Yoshimoto (Kobe City College of Technology), Toshimi Takagi (Former Osaka University)
- 140 Large- and fine-scale vortical structures in turbulent premixed V-flame
Takayuki Kadowaki, Naoya Fukushima, Masayasu Shimura, Mamoru Tanahashi, Toshio Miyauchi (Tokyo Institute of Technology)
- 144 Behaviors and characteristics of combustion on radial horizontal jet diffusion flame for methane, hydrogen and fuel gas diluted with nitrogen
Ryuji Takashima, Hiroki Hara, Takamitsu Yoshimoto (Kobe City College of Technology), Toshimi Takagi (Former Osaka University)
- 145 Flame behavior and stability on radial horizontal jet premixed flame
Hiroki Hara, Shin-nosuke Watanabe, Takamitsu Yoshimoto (Kobe City College of Technology), Toshimi Takagi (Former Osaka University)

- 153 Using 3D modeling technologies in research of heat warm transfer processes in combustion chamber of acting energy objects
Aliya Askarova, Symbat Bolegenova, Valery Maximov, Aidyn Bekmukhamet (Al-Farabi Kazakh National University)
- 165 Effect of fuel-N concentration on NO_x emission during air and O₂/CO₂ coal combustion
Dejudom Kiatpanachart, Fumiya Arai, Hirotsatsu Watanabe, Ken Okazaki (Tokyo Institute of Technology)
- 016 Measurement of void fraction of ammonia boiling flow in plate evaporator
Hirofumi Arima, Fumiya Mishima, Kohei Koyama, Toru Fukunami, Yasuyuki Ikegami (Saga University)
- 028 Development of simultaneous imaging method of temperature and water concentration of aqueous solutions based on the near-infrared absorption characteristics of water
Naoto Kakuta (Tokyo Metropolitan University), Katsuya Kondo (Tottori University), Hidenobu Arimoto (National Institute of Advanced Industrial Science and Technology), Yukio Yamada (University of Electro-Communications)
- 029 Simultaneous measurement of bubble behavior and emissions of Balmer series in radio-frequency plasma in water by a high-speed camera
Shinobu Mukasa, Atsushi Kamada, Shinfuku Nomura, Hiromichi Toyota (Ehime University)
- 058 Effect of nanoscale wall roughness on zeta potential in microchannel flow
Tasuku Tabei, Shun Yoshikawa, Yuta Mizumoto, Jakob Born, Hiromi Jitsukawa, Takayuki Ikebe, Kota Ozawa, Yasuhiro Kakinuma, Yohei Sato (Keio University)
- 063 Quantitative visualization of temperature distribution with micron resolution by spontaneous Raman imaging
Reiko Kuriyama, Yohei Sato (Keio University)
- 073 Visualization and measurement of laminar natural convection in square enclosure
Eita Shoji, Shion Kon, Atsuki Komiya, Junnosuke Okajima, Shigenao Maruyama (Tohoku university)
- 081 Experimental study on natural convection heat transfer in water with microbubble injection
Takuya Ozato, Atsuhide Kitagawa, Yoshimichi Hagiwara (Kyoto Institute of Technology), Yuichi Murai (Hokkaido University)
- 082 Study of flow rate measurement on bent pipe flow using ultrasonic velocity profile method and computational fluid dynamics
Weerachon Treenuson, Nobuyoshi Tsuzuki, Hiroshige Kikura, Masanori Aritomi (Tokyo Institute of Technology), Sanehiro Wada, Kenichi Tezuka (Tokyo Electric Power Company)
- 089 A stamp sensor for measurement of thermal conductivity and thermal diffusivity of solid materials
Syamsul Hadi, Mamoru Nishitani, Takanobu Fukunaga, Kosaku Kurata, Hiroshi Takamatsu (Kyushu University)
- 107 Development of sensitive detection method using tunable diode laser absorption spectroscopy with optical hollow fiber
Akira Adachi, Yoshihiro Deguchi (University of Tokushima)
- 109 Development of real-time 2D temperature measurement method using CT tunable diode laser absorption spectroscopy
Yoshihiro Deguchi, Daisuke Yasui, Akira Adachi (University of Tokushima)
- 118 In-plane thermal and electrical conductivity of Si thin film with periodic microporous
Yosuke Kawahara (Kyushu Institute of Technology), Harutoshi Hagino (BEANS Laboratory), Hisashi Iwata (Kyushu Institute of Technology), Koji Miyazaki (BEANS Laboratory)
- 130 Measurement of radiative transmission through a diffuse surface using fluorescent material
Kae Nakamura, Hirokazu Kawai (Shibaura Institute of Technology), Masaya Koshino, Sadaki Takata (Shiseido Co., Ltd.), Jun Yamada (Shibaura Institute of Technology)
- 147 Study the thermoelectric properties of the ultralong double-walled carbon nanotube bundles by using a novel T-type method
Tingting Miao, Weigang Ma, Xing Zhang, Jialin Sun (Tsinghua University)
- 157 Study on SThM with multifunctional thermal cantilever probe
Masayuki Shinya, Osamu Nakabeppu (Meiji University)
- 166 Thermal diffusivity and thermal conductivity of vertically-aligned multi-walled carbon nanotube array
Weigang Ma, Xing Zhang (Tsinghua University), Liping Yang, An Cai (Shanghai Institute of Ceramics, Chinese Academy of Sciences), Zhenzhong Yong, Qingwen Li (Suzhou Institute of Nano-Tech and Nano-Bionics)
- 187 Measurements of hydrogen viscosity with capillary tube method up to 773K and 100MPa
Temujin Uehara, Kousuke Yoshimura (Kyushu University), Elin Yusibani (Syiah Kuala University), Kan'ei Shinzato (National Institute of Advanced Industrial Science and Technology), Masamichi Kohno, Yasuyuki Takata (Kyushu University)
- 188 PVT property measurements of hydrogen in the range from 473 K to 773 K and up to 100 MPa by the isochoric method

