# 2008 JSRAE Annual Conference

## Conference Program

| October 20 (Monday) | October 21 (Tuesday) | October 22 (Wednesday) |
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(1) The available time for presentation is 15 minutes + 5 minutes discussion for general speech, and is 25 minutes + 5 minutes discussion for keynote speech.
(2) In the case of multiple authors from 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.
(3) Asterisks * show speakers.

## October 20, 2008 (Monday)

Room A ＜October 20 (Monday) ＞

Organized session OS-5

Desiccant Cooling and Humidity Control
Organizers: Atsushi Akisawa (Tokyo Univ. of Agriculture and Technology), Akio Kodama (Kanazawa Univ.), Kiyoshi Saito (Waseda Univ.)

9:40～10:40 OS-5(1) [Chairperson : Akio Kodama (Kanazawa Univ.)]

A111 Heat and Mass Transfer in Packed-Bed Absorber and Regenerator of Liquid Desiccant System,
*Seiichi Yamaguchi (Waseda Univ.), Kiyoshi Saito, Sunao Kawai

A112 Performance Analysis of a Hybrid Air Conditioning System using Aqueous Lithium Chloride Solution,
*Li Zhang (The Univ. of Tokyo), Chaobin Dang, Eiji Hihara

A113 Measuring Apparatus and Measurements of the Equilibrium Water Vapor Adsorption with Moisture Measuring System,
*Yoshinori Hamamoto (Kyushu Univ.), Hideo Mori, Takahumi Akai, Tatsuhiro Fukuda

11:00～12:00 OS-5(2) [Chairperson : Yoshinori Hamamoto (Kyushu Univ.)]

A121 Regeneration Behavior of Desiccant Rotor with Microwave Irradiation,
*Mitsuhiro Kubota (Nagoya Univ.), Satoshi Yabe, Hitoki Matsuda

A122 Enhancement of Water Desorption from Zeolite by Microwave Irradiation with Heater,
*Fujio Watanabe (Aichi Institute of Technology), Tsuyoshi Kashiwagi, Tomoya Takagi, Toshinari Oike, Masanobu Hasatani, Noriyuki Kobayashi (Nagoya Univ.)

A123 Study on Energy Saving Air-Conditioning System using Compact Desiccant Ventilation Units (Part 22 Comparison of regeneration efficiency),
*Masazumi Godo (Shin Nippon Air Technologies), Takeshi Takatsuka, Toshihiko Ishizawa, Kunio Miura

13:10～14:30 OS-5(3) [Chairperson : Mitsuhiro Kubota (Nagoya Univ.)]

A131 Asymptotic Nature of Heat and Mass Transfer in Adsorptive Dehumidifiers for Desiccant Air Conditioning,
*Tsutomu Hirose (Advanced Adsorption Technology)

A132 Interpretation of Angular and Axial Temperature Distributions in an Adsorbent Wheel for a Higher Dehumidification Performance,
*Akehiko Adachi (Kanazawa Univ.), Akio Kodama

A133 Investigation of Heat and Mass Transfer and Static Simulation of Desiccant Wheel,
*Seiichi Yamaguchi (Waseda Univ.), Kiyoshi Saito, Sunao Kawai, Naoki Onda (Tokyo Gas)

A134 Static and Dynamic Adsorptive Characteristic Research on Low Temperature Regeneration Desiccant Rotor,
*Weili Jin (Seibu Giken), Hiroshi Okano, Hiroshi Inoue, Tsutomu Hirose

14:50～16:10 OS-5(4) [Chairperson : Atsushi Akisawa (Tokyo Univ. of Agriculture and Technology)]

A141 Desiccant Air-Conditioning System using Solar Energy Collector (1st report : Proposal and characteristic analysis on the desiccant air-conditioning system),
*Ayako Inoue (Waseda Univ.), Makoto Koganei (Asahi Kogyosya), Ken Komatsu (Nippon Light Metal), Tatsuichiro Tashiro (Shin Nikkei), Yasutoshi Yoshida (Earth Clean Tohoku), Sunao Kawai (Waseda Univ.)

A142 Desiccant Air-Conditioning System using Solar Energy Collector (2nd report: Characteristics of solar energy collector (solar spandrel)),
Ayako Inoue (Waseda Univ.), Makoto Koganei (Asahi Kogyosya), Ken Komatsu (Nippon Light Metal), Masao Takagi, *Tatsuichiro Tashiro (Shin Nikkei), Sunao Kawai (Waseda Univ.)

A143 Desiccant Air-Conditioning System using Solar Energy Collector (3rd report: Design and characteristic evaluation of indirect evaporative cooler),
*Keisuke Kato (Waseda Univ.), Jongsoo Jeong, Sunao Kawai, Ayako Inoue, Yasutoshi Yoshida (Earth Clean Tohoku)

A144 Investigation of a Multi-Stage Dehumidification Process Considering Water Vapor Adsorption Property of Desiccant Wheels,
*Keisuke Sekiguchi (Kanazawa Univ.), Akio Kodama, Hisashi Asano

16:20～17:50 OS-5(4) [Chairperson : Kiyoshi Saito (Waseda Univ.)]

