

JSRAE Annual Conference, Presentation Program

- (1) Each presentation has 20 minutes including 5 minutes for discussion.
- (2) Symbol (○/◎) shows speakers.
- (3) For multiple authors from the same institution, the affiliation of the first author from each institution is mentioned. The affiliation(s) of other author(s) is same as the preceding author.

----- The 1st Day -----

Electric Power Co.) ,ASANO Hitoshi
(Kobe Univ.)

Room A

OS-1 Technological Development in Heat Exchangers

09:00 ~ 10:40 OS-1(1) [Session chair:
SASAKI Naoe (Nihon Univ.)]

A114 Effects of fin shape for condensation
heat transfer in Vertical Rectangular
Channel

FUKUDA Sho (Kyushu Univ.) , ◎
TANOURA Teppei, OISHI, Shohei,
TAKATA Nobuo, KOYAMA Shigeru

A111 Development of small temperature
difference heat engine and heat exchange
technologies

○SHIKAZONO Naoki (The Univ. of
Tokyo)

OS-4 Phenomena and Application Technology on Frost, Snow and Ice

11:00 ~ 12:20 OS-4(1) [Session chair:
ONISHI Hajime (Kanazawa Univ.)]

A112 Characteristics of two phase flow in a
plate heat exchanger

◎WAKASUGI Shota (Graduate school
of Saga Univ.), SONODA Kohki,
KARIYA Kesihi (Saga Univ.) ,MIYARA
Akio

A121 Improvement of heat transfer on a
surface of cylinder with Synthetic jets

○OHTA Kengo (Shizuoka Univ.) ,
HUKIBA Katsuyoshi, HARASHINA
Yutaka

A113 Study on Boiling Heat Transfer
Characteristics of Vertically Upward
Flows in a Single-Channel Plate-Fin
Heat Exchanger -Effect of Fin pitch-

◎ MINOURA Kenji (Kobe
Univ.) ,SIKICHI Kazuaki (The Kansai

A122 Effects of micro-machined groove shape
on Heat Transfer with Frosting
Phenomena

◎NAKAJIMA Shun (Tamagawa Univ.) ,
OHKUBO Hidetoshi, YAJIMA
Takeshi (Tokyo Electric Power Co.
Holdings, Inc.), SEKI Mitsuo

(NATOMICS Corp.) , AGUI Haruka
(Tamagawa Univ.)

ELECTRONICS Co., Ltd.) , CHOI
Yonghwa, KIM Youngmin

A123 Development of Evaporator for
Refrigerator improved Cooling and
Defrosting Performance under frosted
condition

○HORIO Yoshimasa (Panasonic Corp.) ,
HORII Katsunori, FUJITA Tomohiro

A134 Development of refrigerant distribution
in a micro channel heat exchanger for
air-conditioning

○INOUE Satoshi (DAIKIN Industries
Co., Ltd.) , HIROKAWA Tomoki,
YOSHIOKA Shun, FUJINO Hirokazu,
ORITANI Yoshio

A124 Heat transfer of microchannel heat
exchanger for precooler under frosting
condition

◎TAKACHI Shu (Shizuoka Univ.) ,
FUKIBA Katsuyoshi, HARASHINA
Yutaka

**15:30 ~ 17:10 WS-1(2) [Session chair:
FUKIBA Katsuyoshi (Shizuoka
Univ.), NISHIDA Kousaku
(Mayekawa MFG. Co., Ltd.)]**

WS-1 Trends in Development of Heat Exchangers

**13:30 ~ 15:10 WS-1(1) [Session chair:
ASANO Hitoshi (Kobe Univ.),
OKUYAMA Akira (FGL)]**

A141 Characteristics of Metal 3D Printing and
its Application to Heat Exchangers

○SHINOMIYA Naruaki (ORIST) ,
NAKAMOTO Takayuki, KIMURA
Takahiro, YAMAGUCHI Shinpei,
KATAGIRI Kazuaki

A131 Fundamental Structure of Steam Boilers
and Related Problems

○OZAWA Mamoru (Kansai Univ.)

A142 Development and application of brazed
Ti heat exchanger

○MATSU Kotaro (Tokyo Braze Co., Ltd.)

A132 Characteristics of Air Conditioning
System for Automobile and Required
Properties of its Heat Exchanger

○TSUNODA Isao (Honda R&D Co.,Ltd)

A143 New Air cooler Defrosting method using
Thermosyphon Principles

○KAYASHIMA Daiki (Mayekawa MFG.
Co., Ltd.) , YOSHIKAWA Choiku,
MUGABI Nelson

A133 Applied development of Microchannel
Heat Exchanger for increasing capacity

○HAYASE Gaku (SAMSUNG

A144 Effect and Influence of Surface
Treatment on Frost and Defrost
Formation

DANJO Yoshihide (Nihon Parkerizing Co., Ltd.) , ○CHIBA Hayato, KATAOKA Toshihisa

KUMITA Mikio, KODAMA Akio, HIGASHI Hidenori, SETO Takahumi, OTANI Yoshio

A145 Progress of studies on frost formation and its organized research activities in Japan
○FUKIBA Katsuyoshi (Shizuoka Univ.)

B114 CFD simulation for predictions of temperature and pressure distribution, and hydrogen absorption/desorption reaction rate in a packed bed of hydrogen storage material

Room B

◎MOCHIHARA Keita (Kyushu Univ.), HAMAMOTO Yoshinori, MIYATA Kazushi, MORI Hideo

OS-9 Refrigerators/Heat Pumps Based on Absorption, Adsorption or Chemical Reactions

OS-9 Refrigerators/Heat Pumps Based on Absorption, Adsorption or Chemical Reactions

09:20 ~ 10:40 OS-9(1) [Session chair: MIYAZAKI Takahiko (Kyushu Univ.)]

11:00 ~ 12:20 OS-9(2) [Session chair : KUBOTA Mitsuhiro (Nagoya Univ.)]

B111 Enhancement of Hydration Reaction of Lithium Hydroxide by Combining LiOH and Mesoporous Carbon
○KUBOTA Mitsuhiro (Nagoya Univ.) , MATSUMOTO Satoshi, MATSUDA Hitoki

B121 Enhancement of Moisture Adsorption Rate by Acoustic Wave
◎IGUCHI Keijiro (Tokyo Noko Univ.), NAKAYAMA Masayuki, UEDA Yuki, AKISAWA Atsushi

B112 Evaluation of heat storage and release process with lithium hydroxide reaction
◎ XU Haotai (Nagoya Univ.) , ICHINOSE Atuhiro, KUWATA Kazuki, KOBAYASHI Noriyuki

B122 Experimental study of activated carbon-ethanol adsorption heat storage system
◎TAKEDA Nami (Kyushu Univ.) , MIYAZAKI Takahiko, KOYAMA Shigeru, MARUYAMA Tomohiro (Calsonic Kansei Corp.) , MAEDA Shinnosuke, KAWAMATA Toru

B113 Water vapor sorption and heat transfer behaviors of $\text{CaCl}_2/\text{Al}_2\text{O}_3/\text{Al}$ composites
◎WATANABE Yuto (Kanazawa Univ.),