Keisuke Kubo, Naoya Sakoda, Koichi Motomura, Supriatno (Kyushu University), Kan'ei Shinzato (National Institute of Advanced Industrial Science and Technology), Masamichi Kohno, Yasuyuki Takata (Kyushu University)

- 138 Characteristics of combustion and exhaust gas in marine diesel engine by mixing various species of gas
Kohsuke Amano, Yoshihiko Nawaki, Takamitsu Yoshimoto (Kobe City College of Technology), Hirotsugu Fujita (Kobe University)

November 14, Wednesday Afternoon

- 13:30–14:20 **Short Presentation 5**
14:20–15:20 **Poster Session 5**
Session Chair: *Hiroshi Takamatsu (Kyushu University)*

Break

- 15:50–16:00 **The Nukiyama Memorial Award Ceremony**
16:00–16:50 **Award Lecture**
Peter Stephan (Technische Universität Darmstadt)
Chair: *Masanori Monde (Saga University)*

- 18:30–20:30 Banquet at Inasa-yama

SESSION 5 Cooling, Refrigeration and Heat Transfer Devices II
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- 013 Study on evaporator heat transfer characteristics of a miniature loop heat pipe with low thermal conductivity wicks
Masahito Nishikawara, Hosei Nagano (Nagoya University)
- 015 Effects of uncertainties in design and manufacturing of microstructure devices
Juergen J. Brandner (Karlsruhe Institute of Technology)
- 025 Prediction of frost characteristics on plain fin tube heat exchanger with fin pitch and tube pitch under frosting condition
Seungyoung Kim, Jieun Hwang, Keumnam Cho (Sungkyunkwan University)
- 034 Convective boiling in a vertical square channel filled with metallic foam
Madani Brahim (University of Sciences and Technology Houari Boumediene), Topin Frederic, Tadriss Lounes (University of Provence)
- 038 Cooling propagation and its effectiveness for a rotating cylinder jet quenching
Aloke Kumar Mozumder, Yuichi Mitsutake, Masanori Monde (Saga University)
- 039 A study of boiling heat transfer enhancement by utilizing EHD effect and electrostatic force
Yohei Takahashi, Ichiro Kano (Yamagata University)
- 055 Effect of electric field distribution on nucleate boiling
Kyohei Sato, Ichiro Kano (Yamagata University)
- 068 Development of top-heat type of bubble-actuated circulating heat pipe (BACH) and its heat transport characteristics
Niro Nagai, Masaomi Asano (University of Fukui), Shoji Tottori (Wakasa Wan Energy Research Center)
- 070 Effect of varying channel diameter on flow patterns and thermal performance of a pulsating heat pipe
Gi Hwan Kwon, Sung Jin Kim (Korea Advanced Institute of Science and Technology)
- 072 Operating characteristics of multiple evaporators and multiple condensers loop heat pipe with PTFE wicks
Sho Okutani, Hosei Nagano (Nagoya University), Shun Okazaki, Hiroyuki Ogawa (Japan Aerospace Exploration Agency), Hiroki Nagai (Tohoku University)
- 076 Performance of an inclined loop thermosyphon for CPU cooling
Hiroyuki Toyoda, Yoshihiro Kondo, Shigemasa Sato, Shigeyasu Tsubaki (Hitachi, Ltd.), Diederik Vreeken (Delft University of Technology)
- 087 Enhancement of heat transportation by oscillatory flow in a curved tube
Kosuke Shiratori, Hong Yu, Gaku Tanaka (Chiba University)
- 088 Thermal design and heat transfer of micro thermoelectric gas sensors using catalytic combustor for H₂, CO, CH₄ gas detection
Daisuke Nagai, Toshio Itoh, Noriya Izu, Woosuck Shin (National Institute of Advanced Industrial Science and Technology)