A151 [Keynote Speech] (30 minutes)
Application of Wakkanai Siliceous Shale as a Natural Meso Porous Material to the Air Conditioning System, *Katsunori Nagano (Hokkaido Univ.)

A152 Dehumidification Performance of Organic Powder Sorbent in a Fluidized Bed during Batch Cycle Operation, Akihiko Horibe

(Okayama Univ.), Hideo Inaba (Tsuyama National College of Technology), Naoto Haruki (Okayama Univ.), *Naotoshi Fujita

A153 Performance Improvement and Evaluation of Wakkanai Siliceous Shale for using as Desiccant Material, *Saya Nakabayashi (Hokkaido Univ.), Katsunori Nagano, Makoto Nakamura, Junya Togawa (Wakkanai Green Factory)

A154 Research on Improvement and Purification of Air Quality using Carbon from Wood, *Tomohiro Fukazawa (Kanazawa Univ.), Akira Takimoto, Yukio Tada, Hajime Onishi

Room B ＜October 20 (Monday) ＞

Organized Session OS-4

Various Phenomena and Applied Technology of Frost, Snow and Ice
Organizers: Mitsuo Seki (Toyo Engineering Works), Koji Yamashita (Mitsubishi Electric)

9:30～10:00 OS-4(1) [Chairperson : Hidetoshi Ohkubo (Tamagawa Univ.)]

B111 [Keynote Speech] (30 minutes)
Consideration for Ice Storage Technique (Thermal properties and application),
*Yoshio Hirasawa (Univ. of Toyama)

10:00～10:40 OS-4(1) [Chairperson : Isao Ishihara(Kansai Univ.)]

B112 Thermal Conductivity of Multi-Component Mixtures using Natural Substances,
*Shigenori Tatsunami (Tamagawa Univ.), Hidetoshi Ohkubo

B113 Melting of a Packed Bed of Ice Particles by a Line Heat Source,
*Kengo Murakami (Aoyama Gakuin Univ.), Masashi Okada, Tatsunori Asaoka, Yoshikazu Teraoka (Chuo Univ.)

11:00～12:00 OS-4(2) [Chairperson : Yoshio Hirasawa (Univ. of Toyama)]

B121 Freezing and Melting Characteristics of Molding Sand with Water for the Freeze Mold Process by Cold Air Flow,
Akihiko Horibe (Okayama Univ.), Naoto Haruki, Hideo Inaba (Tsuyama National College of Technology), *Yasunori Miyagawa (Okayama Univ.)

B122 Phase Change Heat Transfer around Horizontal Tubes Immersed in Water,
*Koichi Hirose (Iwate Univ.), Yuuki Takahashi (Fujitsu), Masayuki Jidaisyo (Iwate Univ.)

B123 Crystal Growth of Solid-Liquid Mixture,
*Kiyonori Ashizawa (Tamagawa Univ.), Hidetoshi Ohkubo

13:10～14:30 OS-4(3) [Chairperson : Akihiko Horibe (Okayama Univ.)]

B131 Dynamic-Type Ice Storage System using Water-Oil Emulsion,
*Junichi Ikeda (Aoyama Gakuin Univ.), Masashi Okada, Yoshikazu Teraoka (Chuo Univ.), Tatsunori Asaoka (Aoyama Gakuin Univ.), Koji Matsumoto (Chuo Univ.), Tetsuo Kawagoe (Engineering Consultant)

B132 Study on Scraping Force of Ice Growing on Cooling Solid Surface (Discussion on influences of main factors on scraping of ice),
*Takahiro Akimoto (Chuo Univ.), Koji Matsumoto, Yoshiaki Kenmotsu, Yoshikazu Teraoka

B133 Flow Characteristics of Ice Slurry in Narrow Tube,
*Michito Shirakawa (Shinshu Univ.), Hiroyuki Kumano, Tetsuo Hirata, Ryouta Shouji

B134 Effect of the Method of Ice Making System on the Distribution on Particle Size and Its Timewise Variation in Ice Thermal Storage using Alcohol Aqueous Solution,
*Mayuko Ohigashi (Tokyo Institute of Technology), Seiji Okawa, Tsutomu Hozumi, Yoshihiro Uji (Kansai Electric Power)

14:50～16:10 OS-4(4) [Chairperson : Koji Yamashita (Mitsubishi Electric)]

B141 Heat and Mass Transfer with Frosting Phenomena in Natural Convection (Region I, II),
*Masayuki Ueno (Tamagawa Univ.), Hidetoshi Ohkubo

B142 Heat and Mass Transfer with Frosting Phenomena in Natural Convection (Region III, IV),
*Sho Inoue (Tamagawa Univ.), Hidetoshi Ohkubo

B143 Relationship between Frost Surface Temperature Distribution and Frost Layer Structure,
*Hiroyuki Yotsumoto (Kansai Univ.), Isao Ishihara, Yasutoshi Koteishi, Ryosuke Matsumoto

B144 About the Contactless Measurement Way of Frost Layer Thickness,
*Nobuo Shimomura (Niihama National College of Technology)

16:30～17:50 OS-4(5) [Chairperson : Nobuo Shimomura (Niihama National College of Technology)]

B151 Heat Transfer Performance of Finless Flat Tube Heat Exchanger for Refrigerator,
*Shota Mido (Kanazawa Univ.), Hajime Onishi, Yukio Tada, Akira Takimoto

B152 Suppression of Frosting by Surface Modification of Cooling Surface,
*Manabu Nakagawasai (Gunma Univ.), Shigeaki Inada, AsnawiMohd , Hisanobu Kawashima, Yusuke Sakai, Takumi Wakabayashi

B153 Analysis of the Frost Growth in a Low Temperature Environment,
*Koji Yamashita (Mitsubishi Electric), Hidetoshi Ohkubo (Tamagawa Univ.)