B123 Performance investigation of adsorber bed heat exchanger by CFD simulation

- for small scale adsorption heat pumps
 ©KHANAM Marzia (Kyushu Univ.)
- B124 Performance Analysis of Double Effect Adsorption Refrigeration Cycle with Adsorption Heat Recovery by Dynamic Simulation
 ©TAMOGAMI Akira (Tokyo Univ. of Agriculture and Technology) , NAKAYAMA Masayuki, AKISAWA Atsushi
- 13:30 ~ 14:30 OS-9(3) [Session chair: HAMAMOTO Yoshinori (Kyushu Univ.)]**
- B131 Study on Adsorption Heat Pump using Natural Mesoporous Material -4th report: Evaluation of cooling ability using small-size heat exchanger with adsorbent-
 ○TOGAWA Junya (Nihon Netsugen System) , KUROKAWA Asami (Hokkaido Univ.) , NAKAMURA Makoto, NAGANO Katsunori
- B132 Study on Adsorption Heat Pump using Natural Mesoporous Material -5th report: Development of 1kW Laboratory Scale AHP and Evaluation of Cooling Ability-
 © OMAE Seiya (Nihon Netsugen System) , MATSUMOTO Takuya, TOGAWA Junya, KUROISHI Hiroaki, MURAKAMI Shin-ichi, HARADA Katsuhiko, NAGANO Katsunori
- (Hokkaido Univ.)
- B133 Study on Adsorption Heat Pump using Natural Mesoporous Material -6th report: Development of numerical analysis program and prediction of 10 kW AHP-
 ©INOUE Mayu (Hokkaido Univ.) , KOMAKI Ayumi, NAGANO Katsunori, TOGAWA Junya (Nihon Netsugen System)
- 15:10~16:50 OS-9(4) [Session chair: IKUMI Yonezo (Waseda Univ.)]**
- B141 Simple expressions of the heat and mass transfer coefficients for horizontal-tube falling film absorbers
 © GIANNETTI Niccolo (Waseda Univ.) ,YAMAGUCHI Seiichi, SAITO Kiyoshi
- B142 A study of the absorber being suitable for the adsorbent for automobiles
 ○EBATA Yusuke (Aisin Seiki) , TSUBOUCHI Osamu, INADA Takaaki (AIST) , SOMEYA Satoshi, TAKEMURA Fumio, DANG Chaobin (Tokyo Univ.) , HIHARA Eiji
- B144 Development of a Single-Effect Double-Lift Adsorption Chiller That Uses Unused Waste Heat in Wide Temperature Difference
 ○UCHIDA Mari (Hitachi, Ltd.) , FUJII Tatsuo, KAWAMURA Hironobu,

IIZUKA Akiko, TAKEDA Nobuyuki
(Hitachi-Johnson Controls Air
Conditioning, Inc.) , UCHIDA Shuichiro

- B145 Starting Characteristic Analysis of Solar-assisted Absorption Air-conditioning System -A dynamic simulation model and experimental verification by long proof test-
◎SATO Ryota (Osaka City Univ.) , TAMASHITA Hiroki, NISHIMURA Nobuya, TERAOKA Kazutaka (Osaka Gas Co.)

Room C

GS General Session

09:20 ~ 11:20 GS-1(1) [Session chair: MASAYUKI Tanino (Takasago Thermal Engineering Co.,Ltd), KAWANAMI Tsuyoshi (Meiji Univ.)]

- C111 Study on aseismic reinforcement method for ceiling-hung air-conditioner and its effect -Sweep-wave vibration test results of air-conditioning equipment models with different hanging length, hanging width, and weight-
◎MIZURTANI Kunio (Tokyo Polytechnic Univ.) , MIYAZAKI Tsubasa, SHINADA Naoya (SHIN-NIPPON Air Technologies) , KIMURA Takashi
- C112 Influence of the Aseismic Reinforcement

Method for Building Equipment

◎SHINADA Naoya (Shin Nippon Air Technologies Co., Ltd.) , KIMURA Takashi

- C113 Effect of pH and temperature on washing organic matter with alkaline electrolyzed water
◎TAKATSUKA Takeshi (Shin Nippon Air Technologies Co., Ltd.) , MIYAKAWA Yuji, YANAGISAWA Masayuki

- C114 Refrigeration performance of room-temperature magnetic refrigerators with layered beds of Mn alloys
◎ TANIGUCHI Tomohiro (Tokyo Institute of Technology) , OKUBO Tatsuya, OKAMURA Tetsuji, BAE Sangchul (Sanden Advanced Technology Corp.)

- C115 Control of Refrigerant Flow Rate by Using Small Orifice
◎TODOROKI Koichi (NEC) , YOSHIKAWA Minoru

- C116 High-Frequency Magnetic Refrigeration System with Displacer and Check Valves
◎TAKEUCHI Katsuhiko (Fujikura Ltd.) , KONDO Masahiro, NOMURA Ryujiro, KAWANAMI Tsuyoshi (Meiji Univ.)

OS-13 Heat and Mass Transport Phenomena with Solid-Liquid Phase Change

**13:30 ~ 14:50 OS-13(1) [Session chair:
ASAOKA Tatsunori (Shinshu
Univ.)]**

C121 Study on Thermal Storage Device using
Soft-Shelled PCM Capsule
◎ ABE Wataru (Kobe Univ.) ,
KAWANAMI Tsuyoshi (Meiji Univ.) ,
HORII Katsunori (Panasonic Corp.) ,
KATAOKA Takeshi (Kobe Univ.)

C122 Change of ice crystal orientation during
a directional growth along wall
◎ YOKOYAMA Yumi (Kanazawa
Univ.) , TERAOKA Yoshikazu,
KOBAYASHI Hokuto

C123 Effect of Flow Direction on Flow
Characteristics of Ice Slurry in T-
junction
◎ KOBAYASHI Takuya (Aoyama
Gakuin Univ.) , MAKINO Yuki (LIXIL) ,
KUMANO Hiroyuki (Aoyama Gakuin
Univ.)

C124 Predicting and Evaluating Thermal
Performance of Freezer by using 3D-
thermal Conduction Food Freezing
Model
○TOBARI Yuta (MAYEKAWA MFG.
Co., Ltd.) , MASUDA Kazunori, KON
Madoka, KONO Shinji

**15:10 ~ 16:30 OS-13(2) [Session chair:
TERAOKA Yoshikazu (Kanazawa
Univ.)]**

C131 Blockage Conditions of Erythritol Slurry
as Heat Transfer Medium for Medium to
Low Temperature Thermal Utilization
◎ MIZUMOTO Hiroshi (Shinshu
Univ.) , ABE Shunsuke, ASAOKA
Tatsunori

C132 Study on Adsorption Ice slurry
Generator -Adsorption Properties of
Ethanol Solution by Silica Gel-
◎ YOKOMIZU Fumiya (Shinshu
Univ.) , ASAOKA Tatsunori

C133 Continuous generation of ice containing
ozone MBs -Investigation on
concentration of ozone gas released from
ice due to melting-
◎ AYATANI Rikuto (Chuo Univ.) ,
MATSUMOTO Koji, EHARA Kohei,
SAKAMOTO Junki

C134 Investigation on influences of IPF and
mass of ice on cohesive force of ice
slurry
◎ UMEHARA Yuri (Chuo Univ.) ,
MATSUMOTO Koji, UEDA Jun

Room D

**OS-11 Low Temperature Application and
Technology for Food and Biological
Materials**

**09:20 ~ 10:40 OS-11(1) [Session chair:
KIMIZUKA Norihito (Miyagi**

Univ.)]

D111 Effects of pretreatment of freezing on pectin in carrot

© IMAIZUMI Teppei (Gifu Univ.) , SZYMANSKA-CHARGOT Monika (IAPAS) , PIECZYWEK M. Piotr, CHYLINSKA Monika, KOZIOL Arkadiusz, GANCZARENKO Diana, TANAKA Fumihiko (Kyushu Univ.) , UCHINO Toshitaka, ZDUNEK Artur (IAPAS)

D112 Effect of Low-Temperature Treatment on the Composition of Chinese yam (II)

○ TAKAHASHI Tadashi (Aomori Prefectural Industrial Technology Research Center) , KUDOH Ken-ichi (Chuo University Research Promotion Office) , SUZUKI Toru (Tokyo University of Marine Science and Technology)

D113 Study on quality change of food gel by low temperature aging

© OZEKI Ami (Tokyo University of Marine Science and Technology) , SUZUKI Toru

D114 Observation of the ultrastructure of frozen foodstuffs using magnetic resonance imaging

© SMOLLEN Christopherkenta (Tokyo University of Marine Science and Technology) , SUZUKI Toru

11:00 ~ 12:00 OS-11(2) [Session chair: TAKAHASHI Tadashi (Aomori Prefectural Industrial Technology Research Center)]

D121 Temperature dependence of Recrystallization of Suspended aqueous solution

○ KIMIZUKA Norihito (MIYAGI UNIVERSITY)

D122 Effect of antioxidants on the survival rate of freeze-dried lactic acid bacteria

○ KAWAI Kiyoshi (Hiroshima Univ.) , MIKAJIRI Syuto, HAGURA Yoshio, SUZUKI Dai (Tokai Univ.) , HAGIWARA Tomoaki (Tokyo Univ. Marine Sci. Technol.) , KIKAWADA Takahiro (NARO) , SUZUKI Toru (Tokyo Univ. Marine Sci. Technol.)