- 092 Experimental study on gas-liquid two phase flow distributions in multi-pass channels
Yamato Nakagawa (Mie University), Mohamad-Razlan Zuradzman (University Malaysia Perlis), Masafumi Hirota (Mie University), Koji Takiguchi, Toshiaki Tsuchiya (FRS), Masaaki Ajima (FEH), Yujiro Kitaide, Motohide Okamoto (FRS), Naoki Maruyama, Akira Nishimura (Mie University)
- 093 About the cooling of power components in automotive electric drive trains
Marcus Schmidt, Helmut Eichert, Sebastian Hauschwitz, Peter Stücker (West Saxon University of Applied Science of Zwickau)
- 099 Effect of cross-sectional dimensions of multi-port extruded tubes on flow boiling heat transfer at low mass flux region
Chitose Tanaka, Chaobin Dang, Fumio Matsuoka, Eiji Hihara (University of Tokyo)
- 131 Theoretical investigation on thermal constriction resistance of thin plate system with volumetric joule heating
Toshio Tomimura, Yasushi Koito (Kumamoto University), Masaru Ishizuka, Tomoyuki Hatakeyama (Toyama Prefectural University)
- 169 Loop heat pipe for fuel cell cooling
Randeep Singh, Zhen Guo, Thang Nguyen, Masataka Mochizuki, Yuji Saito, Masakazu Ohashi, Koichi Mashiko (Dujikura Ltd.)
- 202 Performance of the prime mover of the thermoacoustic refrigerator driven by solar heat
Yoshisane Nakamura, Kenichi P. Kobayashi (Meiji University)
- 203 Flow visualization of oscillatory flow between the parallel plates in the thermoacoustic system
Hiroki Ishiyama, Kenichi P. Kobayashi (Meiji University)

November 15, Thursday Morning

- 8:50–9:40 **Keynote Lecture 5**
 “Microscopic Observation of Water Transport Phenomena in PEM Fuel Cell using Freezing Method”
Takemi Chikahisa (Hokkaido University)
 Chair: *Naoki Shikazono (University of Tokyo)*
- 9:40–10:30 **Keynote Lecture 6**
 “Thermofluidic Phenomena in the Heat Transfer of Supercritical Fluid: Thermoacoustic Wave, Piston Effect and Thermal Convection”
Peng Zhang (Shanghai Jiao Tong University)
 Chair: *Josua P. Meyer (University of Pretoria)*
- Break**
- 10:40–11:10 **Short Presentation 6**
- 11:10–12:00 **Poster Session 6**
 Session Chair: *Hideo Yoshida (Kyoto University)*