B154 Study of the Droplet Behavior in Frost and Defrost Process on the Surface with Artificial Structure,
*Keisuke Shiomi (Osaka Univ.), Tatsuya Yoshida, Kenji Yoshida, Isao Kataoka

Room C ＜October 20 (Monday) ＞

Organized Session OS-6

Technologies for $CO_2$ Heat Pump Components and Systems
Organizers: Toru Takahata (Kansai Electric Power), Ryohei Yokoyama (Osaka Prefecture Univ.)

9:30～10:50 OS-6(1) [Chairperson : Naoki Endo (AIST)]

C111 Development of the High Efficiency Swing Compressor for the $CO_2$ Heat Pump Water Heater,
*Ayumi Ogawa (Daikin Industries), Makoto Adachi, Kazuo Ida, Yasunobu Nishimoto, Masahide Higuchi, Yoshihiro Kataoka, Azusa Ujihara

C112 Development of Scroll Expander for $CO_2$ Refrigerant (Designing a back-to-back mechanism of expansion and sub-compression),

*Masayuki Kakuda (Mitsubishi Electric), Fumihiko Ishizono, Mihoko Shimoji, Hideaki Nagata, Shin Sekiya, Toshihide Koda

C113 Development of Scroll Expander for $CO_2$ Refrigerant (2nd Report: Performance evaluation of sub-compressor/ expander combined machine),
*Hideaki Nagata (Mitsubishi Electric), Shin Sekiya, masayuki Kakuda, Mihoko Shimoji, Toshihide Koda

C114 Development of EJECS2 Cycle for $CO_2$ Heat Pump Water Heater,
*Masahiro Takatsu (DENSO), Susumu Kawamura, Masataka Imazu, Joji Kuroki, shigeji Ohishi

11:10～12:10 OS-6(2) [Chairperson : Ryohei Yokoyama (Osaka Prefecture Univ.)]

C121 Absorption/Compression System using $CO_2$ as Working Fluid (Selection of absorbent and estimation of performance),
*Naoki Endo (AIST)

C122 $CO_2$ Based Adsorption Hybrid Refrigeration Cycle and Comparison with R134a Based Compression Refrigeration System,
*Anutosh Chakraborty (Kyushu Univ.), Bidyut Saha, Shigeru Koyama, Ken Kuwahara

C123 Performance Analysis on a $CO_2$ Air Conditioning System,
*Jun Xue (Kyushu Univ.), Shigeru Koyama, Ken Kuwahara, Nobuo Takata, Tadashi Yanagisawa (Shizuoka Univ.)

Organized Session OS-1

Technological Development in Heat Exchangers
Organizers: Shigeru Koyama (Kyushu Univ.), Akio Miyara (Saga Univ.), Hideo Mori (Kyushu Univ.)

13:00～14:30 OS-1(1) [Chairperson : Hideo Mori (Kyushu Univ.)]

C131 [Keynote Speech] (30 minutes)
On the Prospect of Self-Rewetting Fluids as a New Working Fluid,
*Yoshiyuki Abe (AIST)

C132 In-tube Condensation Pressure Drops of $CO_2$/DME Mixture,
Akio Miyara (Saga Univ.), *Koutaro Tsubaki, Afroz Hasan M. M.

C133 Evaporating Heat Transfer Characteristics of $CO_2$ Cooling Cycle (Flow visualization of oil contaminated $CO_2$ two-phase flow and a discussion focused on its transition),
Masafumi Katsuta (Waseda Univ.), Shinya Kishi, Naoyuki Miyachi, *Takahiro Oshiro

C134 Experimental Study on Flow Boiling of Carbon Dioxide in a Horizontal Microfin Tube,
*Soshi Ikeda (Kyushu Univ.), Shinya Higashiiue, Yukiko Hino, Ken Kuwahara, Sigeru Koyama

14:50～16:10 OS-1(2) [Chairperson : Akio Miyara (Saga Univ.)]

C141 Heat Transfer Performance for R744 with PAG in Air-cooled Heat Exchanger,
Shun Yoshioka (Daikin Industries), Hyunyoung Kim, *Toshimitsu Kamata, Kazushige Kasai

C142 Correlations of Evaporation Heat Transfer of $CO_2$-PAG Oil Mixtures,
Lei Gao (Fukuoka Univ.), *Yukio Matsusaka, Madoka Sato, Tomohiro Honda

C143 Measurements of Solubility and Density of $CO_2$-Oil Mixtures in a $CO_2$ Heat Pump System, Lei Gao (Fukuoka Univ.),
*Madoka Sato, Yukio Matsusaka, Tomohiro Honda, Ryusuke Takigawa (CHINO), Takao Shimizu