D123 Effects of cryoprotectant on internal freezing of medaka eggs

ONISHI Ryo (Kyushu Institute of Technology Univ.) , TANIGAWA Hirofumi , ○ TSURUTA Takaharu

13:30 ~ 14:50 OS-11(3) [Session chair: IMAIZUMI Teppei (Gifu Univ.)]

D131 Multi-scale X-ray CT Image Processing for Mapping of Thermal Properties of Fruit

○ TANAKA Fumihiko (Kyushu

- University) , IMAMURA Keitaro,
TANAKA Fumina, UCHINO Toshitaka
- YAMAWAKI Ayuko, GENKAWA
Takuma
- D132 The Design and Evaluation of the Dual
Temperature Storage Container Using
CFD
©SEKIYA Madoka (Graduate school of
Bioresource and Bioenvironmental
Sciences, Kyushu University) ,
TANAKA Fumina (Laboratory of
Postharvest Science, Faculty of
Agriculture, Kyushu University) ,
TANAKA Fumihiko, UCHINO
Toshitaka
- D142 Evaluation of Melting Degree and
Processability of Frozen Beef Using
Near-Infrared Spectroscopy.
©ISHIZUMI Yuto (Univ. of Tsukuba) ,
ITO Yukino, GENKAWA Takuma
- D143 Study on high quality thawing by using
simulation
-Application of ice slurry to thawing-
© NAKAJIMA Yuto (TUMSAT) ,
SUZUKI Toru, WATANABE Manabu
- D133 Evaluation of transport form with quality
and environmental load of Japanese
common squid (*Todarodes Pacificus*)
© NAGASHIMA Futa (Tokyo
University of Marine Science and
Technology) , SUZUKI Toru,
WATANABE Manabu
- D134 A Novel method for measuring
MetMyoglobin ratio by using wave
length of Soret band peak
©KURITA Shun (Tokyo University of
Marine Science and Technology)
- 15:10 ~ 16:10 OS-11(4) [Session chair:
TANAKA Fumihiko (Kyushu
Univ.)]**
- D141 Taste evaluation of melting ice cream
using NIR spectroscopy
○HARA Risa (University of Tsukuba) ,
- Room E**
- OS-10 Thermophysical Properties of
Refrigerants**
- 09:00 ~ 10:40 OS-10(1) [Session chair:
KAYUKAWA Yohei (AIST)]**
- E111 Thermodynamic Properties for Aqueous
Solution of Ammonia
-Examination of the Behavior of
Maximum Densities of this Substance-
○OGUCHI Kosei (Kanagawa Institute of
Technology)
- E112 Measurements of PvTx Properties for
Binary Refrigerant Mixtures with R1123
○SAKODA Naoya (Kyushu Univ.) , MD
AMIRUL Islam, TAKATA Yasuyuki,
HIGASHI Yukihiro

E113 Surfacetension measurement of new low-GWP refrigerant R1123 by differential capillary rise method
○KONDOU Chieko (Nagasaki Univ.) , HIGASHI Yukihiro (Kyushu Univ.) , TSUYASHIMA Taro (Nagasaki Univ.)

E114 Measurement of critical parameters of HFE7000 for high temperature heat pump refrigerants.
◎TERUMASA Oki (Nihon Univ.) , KATSUYUKI Tanaka

E115 Development of PpTx Property Measurement System for Refrigerants
○MATSUGUCHI Atsushi (National Defense Academy) , KAGAWA Noboru

11:00 ~ 12:20 OS-10(2) [Session chair:MATSUDA Kenji (JRAIA)]

E121 Thermodynamic Property Measurements for New Refrigerant R448A
○HIGASHI Yukihiro (Kyushu Univ.)

E122 Development of a thermal-flow type calorimeter for measuring isobaric specific heat capacity of gas
◎EGUCHI Yoji (Nihon Univ.) , TANAKA Katsuyuki

E123 A New Fundamental Equation of State for R-1234ze(Z)
○AKASAKA Ryo (Kyushu Sangyo University)

E124 The Practical Use of Lower GWP Refrigerants for Refrigeration
◎ OHKUBO Shun (DAIKIN INDUSTRIES, LTD.) , ARIMOTO Hitomi, TSUCHIYA Tatsumi, TSUCHIYA Tatsumi, SHIBANUMA Takashi

OS-5 Fundamentals and Application of Cooling by Boiling

13:30~14:30 OS-5(1) [Session chair: NAGAI Niro(Univ. of Fukui)]

E131 Saturated flow boiling CHF enhancement of water by bilayer honeycomb porous structure
◎MUTA Akihiro (Yokohama National Univ.) , MORI Shoji, OKUYAMA Kunito

E132 Study on boiling-cooling using liquid nitrogen;Part I
OHKUBO Hidetoshi (Tamagawa Univ.) , ◎MOROKUMA Takayuki (Yokohama National Univ.) , TAKAMIZU Shunichi (Tamagawa Univ.)

E133 Study on Boiling-cooling using Liquid Nitrogen:Part II
◎ TAKAMIZU Shunichi (Tamagawa Univ.) , OHKUBO Hidetoshi

15:10 ~ 16:10 OS-5(2) [Session chair: MORI Shoji (Yokohama National

Univ.)]

E141 Development of Heat Pipe BACH utilizing Vapor Bubble by Boiling Nucleation

○NAGAI Niro (Univ. of Fukui)

E142 Transient transition boiling heat transfer during impact of droplets on a hot surface

○MITSUTAKE Yuichi (Saga Univ.) ,
TSUBAKI Koutarou, SHANTA Shazida,
SOEJIMA Hisayoshi

E143 Development study of capacitive void fraction sensor for cryogenic chilldown experiment.

◎SAKAMOTO Yuki (Waseda Univ.) ,
PEVERONI Laura (The von Karman
Institute for Fluid Dynamics) ,
VETRANO Rosaria (Katholieke
Universiteit Leuven) , SATO Tetsuya
(Waseda Univ.) , KOBAYASHI
Hiroaki (JAXA) , MINOTE Kazuma
(Waseda Univ.) , TANE Shohei

Room F

WS-4 Geothermal Heat Utilization in Shallow Layer

11:00 ~ 12:20 WS-4(1) [Session chair:
OGUMA Masahito (Nihon Univ.)]

F111 Design methodology for ground source heat pump system considering multiple

geological layers with ground water flow

○KATSURA Takao (Hokkaido University) , CHAE Hobyung, SAKATA Yoshitaka, NAKAMURA Makoto, NAGANO Katsunori, OHSHIMA Kunihiko (Tohoku-Electric Power Co.,Inc.) , SASAKI Masahiro, KONDO Takeshi (Nikken Sekkei Research Institute) , KUBO Ryutarō

F112 Improvement of the Simulation Model for the Vertical Type Spiral Ground Heat Exchanger and Comparing with the Field Measurement

◎HIGASHITANI Takashi (Hokkaido Univ.) , KATSURA Takao, NAGANO Katsunori, AKAI Hitoshi (Fukushima Univ.) , OE Motoaki (Inoac Corporation) , SEGAWA Kazuyuki (TOHOKU Electric Power Co.)