SESSION 6 Computation Heat and Mass Transfer

- 031 Thermal analysis of the glass cover in a solar test stand
Wai K Choong, Keh C Chang (National Cheng Kung University)
- 035 Bridging model of PEMFC electrode heterogeneous contamination kinetics with multiphase transport
Saiful Hasmady, Kazuyoshi Fushinobu (Tokyo Institute of Technology)
- 054 A large-eddy simulation for turbulence structure generated by an urban-like surface under convective flow conditions
Yasuo Hattori, Takenobu Michioka (Central Research Institute of Electric Power Industry), Shuji Ishihara (Denryoku Computing Center), Hitoshi Suto, Hiromaru Hirakuchi (Central Research Institute of Electric Power Industry), Chin-Hoh Moeng (National Center for Atmospheric Research)
- 064 Analysis of microscale energy transport in solid based on Boltzmann equation
Honami Imanishi, Yusuke Masao, Mitsuhiro Matsumoto (Kyoto University)
- 066 On possibility of selective definition of coherent phonon frequencies in the presence of diffusion from spectral characteristics of propagating phonons in nanoribbons
Yuta Okumura, Tatiana Zolotoukhina (Toyama University)
- 069 A molecular dynamics study on molecular scale structure and mass transport properties in the vicinity of SiO₂-water/IPA

interfaces

Shuichi Kosaka, Gota Kikugawa (Tohoku University), Takeo Nakano (Tokyo Electron Ltd.), Taku Ohara (Tohoku University)

- 071 Large-eddy simulation of an eruption column based on a multi-fluid approximation - effects of subgrid-scale models on spatial structures –
Hitoshi Suto, Yasuo Hattori, Kiyoshi Toshida (Central Research Institute of Electric Power Industry)
- 091 Molecular dynamics simulation of liquid-vapor interfacial properties of n-alkanes
Hari Krishna Chilukoti, Gota Kikugawa, Taku Ohara (Tohoku university)
- 094 Analytical and numerical investigation of heat transfer in a rotating cylinder
Mario Leindl, Eduard Roman Oberaigner (University of Leoben, Materials Center Leoben)
- 105 Heat transfer analysis on glass fiber drawing from large sized silica perform
Kyoungjin Kim, Dongjoo Kim, Ho Sang Kwak (Kumoh National Institute of Technology)
- 114 Convective heat rate change efficiency of mixing ventilation system at cooling-off regime
Lubos Hach (University of Pardubice), Yasuo Katoh, Junji Kurima (Yamaguchi University)
- 121 Molecular dynamics simulation on homogeneous nucleation of methanol
Donguk Suh, Kenji Yasuoka (Keio University)
- 135 Mal-uniformity of two-phase flow through merged pipe distributor
Muh. Anis Mustaghfirin (Saga University, Institut Teknologi Sepuluh Nopember), Akio Miyara (Saga University), Azridjal Aziz (Riau University)
- 141 Numerical simulation of liquid water in a gas diffusion layer of PEFC using the lattice Boltzmann method
Ryuji Kamijo, Yutaka Tabe, Takemi Chikahisa (Hokkaido University)
- 170 Molecular dynamics study on liquid-vapor interface of carbon chain molecules
Gyoko Nagayama, Masaki Takematsu, Takaharu Tsuruta (Kyushu Institute of Technology)

November 15, Thursday Afternoon

13:00–13:40 **Short Presentation 7**

13:40–14:40 **Poster Session 7**

Session Chair: *Lubos Hach (University of Pardubice)*

14:40–14:50 **Closing**

15:00–16:10 **Technical Tour** of the Nagasaki Shipyard and Machinery Works History Museum, Mitsubishi Heavy Industries Ltd.

* Shuttle bus is available

SESSION 7

Energy Technologies

- 027 Entropy-dissipation-based thermal resistance analysis and energy saving design of data center cooling system
Xiaodong Qian, Hao Tian, Zhen Li, Zhixin Li (Tsinghua University)
- 040 Combining dynamic and thermodynamic model for thermal-lag stirling engine with crank drive mechanism
Chin-Hsiang Cheng, Hang-Suin Yang (National Cheng Kung University)
- 043 Measurement error reduction method for thermal conductivity of thermal insulations using the GHP method
Takahiro Ohmura (NICHIAS Corporation)
- 044 Effect of graphene nano/micro scale structure on novel boiling phenomenon
Ho Seon Ahn, Ji Min Kim, Moo Hwan Kim (Pohang University of Science and Technology)
- 053 Cell performance of PEFC with a variable gas channel
Hirofumi Tanigawa, Yusuke Ikeda, Takaharu Tsuruta (Kyushu Institute of Technology)
- 057 Bismuth-telluride thermoelectric thin films prepared by coaxial type vacuum arc evaporation method
Michitaka Uchino, Akihiro Yamamoto (Kyushu Institute of Technology), Kunihisa Kato (Lintec Corporation), Koji Miyazaki (Kyushu Institute of Technology)
- 065 Renewable energy and new energy technologies

Kan Ogata, Akira Yamada, Masayuki Fukagawa (Mitsubishi Heavy Industries, Ltd.)