C144 Real-Time Measurement of Oil Circulation Ratio in $CO_2$ Heat Pump System using Optical Method (Study of the measurement wavelength and the visual vessel part),
*Ryusuke Takigawa (CHINO), Takao Shimizu, Yukio Matsusaka (Fukuoka Univ.), Lei Gao, Tomohiro Honda

Organized Session OS-10

Next Generation Refrigeration System
Organizers: Hiroo Nakamura (Waseda Univ.), Fumio Matsuoka (The Univ. of Tokyo)

16:30～17:50 OS-10(1) [Chairperson : Fumio Matsuoka (The Univ. of Tokyo)]

C151 Research and Development of Room Temperature Magnetic Refrigerator (Overall plan),
*Naoki Hirano (Chubu Electric Power), Shigeo Nagaya, Tetsuji Okamura (Tokyo Institute of Technology), Tsuyoshi Kawanami (Kobe Univ.), Hirofumi Wada (Kyushu Univ.)

C152 Study on Temperature-Span Extension for Room Temperature Magnetic Refrigerator,
*Mitsuru Saimaru (Tokyo Institute of Technology), Naoto Oyama, Tetsuji Okamura, Naoki Hirao (Chubu Electric Power), Shigeo Nagaya

C153 Effect of Operation Sequence on Cooling Performance of AMR Refrigerator,
*Masaki Miyachi (Kobe Univ.), Tsuyoshi Kawanami, Naoya Shiraishi, Shigeki Hirano (Hokkaido IRI), Shigeki Hirasawa (Kobe Univ.), Naoki Hirano (Chubu Electric Power), Shigeo Nagaya

C154 Study on Simulation Model for Cooling Performance Estimation of Room Temperature Magnetic Refrigerator,
*Tsuyoshi Kawanami (Kobe Univ.), Ko Nakamura (Hokkaido Univ.), Shigeki Hirano (Hokkaido IRI), Masahiro Ikegawa (Hokkaido Univ.), Koji Fumoto (Kushiro National College of Technology)

## Room D ＜October 20 (Monday) ＞

General Session GS

9：30～10：50 GS(1) (Air-Conditioning and Refrigeration System) [Chairperson : Masanori Kando (Mayekawa MFG.)]

D111 A study on Energy Saving of Shop by Operational Change of Air Conditioning System,
*Hiroshi Nakayama (Chubu Electric Power), Choyu Watanabe, Ichiro Sakuraba, Katsuaki Nagamatsu, Yoichi Miyaoka, Eiichiro Ohashi (Nagoya Univ.), Masafumi Hirota (Mie Univ.)

D112 Study on Energy Saving of Air-Conditioners in Mass Merchandisers,
*Ei-ichiro Ohashi (Nagoya Univ.), Choyu Watanabe (Chubu Electric Power), Katsuaki Nagamatsu, Hiroshi Nakayama, Yoichi Miyaoka, Masafumi Hirota (Mie Univ.)

D113 Development of New Air-Cooled Heat Pump Chiller 'Compact Cube',
*Takuya Ito (Mitsubishi Electric), Yasushi Okoshi, Yohei Kato, Yasutaka Ochiai, Hiroshi Yamaguchi, Kosuke Tanaka, yoshihiro uji (Kansai Electric Power), Hiroshi Nakayama (Chubu Electric Power),

D114 Research on Upgrade of Operation in Vending Machine for Beverage (Development of Vending Machine Best Available Allocation

Supporting System),
*Keiichiro Matsuo (Waseda Univ.), Katsuya Nagata, Hiroshi Onoda, Shinji Yamashita, Toshio Hosoda

11:10～12:10 GS(2) (Numerical System Analysis) [Chairperson : Masafumi Hirota (Mie Univ.)]

D121 Development of General-Purpose Thermal System Analysis (5th report: Start-up and shut down analysis of compression type refrigerator), *Keisuke Ohno (Waseda Univ.), Kiyoshi Saito, Hiroo Nakamura

D122 Development of General-Purpose Energy System Analysis Software -ENEGY FLOW +M- (1st report: Static analysis of compression type refrigerator), *Keisuke Ohno (Waseda Univ.), Kiyoshi Saito, Hideaki Nakamura (Asankhya)

D123 Development of General-Purpose Energy System Analysis Software -ENEGY FLOW +M- (2nd report: Static analysis of desiccant air-conditioning system), *Masahiro Hiramatsu (Waseda Univ.), Kiyoshi Saito, Hideaki Nakamura (Asankhya)

Organized Session OS-3

Advanced Technology for Food Refrigeration and Cryopreservation
Organizers: Toshitaka Uchino (Kyushu Univ.), Ken-ichi Kudoh (The Univ. of Tokyo)

13:10～14:30 OS-3(1) [Chairperson : Akio Tagawa (Chiba Univ.)]