F113 Development of optimum control system for the heat recovery ground source heat pump system

◎ MIYASHITA Yoshiki (Hokkaido University) , KATSURA Takao, NAGANO Katsunori, NAKAMURA Yasushi (Nippon Steel & Suminkin Engineering)

F114 Evaluation of Thermophysical Properties of Shallow Ground

○TANAKA Saburo (Nihon Univ.) , YAMADA Hideki, SONE Yukiko, ITO Kosuke, SASAKI Naoe

**13:30 ~ 15:10 WS-4(2) [Session chair:
SASAKI Naoe(Nihon Univ.)]**

F121 R&D of Ground Source Heat Pump
Systems with Pile Heat Exchangers

-Development for nationwide spreading
of the system-

○KAKIZAKI Takao (Nihon University),
OGUMA Masahito

F122 Evaluation of the Residential Heating
Operation due to GSHP with Pile Heat
Exchangers

○YABUKI Taisei (Nihon University) ,
OGUMA Masahito

F123 GSHP with Pile Heat Exchangers for
Temperate Regions

○OIKAWA Masayoshi (Nihon
University) , OGUMA Masahito

F124 Effect of partial heat insulation of
stainless steel U-tubes on temperature
distribution of steel-pipe pile for shallow
ground source heat exchanger wells

○ITO Kosuke (Nihon Univ.) , TANAKA
Saburo, SASAKI Naoe

**WS-3 Distributed Energy Systems with
Technologies Utilizing Wasted Heat**

**10:00 ~ 12:00 WS-3(1) [Session
chair:TAKEDA Tetsuaki (Yamanashi
Univ.)]**

F131 Demonstration test of ground source heat

pump using foundation pile

YODA Osamu (Fujishima Co. Ltd.) ,
OKUBO Hiroji, ○TAKEDA Tetsuaki
(University of Yamanashi)

F132 Study of ground source heat pump using
direct expansion method applied as
agricultural solar house

HAGIHARA Toshio (Hagihara Boring
Co. Ltd.) , ONO Toshio, NAKAZAWA
Toshiya, MATSUKAWA Tsutomu
(Yamanashi Prefecture), KOMIYAMA
Yoshitaka, ○TAKEDA Tetsuaki
(University of Yamanashi) ,
ISHIGURO Shuhei

F133 Performance test of ground source heat
pump using parallel underground heat
exchanger

ISHIGURO Shuhei (Integrated Graduate
School of Medicine, Engineering, and
Agricultural Sciences, University of
Yamanashi) , MURAMATSU Norihiko,
○WATANABE Seiya, TAKEDA
Tetsuaki (Graduate School of
Engineering, University of Yamanashi)

F134 Performance test of ground source heat
pump using direct expansion method for
hot water supply system

◎ ISHIGURO Shuhei (Integrated
Graduate School of Medicine,
Engineering, and Agricultural Sciences,
University of Yamanashi) , TSUCHIYA
Masatoshi, MARUMO Yuki, TAKEDA
Tetsuaki (Graduate School of

Engineering, University of Yamanashi)

----- #2 Day -----

Room A

OS-1 Technological Development in Heat Exchangers

09:20 ~ 10:40 OS-1(2) [Session chair: KONDOU Chieko (Nagasaki Univ.)]

A211 Study on heating performance of refrigeration cycle with 'Innovative Smart Channel®' Heat Exchanger
○KAIJIAN Wang (Fujitsu General Laboratories LTD.) , TOSHIHIKO Takahashi

A212 Condensation heat transfer of refrigerants at near-critical pressures in plate heat exchangers
◎ YANAGIHARA Shuntaro (Kyushu Univ.) , TANIGUCHI Takahiro (KHI) , MORI Hideo (Kyushu Univ.) , HAMAMOTO Yoshinori, MIYATA Kazushi, UMEZAWA Syuichi (TEPCO) , SUGITA Katsuhiko

A213 An Experimental Study on Flow Boiling in Non-uniformly Heated Parallel Mini-Channels
◎ KUROSE Kizuku (Kyushu Univ.) , KAWASUSO Takuya, MIYATA Kazushi, HAMAMOTO Yoshinori, MORI Hideo

A214 A Simulation for the Flow Distribution and Unsteady Behavior of Flow Boiling in Parallel Mini-Channels
◎ KAWASUSO Takuya (Kyushu Univ.) , KUROSE Kizuku, MIYATA Kazushi, HAMAMOTO Yoshinori, MORI Hideo

11:00 ~ 12:20 OS-1(3) [Session chair: GAO Lei (Fukuoka Univ.)]

A221 Experimental Study on Distributions of Gas-Liquid Refrigerant Flows in Multi-Pass Channels
◎ EKAWA Akira (Mie University) , HIROTA Masafumi

A222 Characteristics of R134a gas-liquid two-phase flow in horizontal multi-pass channels
-characteristic grasp under actual conditions-
◎ TABELI Yusuke (Waseda Univ.) , KATSUTA Masafumi

A223 Characteristics of refrigerant flow in an evaporator for a refrigerator
◎ KITAGAWA Hiroki (Graduated school of Saga Univ.) , KARIYA Keishi (Saga Univ.) , MIYARA Akio

A224 Two-phase flow distribution at wider flow range within the vertical header of microchannel heat exchanger
◎ REDO Mark Anthony (Waseda University) , GIANNETTI Niccolo,

JEONG Jongsoo, ENOKI Koji, OTA Ikuhide, YAMAGUCHI Seiichi, SAITO Kiyoshi, KIM Hyunyoung (Samsung R&D Institute Japan)

Large Capacity Rotary Compressor
© KIMURA Shigeki (TOSHIBA CARRIER CORPORATION), HIRAYAMA Takuya, AOKI Toshimasa, SHIDA Syogo, HATAYAMA Masahiro

IS Advancement in HVAC&R Technologies in Asia

15:30 ~ 16:00 IS-1(0) [Session chair:MIYARA Akio (Saga Univ.)]

A231 ASHRAE activities related to refrigeration and refrigerants
○OLESEN Bjarne (ASHRAE)

B214 Reduction of Friction Loss in Compressors by Surface Texturing
○SATO Hajime (Mitsubishi Heavy Industries Thermal Systems, Ltd.), OGAWA Makoto, GOTO Toshiyuki (Mitsubishi Heavy Industries, Ltd.), YAMASHITA Takuma

Room B

OS-2 Present Status and Future Development of Compressors

09:00 ~ 10:40 OS-2(1) [Session chair:FUKUTA Mitsuhiro (Shizuoka Univ.)]

B211 Latest Trend of Permanent Magnets
○MARUKAWA Yasuhiro (Hitachi Metals,Ltd. Magnetic Materials Company), KOBAYASHI Koji

11:00 ~ 12:20 OS-2(2) [Session chair:SATO Hajime(Mitsubishi Heavy Industries Thermal Systems, Ltd)]

B221 Experimental investigation on oil outflow characteristics in horizontal compressor
-Reduction of unsteady oil circulation-
© MORIYAMA Takashi (Mitsubishi Electric Corp.), MURAKAMI Hiroki

B212 Measurement of clearance around bush in swing compressor by visualization of behavior
© NISHIMURA Kosuke (DAIKIN INDUSTRIES,LTD.), TANAKA Shinji (Tokyo Institute of Technology)

B222 Evaluation of dissolution properties of Lubricants and Refrigerants
-2nd Report: Effect of refrigerants-
○MATSUMOTO Tomoya (Idemitsu Kosan Co., Ltd.), KANEKO Masato, KAWAGUCHI Yasuhiro

B213 Development of High Efficiency and

B223 Measurement of surface tension by maximum bubble pressure method
-Influence of capillary direction and flow-

- ©KIMURA Ryota (Shizuoka Univ.) ,
MITSUHIRO Fukuta, MOTOZAWA
Masaaki
- B224 Reliability Improvement of Anti-
Rotation Mechanism for Scroll
Compressor
○IIZUKA Jiro (SANDEN・AC) ,
TATENYO Yuri, IYOKU Satoshi,
AKAIWA Fumio, NOBE Masayuki

SN-1 Seminar on Compressor Technology

**13:30~14:50 SN-1(1) [Session chair:TOJO
Kenji (TOJO R&D Design Office)]**

- B231 High Efficiency Room Air Conditioner
equipped with an Image Camera and a
Thermal Camera
○DAISAKA Hisashi (Hitachi-Johnson
Controls Air Conditioning, Inc.) ,
AKIYAMA Tomohito, OKUYAMA
Atsushi, KOMATSU Tomohiro (Hitachi,
Ltd.) , KOMATSU Yuto
- B232 Trend of refrigeration oil and various
evaluation technologies
○KANEKO Masato (Idemitsu Kosan
Co.,Ltd.)
- B233 Transition and Trends of Refrigeration
Oil
-Diversification of Refrigeration systems
and Refrigeration Oil-
○SAITO Rei (Japan Sun Oil Company,
Ltd.) , YOSHINO Noboru, SUZUKI