- 074 FDTD simulation of near-field radiative heat transfer between two SiC slabs
Alejandro Datas, Daisuke Hirashima, Katsunori Hanamura (Tokyo Institute of Technology)
- 078 Thermoacoustic cooling by utilizing traveling wave in looped tube with branch resonator
Tomoaki Kyoden (Toyama National College of Technology), Yukio Tada, Akira Takimoto, Hajime Onishi (Kanazawa University)
- 085 Catalytic partial oxidation of methane on Ni-YSZ cermet anode of SOFC
Koshi Tada, Hiroshi Iwai, Motohiro Saito, Hideo Yoshida (Kyoto University)
- 098 Numerical simulation of methane steam reforming using a reaction rate evaluated on the surface catalyst of annular channel
Kyaw Kyaw Lin, Motohiro Saito, Jun-ichi Kojima, Shohei Kuratsu, Hiroshi Iwai, Hideo Yoshida (Kyoto University)
- 115 Fabrication of porous bismuth telluride thin films using micro-phase separation of block copolymer
Kunihisa Kato (Lintec Corporation, Kyushu Institute of Technology, BEANS Laboratory), Yoshika Hatasako, Michitaka Uchino (Kyushu Institute of Technology), Yasukazu Nakata (Lintec Corporation), Yohinori Suzuki, Teruaki Hayakawa (Tokyo Institute of Technology), Chihaya Adachi (BEANS Laboratory, Kyushu University), Koji Miyazaki (Kyushu Institute of Technology, BEANS Laboratory)
- 120 Minimization for the total area of condenser and evaporation in vapor-compression refrigeration systems
Yun-Chao Xu, Qun Chen (Tsinghua University)
- 126 Heat transfer performance of finless symmetric airfoil-shaped tube heat exchanger
Hajime Onishi (Kanazawa University), Haruka Yonekura (Hokuriku Electric Power Company), Hajime Kikuchi, Yukio Tada, Akira Takimoto (Kanazawa University)
- 136 Freezing behavior in the gas diffusion layer of PEFC after gas purge treatment
Akira Iguchi, Hirofumi Tanigawa, Takaharu Tsuruta (Kyushu Institute of Technology)
- 142 Analysis of water molecules and hydronium ions dynamics in Nafion membrane
Takuya Mabuchi, Takashi Tokumasu (Tohoku University)
- 143 Analysis of water transport of PEM electrolysis cell
Koji Kashiwase, Yutaka Tabe, Takemi Chikahisa (Hokkaido University)
- 159 Experimental and numerical investigation for the development of high-efficiency fluidized bed solar reactor
Atsushi Sakurai, So Sakuma, Nobuyuki Gokon, Koji Matsubara, Tatsuya Kodama (Niigata University)
- 181 An analysis of quantum effect on the thermodynamic properties of cryogenic hydrogen
Hiroki Nagashima (Tohoku University), Shin-ichi Tsuda (Shinshu University), Nobuyuki Tsuboi (Kyushu Institute of Technology), Mitsuo Koshi (University of Tokyo), A. Koichi Hayashi (Aoyama Gakuin University), Takashi Tokumasu (Tohoku University)
- 185 Molecular dynamics study of oxygen permeation of the ionomer on PEFC catalyst layer
Yuta Sugaya, Takashi Tokumasu (Tohoku University)
- 199 Transport phenomena in alumina nanopores for power generation from a salinity gradient by reverse electrodialysis
Juwan Kim (Korea Advanced Institute of Science and Technology), Dong-Kwon Kim (Ajou University), Sung Jin Kim (Korea Advanced Institute of Science and Technology)