D131 Concentration of Antifreeze Protein and Temperature in One-Directional Freezing of the Protein Solution, *Yoshimichi Hagiwara (Kyoto Institute of Technology), Ryo Sakurai, Rikiya Nakanishi (Yamaha)

D132 Relationship of Kind of Solute and Ice Crystal's Form in One Dimensional Freeze-Concentration, *Atsushi Watanabe (Tokyo Univ. of Marine Science and Technology),
Osato Miyawaki (Ishikawa Prefectural Univ.), Manabu Watanabe (Tokyo Univ. of Marine Science and Technology), Toru Suzuki

D133 Freezing of Biological Materials around a Cryoprobe,
*Kenji Adachi (Kyushu Univ.), Tomoki Ohwada, Toshiyuki Tanaka, Takeshi Kamimura (Mayekawa MFG.), Satoru Uchida (Kyushu Univ.), Hiroshi Takamatsu

D134 Basic Study on Salt Production from Seawater by Freezing,
*Toshiaki Watanabe (National Fisheries Univ.)

Workshop WS-1

Globalization Presence of Air-Conditioning and Refrigeration Industry
Coordinator: Tadao Tsuji (Daikin Industries)

14:50～17:50 WS-1 [Chairperson : Tadao Tsuji (Daikin Industries)]

D141 Overview of Global Market of Air-Conditioning and Refrigeration in the World,
Tadashi Yoshimura (Daikin Industries)

D142 Activity of Mitsubishi Electric for VRF Market in Europe,
Takeshi Isazawa (Mitsubishi Electric)

D143 Activity of Hitachi Appliance in Taiwan,
Hidefumi Yamazaki (Hitachi Appliances)

D144 Activity of Daikin Investment in China,
Hirohfumi Oumi (Daikin (China) Investment)

D145 Deployment of Refrigeration Technology in Asia,
Seiji Hasegawa (Hasegawa Refrigeration)

D146 Activity of Mayekawa MFG. in Brasil,
Kuniaki Kawamura (Mayekawa MFG.)

D147 Activity of Matsushita Electric Industrial in Southeast Asia,
Hisao Wakabayashi (Matsushita Electric Industrial)

## October 21, 2008 (Tuesday)

Room A ＜October 21 (Tuesday) ＞

International Session IS

9:00～10:20 IS(1) [Chairperson : Atsushi Akisawa (Tokyo Univ. of Agriculture and Technology)]

A211 Study on an Ideal Pressurized based Adsorption Hybrid Refrigeration Cycle,
*Khairul Habib (Kyushu Univ.), Bidyut Saha, Anutosh Chakraborty, Ibrahim El-Sharkawy, Shigeru Koyama

A212 Study on ACF/Methanol based Adsorption Cooling Cycle,
*Mahmoud Hassan (Kyushu Univ.), Ibrahim El-Sharkawy, Bidyut Saha, Shigeru Koyama

A213 Numerical Study of Steam Absorption in Falling Film of LiBr Aqueous Solution with Surfactant,
*Mohammad Ariful Islam (Saga Univ.), Akio Miyara

A214 Design of a Compression/Absorption Heat Pump System using $NH_3/H_2O$ Mixture for High Temperature Generation,
Minsung Kim (Korea Institute of Energy Research), Young-Jin Baik, Seong-Ryong Park, Ho-Sang Ra

General Session GS

10:40～12:00 GS(3) (Adsorption Refrigeration Cycle) [Chairperson : Bidyut Saha (Kyushu Univ.)]

A221 Study of Refrigeration System using HPA－Zeolite,
*Akira Saito (Tokyo Univ. of Agriculture and Technology), Marlinda, AepSaepul Uyun, Takahiko Miyazaki, Yuki Ueda, Atsushi Akisawa

A222 Performance Increase of Mass Recovery Cycle by Optimal Composition of Cycle Time,
*Akito Moriyama (Tokyo Univ. of Agriculture and Technology), Takahiko Miyazaki, Yuki Ueda, Atsushi Akisawa

A223 Simulation Analysis of Double Effect Adsorption Refrigeration Cycle utilizing Condensation Heat,
*Marlinda (Tokyo Univ. of Agriculture and Technology), AepSaepul Uyun, Akira Saito, Takahiko Miyazaki, Yuki Ueda, Atsushi Akisawa

A224 Improvement of the Cooling Performance by the Two-Stage Evaporator Type Adsorption Chiller,
*Takahiko Miyazaki (Tokyo Univ. of Agriculture and Technology), Atsushi Akisawa

13:00～14:00 GS(4) (Adsorption Refrigeration Cycle) [Chairperson : Tsutomu Hirose (Advanced Adsorption Technology)]

A231 Reducing Thermal Conduct Resistance and Heat Transfer Enhancement in Adsorbed Layer,
*Yoshiko Fujiwara (Tokyo Univ. of Agriculture and Technology), Takahiko Miyazaki, Yuki Ueda, Atsusi Akisawa

A232 Experiment on Performance of Adsorption Refrigeration System using Activated Carbon Fiber/Ethanol Pair,
Keishi Kariya (Kyushu Univ.), *Naoya Makimoto, Ken Kuwahara, Shigeru Koyama

A233 Optimization of Fin-Tube Type Adsorber/Desorber Heat Exchanger for ACF/$C_2H_5OH$ Adsorption Refrigeration System,
*Keishi Kariya (Kyushu Univ.), Ken Kuwahara, Shigeru Koyama

International Session IS

14:20～15:20 IS(2) [Chairperson : Hyunyoung Kim (Daikin Industries)]

A241 Flow Boiling Heat Transfer Characteristics of R-410A in Horizontal Smooth Microchannels,
Choi Kwang-Il (Chonnam National Univ.), Ardiyansyah, Pamitran A.S., Oh Jong-Taek, Oh Hoo-Kyu (Pukyong National Univ.)