Yoshinori

- B234 Lubricant additives
○OKIDO Takeshi (JXTG Nippon Oil &
Energy Corporation)

Room C

**OS-12 Supercooling Phenomenon from
Fundamentals to Applications**

**09:20 ~ 11:20 OS-12(1) [Session chair :
WATANABE Manabu(Tokyo
University of Marine Science and
Technology)]**

- C211 Active Control of Freezing of Biological
Tissue by Utilizing High-frequency
Ultrasonic Vibration
©NISHIKAWA Kohei (Kanazawa
Univ.) , TADA Yukio, ONISHI Hajime,
HARUKI Masashi
- C212 Effect of the condition of pore processed
to a sheet of membrane on the
performance of the device for
suppressing a supercooling.
©HACHIYA Takayuki (Tokyo Institute
of Technology) , IWASHITA Naoki
(Seiko Epson Corporation) , OKAWA
Seiji (Tokyo Institute of Technology) ,
HOZUMI Tsutomu
- C213 Maximum Supercooling of Tetra-n-
Butyl Ammonium Bromide Aqueous
Solution

○INADA Takaaki (AIST) , KOYAMA Toshie, TAKEYA Satoshi, KUMANO Hiroyuki (Aoyama Gakuin Univ.)

- C214 Identification and observation of nucleation materials for TABA hydrate
◎ MORIMOTO Takashi (Aoyama Gakuin Univ.) , TAKEYA Satoshi (AIST) , INADA Takaaki, KUMANO Hiroyuki (Aoyama Gakuin Univ.)

11:00 ~ 12:00 OS-12(2) [Session chair : INADA Takaaki (AIST)]

- C221 Application of supercooling on food preservation
○WATANABE Manabu (TUMSAT) , SUZUKI Toru

- C222 Study on Inhibition of Generations and Growth of Frost-crystals by Antifreeze Materials of Microorganisms from Isolated low temperature environments
○INOUE Tadahiro (Grad. Sch.of Agl., Tamagawa Univ.) , KAMO Tomohiro (Agl., Tamagawa Univ.) , YOSIMURA Yositaka, NAKAJIMA Shun (Grad. Sch.of Eng., Tamagawa Univ.) , OKUBO Hidetosi (Eng., Tamagawa Univ)

- C223 An experimental study on the collision and freezing of water droplets carried by air flow impinging on cooling surfaces
◎YONEZAWA Sho (Kyoto Institute of Technology) , ISHIKAWA Shoji,

HASEGAWA Koichi, OKUBO Hidetoshi (Tamagawa Univ.) , HAGIWARA Yoshimichi (Kyoto Institute of Technology)

- C224 Study on supercooling degree due to simultaneous mixing of two kinds of surfactant mixture with different molecules sizes
◎ UEDA Jun (Chuo Univ.) , MATSUMOTO Koji, SAKAMOTO Junki, EHARA Kohei (Chuo Univ)

SN-2 Refrigeration engineer seminar

13:30~15:30 SN-2(2) [Session chair : IRIE Tomoyoshi(Ebara Refrigeration Equipment & Systems)]

- C231 Meat Safety from Farm to Table
○MATSUMOTO Mitsuto (Nippon Veterinary and Life Science University)

- C232 A
○KAGAWA Sanae (DAIKIN INDUSTRIES,Ltd.)

- C233 A
○KOISO Hiroaki (San-Ei Gen F.F.I.Co.,Ltd.)

Room D

OS-6 Simulation Techniques for Air-conditioners, Chillers and Heat Pump Water Heaters

**09:00 ~ 10:20 OS-6(1) [Session chair:
YAMAGUCHI Seiichi (Waseda
Univ.)]**

D211 Development of general-purpose energy
system analysis simulator -ENEGY
FLOW +M-

-Evaluation of refrigerants for
compression type heat pump system-
○OHNO Keisuke (Waseda university) ,
YAMAGUCHI Seiichi, SAITO Kiyoshi

D212 Simulation accuracy of air conditioner
using low GWP refrigerant

◎ NAKAJIMA Komei (JRAIA) ,
NISHIYAMA Takumi (Mitsubishi
Electric Corporation)

D213 Evaluation of Appropriateness of Next
Generation Refrigerant for Air-
Conditioners

TAIRA Shigeharu (JRAIA) ,
○HAIKAWA Tomoyuki, MINAMIDA
Tomoatsu (Daikin Industries, LTD.)

D214 Refrigeration Cycle System Simulation
for Window Type Room Air Conditioner

○ENDO Michiko (JRAIA) ,
MATSUMURA Kenji (Hitachi-Johnson
Controls Air Conditioning) ,
YAMAZAKI Hiroshi, YOSHIDA
Yasutaka (JRAIA)

**10:40 ~ 12:40 OS-6(2) [Session chair:
YOSHIDA Yasutaka (JRAIA)]**

D221 Advancement of Refrigeration Cycle
Design for Air Conditioning

○HAGA Seiji (Mitsubishi Electric
Corp.) , YAMASHITA Koji,
HATOMURA Takeshi, TAKENAKA
Naofumi, TAMAKI Shogo, NISHIO Jun

D222 Study on High Efficiency Air
Conditioner for Data Centers

-5th Report : Control Characteristics of
Injection Cycle-

○UDAGAWA Yosuke (NTT
FACILITIES, INC.) , FUTAWATARI
Naoki, KOHATA Yuji, SAITO Kiyoshi
(Waseda univ.), YAMAGUCHI Seiichi,
OHNO Keisuke, NAKANO Daiki

D223 Study on High Efficiency Air
Conditioner for Data Centers

-6th Report: Study on Control Theory by
Simulation-

◎ FUTAWATARI Naoki (NTT
FACILITIES, INC.) , UDAGAWA
Yosuke, KOHATA Yuji, SAITO Kiyoshi
(Waseda University) , YAMAGUCHI
Seiichi, OHNO Keisuke, NAKANO
Daiki

D224 Evaluation of control method of VRF
heat pump system

○MATSUMOTO Kuniyasu (The
KANSAI ELECTRIC POWER CO.,
INC.) , OHNO Keisuke (Waseda Univ.) ,
YAMAGUCHI Seiichi, SAITO Kiyoshi

D225 Analysis of thermal fluid behavior during compression process of scroll compressor

©KAWAMURA Raito (MITSUBISHI ELECTRIC CORPORATION) , IWATAKE Wataru, SHIMIZU Mizuho (MITSUBISHI ELECTRIC ENGINEERING CORPORATION) , TATSUWAKI Kohei (MITSUBISHI ELECTRIC CORPORATION)

D226 Study on heat infiltration through the air curtain of refrigerated display cabinets

©NOMURA Takahiro (Waseda Univ.) , OHTA Ikuhide, YAMAGUCHI Seiichi, SAITO Kiyoshi

Room E

IS Advancement in HVAC&R Technologies in Asia

09:20 ~ 10:40 IS-1(1) [Session chair:MORI Shoji (Yokohama National Univ)]

E211 Develop of a Modulized Plant Factory for Planting Black Fungus

○KUAN Yean-der (National Chin-Yi University of Technology) , CHIU Yu-wei, TSAI Kuei-i, CHIEN Liang-chun

E212 Analysis of the rotary compressor efficiency in variable pressure ratio

○NA Sangkyung (Pusan National University) , MIN Byungchae,CHOI Gyungmin

E213 The Numerical Analysis on the Heat Transfer Performance of a Helical Coil Heat Exchanger

○SHIH Yang-cheng (National Taipei University of Technology) , LIN Kuan-chun, SHIH Shih-hao, CHAO Ling-yu

E214 Effect of Taiwan Ambient Conditions on Hybrid Solid Desiccant Vapor-Compression Air-Conditioning System

○LUO Win-jet (National Chin-Yi University of Technology) , DINI Faridah

11:00 ~ 12:20 IS-1(2) [Session chair:NAGAI Niro (Fukui Univ.)]