A242 Study on the Cooling Performance in a Two-Stage Gas Injection $CO_2$ Cycle,
Cho Honghyun (Chosun Univ.), Baek Changhyun (Korea Univ.), Lee Eungchan, Kim Yongchan

A243 Development Fault Detection and Diagnosis Algorithm for Water Chiller of Building Air-Conditioning System,
Chang Young-Soo (Korea Institute of Science and Technology), Han Dong Won (Korea Univ.)

Room B ＜October 21 (Tuesday) ＞

Organized Session OS-1

Technological Development in Heat Exchangers
Organizers: Shigeru Koyama (Kyushu Univ.), Akio Miyara (Saga Univ.), Hideo Mori (Kyushu Univ.)

9:00～10:20 OS-1(3) [Chairperson : Shigeru Koyama (Kyushu Univ.)]

B211 Boiling Heat Transfer of R-290 in Horizontal Small-Diameter Tubes,
*Shizuo Saitoh (The Univ. of Tokyo), Keitarou Hoshika, Chaobin Dang, Eiji Hihara

B212 Two-Phase Pressure Drop of Refrigerant Flowing Vertically Downward in Small Diameter Tubes,
*Kazushi Miyata (Kyushu Univ.), Hideo Mori, Katsumi Ohishi, Yoshinori Hamamoto

B213 Flow Regime and Heat Transfer of Ammonia and HCFC22 while Evaporating inside an Horizontal Internally Spirally Grooved Tube,
*Satoru Momoki (Nagasaki Univ.), Shunichi Nagano, Daisuke Nakagawa, Toru Shigechi

B214 Forced Convective Boiling of Refrigerant HCFC inside a Minitube,
Keiji Murata (Kinki Univ. Technical College), *Keisuke Okamoto, Takuya Miki, Kazuhisa Yabuki, Kouichi Araga

10:40～12:00 OS-1(4) [Chairperson : Satoru Momoki (Nagasaki Univ.)]

B221 Flow Behavior and Distribution of Two-Phase Flow in a Distributor,
Akio Miyara (Saga Univ.), Koutaro Tsubaki, *Masaharu Oshima, Shouta Higashikura, Ryuuji Kitano (Toshiba Carrier)

B222 Distribution characteristics of two-phase gas-liquid flow in multipass tube (Discussion on T-junction and multipass tube concerning on the phase separation characteristics),
Masafumi Katsuta (Waseda Univ.), Manabu Watanabe (Tokyo Univ. of Marine Science and Technology), Daisuke Nomura (Waseda Univ.), *Satoru Tanaka, Chihiro Sueyosi (Tokyo Univ. of Marine Science and Technology)

B223 Gas-Liquid Distribution in Upward Multi-Pass Channels,
*Ryota Isobe (Nagoya Univ.), Masafumi Hirota (Mie Univ.), Yasuhiro Mizuno (DENSO), Ryo Hachisuka (Mitsubishi Motors)

B224 Study of Compact Gas-Liquid Separator using Surface Tension (A series of capacity of compact gas-liquid separator),
*Hiroshi Iwata (Nichirei Industries), Kazutaka Watarai, Testuya Komori, Naoki Shikazono (The Univ. of Tokyo)

Seminar on compressor technology SN-1

Coordinators: Kenji Tojo (Hitachi Appliances), Mitsuhiro Fukuta (Shizuoka Univ.)

13:00～15:00 SN-1 [Chairperson : Kenji Tojo (Hitachi Appliances)]

B231 Report on 2008 Purdue Conferences,
*Hirofumi Yoshida (Matsushita Electric Industrial)

B232 Single-Stage Rotary Compressor for Natural Refrigerant $CO_2$,
*Hideaki Maeyama (Mitsubishi Electric), Naotaka Hattori (Mitsubishi Electric Engineering), Hideto Nakao (Mitsubishi Electric), Tomoo Takayama, Eiji Sakamoto

B233 Introduction of Reefer Unit with 3D Scroll Compressor,
Makoto Fujitani (Mitsubishi Heavy Industries), Masakazu Kai, Takashi Tanaka, *Takahide Itoh, Yasushi Watanabe

B234 The History of Screw Compressor,
*Sigekazu Nozawa (Hitachi Appliances), Masayuki Uranishi

Room C ＜October 21 (Tuesday) ＞

Organized Session OS-8

Heat Island and Refrigerating and Air-Conditioning System

Organizers: Akira Kondo (Osaka Univ.), Yoshiyuki Shimoda (Osaka Univ.)

9:10～10:20 OS-8(1) [Chairperson : Atsumasa Yoshida (Osaka Prefecture Univ.)]

C211 [Keynote Speech] (30 minutes)
Urban Heat Island and Urban Environmental Management,
*Yasunobu Ashie (Building Research Institute)

C212 Investigating the Contribution of Anthropogenic Heat Emission to Urban Heat Island Effect using WRF-UCM Model,
*Kundan LalShrestha (Osaka Univ.), Akira Kondo, Chikara Maeda, Akikazu Kaga, Yoshio Inoue

C213 Improvement of the Thermal Environment around the Outdoor Units of Air Conditioning System and Their Effects,
*Daisuke Narumi (Osaka Univ.), Kitoshi Tanaka (Takenaka), Yoshiyuki Shimoda (Osaka Univ.), Minoru Mizuno

10:40～12:00 OS-8(2) [Chairperson : Yoshiyuki Shimoda (Osaka Univ.)]

C221 Evaluation of Gas Engine-Driven Heat Pump Systems Equipped with Electric Generator,
*Tatsuya Ikki (The Univ. of Tokyo), Eiji Hihara

C222 Study on Moderating Effect of Urban Heat Island using Wakkanai Siliceous Shale,
*Katsunori Nagano (Hokkaido Univ.), Wanphen Surakha, Makoto Nakamura, Junya Togawa (Wakkanai Green Factory), Shigeo Yoshida (Natural Material Institute), Rikuo Ishida (Dow Kakoh K.K.)

C223 Thermal Environment in Sakai and Surrounding Area,
*Atsumasa Yoshida (Osaka Prefecture Univ.), Ryusuke Yasuda, Shinichi Kinoshita

C224 Study on Exhaust Heat Load Reduction using Thermal Energy of River Water,
*Kazuhiro Nakazawa (Kansai Electric Power), Kazunobu Sagara (Osaka Univ.), Yoshiyuki Shimoda, Hideharu Niwa (Nikken Sekkei Research Institute), Koichi Yoshinari (Kanden Energy Development), Hisataka Kitora (Kansai Electric Power)

13:00～14:20 OS-8(3) [Chairperson : Akira Kondo (Osaka Univ.)]

C231 Air Conditioning System in Urban Area concerning Heat Island Problem (7th Report: A simple measuring method of the actual performance of room air conditioner by neural network analysis),
*Naruaki Shinomiya (Osaka City Univ.), Nobuya Nishimura, Hiroyuki Iyota, Satoru Kurata

C232 Development of a Simple Measuring Method of the Actual Performance of Room Air Conditioner,
*Satoru Kurata (Osaka City Univ.), Nobuya Nishimura, HIroyuki Iyota, Naruaki Shinomiya

C233 Air-Conditioning System with "Humidity" and "Temperature" Individual Control that Uses Highly Effective Compact Desiccant System "DESICA",
*Nobuki Matsui (Daikin Industries), Shuji Ikegami

C234 Study on Mitigation of Outdoor Thermal Environment by the Unit of Heat Pump Water Supply,
*Hideki Takebayashi (Kobe Univ.), Masakazu Moriyama, Makiko Kasahara (Nikken Sekkei)

Workshop WS-3

Proceeding of service maintenance

14:40～15:10 WS-2

C241 Sectional Committee Activity Report and Brief Overview,
Kenichiro Watanabe (Energy Advance)

C242 Definition and Problems of “Service Maintenance”,
Akira Takakusagi (Toyo Univ.)

Room D ＜October 21 (Tuesday) ＞

Panel Discussion PD-1

Innovations in Cold Chain Serving the Food Safety and the Quality of Food based on Scientific Evidence

Coordinator: Ken-ichi Kudoh (The Univ. of Tokyo)

9:20～11:40 PD-1 [Chairperson : Ken-ichi Kudoh (The Univ. of Tokyo)]

Opening Speech,
Toru Suzuki (Tokyo Univ. of Marine Science and Technology)

D211 Environmental Pollution and Food Contamination with Special References to Fishery Products,
Shinichiro Kawai (Kobe College)

D212 Safety Quality Control from Production to Distribution Activity,
Kazuo Hisa (Tokyo Univ. of Marine Science and Technology)

D213 Quality Control of Frozen Foods,

Hiroki Yamamoto (Japan Frozen Food Association)
D214 The Safety Evaluation of Foods that Japanese Consumers Demand,
Satoru Kitai (The Consumer Economics Research Institute)
D215 Progress of Cold Chain from Early Stage of Admonition of Science and Technology Agency in Japan (1965) to Recent Cold Chain Nets,
Masato Shiraishi (The Univ. of Tokyo)
Panel Discussion
Moderator: Masato Shiraishi (The Univ. of Tokyo)

Seminar for Refrigeration Engineer SN-2
Freezing Mechanism of Food Products and Leading-edge Refrigeration Systems
Coordinators: Choiku Yoshikawa (Mayekawa MFG.), Akio Soneda (Ryourei Service)
13:00～15:10 SN-2 [Chairperson : Akio Soneda (Ryourei Service), Choiku Yoshikawa (Mayekawa MFG.)]
D221 [Keynote Speech] (40 minutes)
Science of Food Freezing,
Norikazu Maeno (Hokkaido Univ.)
D222 Visualization of Freezing and Thawing Process of Foods by MRI,
*Rei Ikeuchi (Mayekawa MFG.), Nobuaki Ishida (Ishikawa Prefectural Univ.), Shigehiro Naito (National Food Research Institute), Tomoyuki Haishi (MR Technology), Kou Ishikura (Mayekawa MFG.), Naoya Hiruma, Satoshi Shinozaki
D223 Measuring Technique for Three-Dimensional Structure of Ice Crystals in Frozen Bio Materials,
Gab-Soo Do(Nihon Univ.)
D224 Technology Trend of the Latest Non-Freon Refrigeration Systems,
Akito Machida (Mayekawa MFG.)