E221 Experimental study on thermal performance and boiling heat transfer of Loop heat pipe operating under gravity assisted condition

○HUYNH Phuoc Hien (Saga Univ.) , HTOO Kyaw Zin, TUHIN A. R., KARIYA Keishi, MIYARA Akio

E222 Local Evaporation Heat Transfer Characteristics of CO₂ in a Plate Heat Exchanger

○MAHMUD Mohammad Sultan (Saga Univ.) , KARIYA Keishi, MIYARA Akio

E223 Investigation of Heat and Mass Transfer of an Evaporating Liquid Film on an Elliptic Tube

○LEE Yee-ting (National Taipei

- University of Technology) , YANG An-shik, CHANG Li-wang, XIAO Yu-xian, JUAN Yu-hsuan
- E224 Nocturnal Radiative Cooling Panels Coupled with in Room PCM Ceiling Panels
 ○OLESEN Bjarne (ASHRAE)

application
 ○IKUMI Yonezo (Waseda University)

- F215 Material Development for Chemical Heat Storage and Heat Pumps
 ○KUMITA Mikio (Kanazawa Univ.)

----- #3 Day -----

Room F

Room A

WS-3 Distributed Energy Systems with Technologies Utilizing Wasted Heat

OS-1 Technological Development in Heat Exchangers

10:00 ~ 12:00 WS-3(1) [Session chair: TSUJIGUCHI Takuya (Kanazawa Univ.)]

09:20~10:40 OS-1(4) [Session chair:INOUE Norihiro(Tokyo University of Marine Science and Technology)]

- F211 Key success factors for local energy systems based on case studies
 -Utilization of heat for local demand in distributed energy models-
 ○TAKIGUCHI Shin-ichiro (Japan Research Institute)

- A311 Effect of Lubricating Oil on Flow Boiling Heat Transfer of Refrigerant R290 in Multi-Port Channels
 ○SAITOH Shizuo (Tokyo Univ.) , DANG Chaobin, HIHARA Eiji

- F212 Desiccant air-conditioning system in a business-use building and its future view
 ○HASEGAWA Iwao (Nikken Sekkei)

- A312 Improvement in Condensing Heat Transfer Performance by an Insert into a Quadrilobed Heat Transfer Tube
 ◎HIRAMATSU Ryota (Kobe Univ.) , KAWAGUCHI Taihei, ASANO Hitoshi, ASANO Tomonori (Noritz Corp.) , HARA Hitoshi

- F213 Adsorption heat pump for vehicle cooling system
 ○MAEDA Shinnosuke (Calsonic Kansei Corp.) , MARUYAMA Tomohiro, KAWAMATA Toru

- A313 Study of Performance prediction method of heat exchanger in transcritical cycle
 -Comparison of accuracy using R600 and R245fa-

- F214 Absorption heat pump cycle and

- ANDO Shinichiro (Waseda Univ.) ,
KATSUTA Masafumi, IMAI Yuji
- A314 Boiling heat transfer coefficient and pressure drop of ammonia within horizontal small channels
○YAMAGUCHI Seiichi (Waseda university) , SAITO Kiyoshi,OBATA Kenichi (MAYEKAWA MFG. CO., LTD.) , KATO Masashi, NISHIDA Kousaku
- 11:00 ~ 12:20 OS-1(5) [Session chair: NISHIDA Kousaku (MAYEKAWA MFG. CO., LTD.)]**
- A321 The effects of enhancement porous surface area and roily coolant in forced convection subcooled boiling heat transfer
◎OHASHI Junki (The University of Electro-Communications) , SANTIAGO-GALICIA Edgar, KUMATORI Kousuke, ENOKI Koji, OKAWA Tomio
- A322 Effect of microscale surface structure on droplet dynamic wettability
YAMADA Yutaka (Okayama Univ.) ,◎ SATANO Masataka, HARUKI Naoto (Okayama Pref. Univ.) , HORIBE Akihiko (Okayama Univ.)
- A323 R1234ze(E) boiling enhancement on aluminum surface by using laser interference surface structuring
- ◎NAKAO Ryo (Nagasaki Univ.) , SUETSUGU Wataru, KONDO Chieko, KOYAMA Shigeru (Kyushu Univ.)
- A324 Pool Boiling Heat Transfer characteristics around a Horizontal Low Thermal Conductivity Tube
-Hysteresis effect and heat transfer enhancement by thermal spray coating under hot water heating condition-
◎HIRONAKA Shigeo (Kobe Univ.) , MIYAZAKI Takeru, MURAKAWA Hideki, SUGIMOTO Katsumi, ASANO Hitoshi, TAKUBO Maki (Fuji Electric) ,MYOUGAN Ichiro
- 13:30 ~ 14:50 OS-1(6) [Session chair:KARIYA Keishi (Saga Univ.)]**
- A331 Effect of Lubricant Oil on Flow Boiling Heat Transfer Characteristics of R32 in a Horizontal Multiport Tube
◎EDA Hikaru (Graduate School of Marine Science and Technology, Tokyo University of Marine Science and Technology) , KIKUCHI Shogo (School of Marine Electronics and Mechanical Engineering, Tokyo University of Marine Science and Technology) , JIGE Daisuke (Tokyo University of Marine Science and Technology) , INOUE Norihiro
- A332 Flow Pattern of R32 in Small Square Channels
◎KIKUCHI Shogo (School of Marine

- Electronics and Mechanical Engineering, Tokyo University of Marine Science and Technology) , EDA Hikaru (Graduate School of Marine Science and Technology, Tokyo University of Marine Science and Technology) , JIGE Daisuke (Tokyo University of Marine Science and Technology) , INOUE Norihiro
- A333 Evaporation Characteristics of R1234ze(E) Upward Two-phase Flow in Narrow Rectangular Channel
 ◎MIYATA Hiromasa (Tokyo University of Marine Science and Technology) , CHO Hoheum, TAKAHASHI Yuki, JIGE Daisuke, INOUE Norihiro
- A334 Boiling heat transfer and pressure drop of R1234ze(E) in a small-diameter microfin tube
 ◎IIZUKA Syota (Tokyo University of Marine Science and Technology) , SAGAWA Kentaro, JIGE Daisuke, INOUE Norihiro
- 15:10~16:10 OS-1(7) [Session chair:DANG Chaobin (Tokyo Univ.)]**
- A341 Effect of Heated Cylindrical Pipe with Slit on Natural Convection Heat Transfer from Horizontal Heated Surface
 ◎SHIMOYAMA Rikio (Okayama pref.) , HORIBE Akihiko (Okayama Univ.) , YAMADA Yutaka, YAMAMOTO Ryoma
- A342 Effect of Bridge on Heat Transfer Characteristics of Airfoil-shaped Tube with Extended Section Heat Exchanger
 ◎ITO Tsubasa (Kanazawa Univ.) , ONISHI Hajime, HARUKI Masashi, TADA Yukio
- A343 Development of an Aluminium Flat-Tube Heat Exchanger for Packaged Air Conditioner
 ◎ NAKAMURA Shin (Mitsubishi Electric Corporation) , ISHIBASHI Akira, KATO Yohei, TANDA Tsubasa
- Room B**
- OS-14 Deployment of Technology in Energy Storage, Energy Conservation, and Energy Creation**
- 09:20 ~ 10:40 OS-14(1) [Session chair: HOKAMURA Taku(Mitsubishi Heavy Industries Air-Conditioning & Thermal Systems Corporation)]**
- B311 Development of Hydroponic Cultivation System and Energy Conservation Greenhouse for Fruit vegetables
 HAYASHI Daisuke (Daico Thermotec Co.,Ltd.) , ○SEKI Mitsuo (NATOMICS Corp.) , OHKUBO Hidetoshi (Tamagawa Univ.) , SEKI Toshio (Machida Chamber of Commerce and Industry)
- B312 Development of the Air Flow System

- Suitable for Plant Factory
- Measurement of distribution of temperature-humidity and the wind velocity in the one unit plant cultivation rack-
- SUMITANI Daisaku (Seiken Co., Ltd.) , MORIUCHI Koji, UEDA Yasushi
- B313 Study of method to shorten cultivation period in plant factory based on the growth prediction of the vegetables.
○MORIUCHI Koji (Seiken Co., Ltd.) , UEDA Yasushi, YOSHIDA Atsumasa (Osaka Prefecture University) , KINOSHITA Shinichi
- B314 Effects of equipment characteristics on Energy Conservation control system for heat source water supply network
◎ADACHI Saki (Tokyo Univ.(Tokyo University of Science)) , ONO Eikichi (Kajima Technical Research Institute) , NAGAI Tatsuo (Faculty of Engineering, Tokyo University of Science, Dr. Eng.)
- 11:00 ~ 12:20 OS-14(2) [Session chair: OGAWA Takahiro(Shinryo Corporation)]**
- B321 A Study on a method for Low Temperature Steam Reforming of Methane
◎KITAGAWA Sho (Tamagawa Univ.) , TAKAHASHI Katsumi, AIHARA Takeshi, OHKUBO Hidetoshi, OBARA Hiroyuki
- B322 Thermodynamic Analysis on High Temperature Heat Pump Cycles for Heat recovery
◎ FUKUDA Sho (Kyushu univ.) , TAKATA Nobuo, MIYAZAKI Takahiko, KOYAMA Shigeru
- B323 Developement of Air Conditioning Systems by using Water Source Heat Pump Units Applied
○MASAKI Hatakeyama (Nippon PMAC Co.,Ltd) , TOSHIAKI Saitou, MASAO Masuda (Takasago Thermal Engineering Co.,Ltd) , MASAYUKI Tanino
- B324 Development of complete non-CFC an air refrigeration system using XY separate crank mechanism (1st report)
○TAKUMI Yoshizawa (Z mechanism Technology Institute Co., Ltd.) , YUTAKA Yoshizawa, SATOSHI Yoshizawa, YASUO Yoshizawa
- 13:30 ~ 14:50 OS-14(3) [Session chair:MAN'O Tatsunori (Takasago Thermal Engineering Co.,Ltd.)]**
- B331 The Investigation of the 4th Generation Hybrid Hot Water Unit
-The Primary Energy Performance Progress of The Hybrid Hot Water Unit-
○MURAMATSU Yasuhito (Rinnai Corporation) , MORI Keisuke, JINNO Hideyuki, SUGIMOTO Takamasa,

NAGATA Hidenori, IMAI Seishi,
SOBUE Tsutomu

B332 Study on Energy Consumption of the
Food Retail Store

-Part2. Appreciation of cooling load of
refrigerate display case-

◎ CHEN Wen (Yokohama National
University) , YOSHIDA Keisuke,
FUJITA Miwako (Chubu Electric Power
Company) , MIYAMA Toshimasa,
NARUMI Daisuke (Yokohama National
University)

B333 Study on Energy Consumption of the
Food Retail Store

-Part3. Appreciation of cold air leakage
using PIV and CFD-

◎ YOSHIDA Keisuke (Yokohama
National University) , FUJITA Miwako
(Chubu Electric Power Company) ,
MIYAMA Toshimasa, NARUMI
Daisuke (Yokohama National University)

B334 Trial production of slim and translucent
vacuum insulation panels and discussion
on the insulation performance

◎ AIHARA Masahiro (Hokkaido Univ),
KATSURA Takao, YANG Zhang,
NAKAMURA Makoto, NAGANO
Katsunori

Room C

**OS-7 Performance Evaluation of Air-
conditioners, Chillers and Heat Pump**

Water Heaters

**09:20~10:40 OS-7(1) [Session chair:WAKUI
Tetsuya (OsakaPrefecture Univ.)]**

C311 Development of ceramic plate burner for
downsizing of absorption refrigerating
machine

◎ OKADA Kunio (Kawasaki Heavy
Industries, Ltd.) , HORIKAWA Atsushi,
KOGA Kazuki, YAMAGUCHI Masato,
KAZARI Masahide, KANAMURA
Yoshihiko (Kawasaki Thermal
Engineering Co, Ltd.)

C312 Study on Integrated Hybrid Air-
conditioning System

-1st Report: Verification of the effect by
optimum operation control system in
commercial facility-

◎ TAHARA Hiroyuki (TOKYO GAS
CO.,LTD.) , FURUHASHI Yuma

C313 Study on Evaluation of Annual Energy
Consumption of Package type EHP Air-
conditioner for Buildings

-5th Report:Evaluation of energy-saving
performance for new type light
commercial air-conditioner-

○ NAKAYAMA Hiroshi (Chubu Electric
Power Co.Inc) , NAMIWO Takashi,
TAKEYA Nobuyuki (Toshiba Carrier
Corporation) , KIGUCHI Yukio,
HIROTA Masafumi (Mie University) ,
KABASHIMA Yasutaka

C314 Performance evaluation of the newest high efficiency GHP(XAIRII) air conditioner
-Evaluation of heating mode-
©NISHIOKA Rikito (Tokyo Univ of Marine Science and Technology) ,
KAMETANI Shigeki

OS-12 Supercooling Phenomenon from Fundamentals to Applications

11:00 ~ 12:20 OS-12(2) [Session chair : WATANABE Choyu (Chubu Electric Power Co.,Inc.)]

C321 Performance Evaluation of Air-Conditioner Using R452B in Wide Cooling Load Range
TAIRA Shigeharu (Daikin Industries, LTD.) , ○MINAMIDA Tomoatsu,
HAIKAWA Tomoyuki

C322 Performance Monitoring and Diagnostics of Multi-Split Type Air-Conditioning System by Support Vector Machine
-Detection of Performance Deterioration Under Steady-state Operation-
○WAKUI Tetsuya (Osaka Prefecture University) , YOKOYAMA Ryohei

C323 Annual Performance Evaluation of Refrigerated Display Cabinets
© REDO Mark Anthony (Waseda University) , GIANNETTI Niccolo,
OHNO Keisuke, YAMAGUCHI Seiichi,

SAITO Kiyoshi

C324 Development of a Simple Measuring Method of Actual Performances of Room Air Conditioner
-Indirect Measurements of local refrigerant pressure profile at heat exchangers-
©TODO Hiroki (Osaka city Univ.) ,
YAMAMOTO Shintaro, NISHIMURA Nobuya

13:30 ~ 14:30 OS-7(3) [Session chair:NISHIMURA Nobuya(Osaka City Univ.)]

C331 A study on partial load characteristic of heat pump system with frost on heat exchanger
©IWASAKI Nobuaki (Waseda Univ.) ,
OHNO Keisuke, YAMAGUCHI Seiichi,
SAITO Kiyoshi, NAKAYAMA Hiroshi
(CHUBU Electric Power Co.)

C332 Study of Lower GWP Refrigerants for Refrigeration systems
© ARIMOTO Hitomi (DAIKIN INDUSTRIES, LTD.) , OHKUBO Shun

C333 Evaluation of performance of VRF air conditioning systems using low GWP Refrigerants
○IWATA Ikuhiro (DAIKIN Industries,LTD.) , KUMAKURA Eiji,
FURUSHO Kazuhiro

Room D

- OS-4 Phenomena and Application Technology on Frost, Snow and Ice**
- 11:00 ~ 12:20 OS-4(3) [Session chair: MATSUMOTO Ryouyusuke (Kansai Univ.)]**
- 09:20~10:40 OS-4(2) [Session chair: KATO Masashi (MAYEKAWA MFG. CO., LTD.)]**
- D311 Frosting phenomenon of corrugated louver fins under forced convection
-Grasping basic characteristics and influence of surface texture of Concave and Convex-Patterned Flat Plates-
◎TERAKADO Yuki (WASEDA Univ.), KATSUTA Masafumi, YASUI Kenzo
- D312 Reduction of Frost Formation using Micro-Machined Groove Shape on Surface
◎AGUI Haruka (Tamagawa Univ.) , OHKUBO Hidetoshi
- D313 Effect of irradiation angle of focused ultrasound on defrosting cooling surface defrosting
◎INOUE Sho (National Institute of Technology, Ichinoseki College) , HOSHI Takayuki (The University of Tokyo)
- D314 Reduction of frost formation using phase change at boundary layer
OHKUBO Hidetoshi (Tamagawa Univ.), ◎ SUZUKI Tomohisa, NAKAZIMA Shun
- D321 Development of frost / ice control technology by natural substance-derived ice crystal control material
○HIDEHISA Kawahara (Kansai Univ.) , AKIRA Kagiya, TAKEHIRO Fuji, YOSHIYUKI Matsuda
- D322 Experimental Study of Delaying Frost Formation on Surfaces of Pre-cooler Tubes Using Ultrahydrophobicity Tube by Anodic Oxidation Method
◎TOKAWA Satoru (Waseda Univ.) , MORIYA Atsuki, KINOSHITA Yoshiaki, SATO Tetsuya
- D323 Fundamental Investigation on Frost Formation Characteristics of Adsorbent Coated Heat Exchanger
○ONISHI Hajime (Kanazawa Univ.) , NAKANO Kosuke, HARUKI Masashi, TADA Yukio
- 13:30 ~ 14:50 OS-4(4) [Session chair : ONISHI Hajime (Kanazawa Univ.)]**
- D331 Fundamental study on pressure loss of heat exchangers under frosting conditions
◎SUN Han (Shizuoka Univ.) , FUKIBA Katsuyoshi, TAKACHI Syuu

- D332 Study of two-dimensional frost modeling under forced convection
 ◎ KINOSHITA Yoshiaki (Waseda Univ.) , SATO Tetsuya, TOKAWA Satoru, KURATA Takumi, OSUMI Ryuma
 Aomori Prefectural Industrial Technology Research Center) , SAITO Masato, IMAI Teruki
- D333 Evaluation of frost density profile by X-ray radiography
 ◎NAGASAWA Yoshiki (Kansai Univ.), MATSUMOTO Ryosuke, UECHI Takuma, ITO Daisuke (Kyoto Univ.) , SAITO Yasushi
 E312 Development of Energy-Saving Dehumidification System for Dry Room and Evaluating Energy Saving Performance
 ◎ NAGASAWA Masatoshi (Shinryo Corp.) , MIKAMI Hideto, SAWARA Makoto, OGATA Hajime, OSAKA Tetsuya (Waseda Univ.) , YOKOSHIMA Tokihiko
- D334 Changes in Three-dimensional Microstructure with Frost Layer Growth
 ○UECHI Takuma (Kansai Univ.) , MATSUMOTO Ryosuke, NAGASAWA Yoshiki
 E313 Development of the super-energy-saving low dew point dehumidifier for which heat pump exhaust heat is used
 ○JIN Weili (Seibu Giken Co., LTD.) , OKANO Hiroshi
- Room E**
- OS-8 Desiccant/Humidity Control/Open Cycle Air Conditioning**
- 09:00 ~ 10:40 OS-8(1) [Seeion chair : TSUJIGUCHI Takuya (Kanazawa Univ.)]**
- E311 Investigation of Air-Conditioning System Potential in Plant Factory Suitable for Snowy Region
 ○AKAHIRA Akira (Industrial Research Institute, Aomori Prefectural Industrial Technology Research Center) , ITO Atsushi (Agriculture Research Institute,
 E314 Moisture-permeable membrane type liquid desiccant air conditioner
 -Prototype of liquid desiccant air conditioner using moisture permeable membrane for humidifier-
 ○MIZURTANI Kunio (Tokyo Polytechnic Univ.) , SUZUKI Takuma, SATO Hideki (Sanken Setsubi Kogyo) , SHIOYA Masaki
- E315 Wetting characteristics of falling films on a fin-tube contactor
 ◎INUI Hanako (Waseda University) , GIANNETTI Niccolo, YAMAGUCHI Seiichi, SAITO Kiyoshi

**11:00 ~ 12:20 OS-8(2) [Session chair:
YAMAGUCHI Seichi (Waseda
Univ.)]**

E321 Moisture transport behavior of
circulating fluidized bed using organic
sorbent particles

HORIBE Akihiko (Okayama Univ.) ,
YAMADA Yutaka, HARUKI Naoto
(Okayama Pref. Univ.) , ◎
YAMASHITA Keisuke (Okayama Univ.)

E322 Thermal comfort improvement effect of
the WSS desiccant system

NABESHIMA Yuki (Toyohashi Univ. of
Technology) , ○DOI Takashi, NAGANO
Katsunori (Hokkaido Univ.) , TOGAWA
Jun-ya (Nihon Netsugen Systems
CO.,LTD.)

E323 Effect of the operating condition on the
adsorption-desorption behavior in the
adsorbent-coated heat exchanger and its
heat flow analysis

○TSUJIGUCHI Takuya (Kanazawa
Univ.) , OSAKA Yugo, KUMITA Mikio,
KODAMA Akio

E324 Response of desiccant rotor to a change
of regeneration heat amount and
minimization of fluctuation of
dehumidifying performance

KODAMA Akio (Kanazawa Univ.) , ◎
SAITO Keigo, TSUJIGUCHI Takuya,
OSAKA Yugo, MASUDA Soichiro
(Toho Gas) , KISHI Hideyuki

Room F

**OS-3 Refrigeration systems : The
International Extension based on
Diversity & Inclusion**

**09:40 ~ 10:40 OS-3(1) [Seession chair :
SAITO Rei (Japan Sun Oil
Company, Ltd.)]**

F311 Development of the energy saving R744
drink vending machine which utilized
heat storage materials

○SHIMODA Hiroyuki (SANDEN
ADVANCED TECHNOLOGY
CORPORATION) , KASUYA
Junichirou, FUJII Hidetoshi

F312 Compatibility of Low-GWP refrigerant
HCFO-1224yd(Z)

◎SOGA Tamaki (AGC Chemicals) ,
FUKUSHIMA Masato, HAYAMIZU
Hiroki

F313 The Generation Behavior of
Flammability Area and Leak Rate of
Low GWP Refrigerants

○KAWASHIMA Mitsuru (Mitsubishi
electric) , MAEDA Akira

**11:00 ~ 12:00 OS-3(2) [Session
chair :MATSUOKA Fumio (Heat
Pump Inc.)]**

F321 Study of Heat Pump Performance on a

- Demand Response Program in the United Kingdom
-Second Report: Summary of Smart Community Demonstration Project in Manchester, UK - The Outcome-
○MASUDA Ryoh (Daikin Industries, Ltd.) , NAKAGAWA Koichi
- F322 A study on quality measurement in refrigeration cycle
◎MORISHITA Shota(Shizuoka Univ.), FUKUTA Mitsuhiro, MOTOZAWA Masaaki
- F323 Development of multilayer distributor for a flat tube heat exchanger
◎ MATSUI Shigeyoshi (Mitsubishi Electric Corporation) , HIGASHIUE Shinya, KATO Yohei, TANDA Tsubasa
- WS-2 Frontier of heat pump system**
- 13:30~14:50 WS-2(1) [Session chair : Sekiya Sachio(Hitachi, Ltd., Research & Development Group.)]**
- F331 Smart Grid and Future Energy Management System for Building Packaged-air-conditioners
○NINAGAWA Chuzo (Dept. of Electrical and Electronic Engineering, Gifu University) , OTAKE Hiroyuki (Mitsubishi Heavy Industries Thermal Systems, Ltd.)
- F332 Humidity Control using Nanospace
- Materials
○DAIGUJI Hirofumi (Univ. of Tokyo)
- F333 Bio-inspired Robot and a future of IoT Technologies
○NIIYAMA Ryuma (Graduate School of Information Science and Technology, The University of Tokyo)
- 15:10 ~ 16:30 WS-2(2) [Session chair : DAIGUJI Hirofumi (Univ. of Tokyo)]**
- F341 Connected Industries & JSRAE
○HASEGAWA Hiroshi (Ministry of Economy, Trade and Industry) , WAKABAYASHI Kiwamu
- F342 Secureing IoT System Security
-Basic knowledge to practice IoT security-
○ITO Kosuke (Connected Consumer Device Security Council)
- F343 Challenge for Realization of Happiness Society
○SATO Nobuo (Research & Development Group, Hitachi, Ltd.)