Room E ＜October 21 (Tuesday) ＞

Organized Session OS-6
Technologies for $CO_2$ Heat Pump Components and Systems
Organizers: Toru Takahata (Kansai Electric Power), Ryohei Yokoyama (Osaka Prefecture Univ.)
9:20～10:20 OS-6(3) [Chairperson : Kazuaki Shikichi (SANYO Electric)]
E211 Improvement of COP of Hot Water Supplier with $CO_2$ as Refrigerant,
*Motoaki Utamura (Tokyo Institute of Technology), Hiroshige Kikura
E212 Analysis of Temperature Distribution in a Storage Tank of a $CO_2$ Heat Pump Water Heating System (Analysis of extraction of medium temperature water by two hot water supply modes),
Tetsuya Wakui (Osaka Prefecture Univ.), Ryohei Yokoyama, *Junya Kamakari, Yasuhiro Kohno
E213 Performance Enhancement of a $CO_2$ Heat Pump Water Heating System by Extracting Water With Middle Temperatures (Performance trade-off analysis using a standardized hot water demand),
*Ryohei Yokoyama (Osaka Prefecture Univ.), Tetsuya Wakui, Kazuhisa Takemura (Kansai Electric Power)

10:40～12:00 OS-6(4) [Chairperson : Toru Takahata (Kansai Electric Power)]
E221 The Study of Instantaneous Heat Pump Water Heaters,
*Kazuaki Shikichi (SANYO Electric), Yoshinori Toya, Norio Sawada
E222 Development of the Heat Pump Water Heater using $CO_2$ for Commercial Use,
*Tomoyoshi Obayashi (Mitsubishi Electric), Toshiro Abe, Shin Kurita, Yohei Kato, Takeshi Sugimoto
E223 Development of Industrial Drier System using $CO_2$ Heat Pump,
*Kimitaka Kadowaki (Mayekawa MFG.), Kousaku Nishida, shinji Shato (Kansai Electric Power), Kenji Ikoma
E224 Development and Case Study of Hybrid Hot-Water-Supply System (High efficiency hot-water-supply system for commercial use by $CO_2$ heat pump and hot-water-boiler),
*Toshihiko Tanaka (NTEC)

Organized Session OS-9
Thermophysical Properties of Fluorocarbon and Natural Refrigerants and Their Application Systems
Organizers: Noboru Kagawa (National Defense Academy), Yohei Kayukawa (AIST), Shigeru Koyama (Kyushu Univ.), Hiroyuki Miyamoto (Toyama Prefectural Univ.)
13:00～14:40 OS-9 [Chairperson : Yohei Kayukawa (AIST)]
E231 Modeling for the Vapor-Liquid Equilibrium of $CO_2$+DME Mixtures using Helmholtz Energy Equations of State, *Ryo Akasaka (Kyushu Lutheran College)
E232 Measurement of Isobaric Heat Capacity for Gaseous Carbon Dioxide,
*Noboru Kagawa (National Defense Academy), Atsushi Matsuguchi, Koichi Watanabe (Keio Univ.)
E233 Measurement of the Critical Parameters for Ammonia/water Systems in High Temperatures and Pressures,
Akinori Sakabe (Keio Univ.), *Hiroyuki Miyamoto (Toyama Prefectural Univ.), Masahiko Uematsu (Keio Univ.)
E234 Experiments on Performance Evaluation of a Heat Pump System uing $CO_2$/DME Mixture,
Jun Xue (Kyushu Univ.), *Nobuo Takata, Atsushi Ochiai, Ken Kuwahara, Shigeru Koyama, Akio Miyara (Saga Univ.)
E235 Development of an Industrial Air Conditioning Heat Pump uing Mixed HC Refrigerants,
*Masashi Kato (Mayekawa MFG.), Nelson Mugabi, Mizuo Kudo, Keizo Kobayashi

Room F ＜October 21 (Tuesday) ＞
Memorial Lecture for the 100th anniversary of IIR
15:30～16:30 [Chairpersons : Noboru Kagawa (National Defense Academy), Naoki Tanaka (Mitsubishi Electric)]
SL-2 What I Have Learnt from My Involvement in the IIR Activities for Three Decades

Koichi Watanabe (Emeritus Professor of Keio Univ.)

Special Lecture

16:30～17:30 [Chairperson : Seiji Hasegawa (Hasegawa Refrigeration)]

SL-1 Activity of Air-Conditioner Maker for Environmental Technology and Globalization
Yukiyoshi Okano (President and COO of Daikin Industries, Ltd.)

## October 22, 2008 (Wednesday)

Room A ＜October 22 (Wednesday) ＞

General Session GS

10:40～11:40 GS(5) (Stirling Refrigerator, J-T Refrigerator) [Chairperson : Noboru Kagawa (National Defense Academy)]

A311 Improved Performance of a Stirling Cooler by using the Cold Section with Pin Fins,
*Kohsuke Watanabe (SHARP), Ryoh Inoshiri, Hiroyuki Katayama

A312 Reverse Cycle Operation of a Water-Type Stirling Engine (Possibility of a new-type Stirling refrigerator),
Yoshiyuki Yamaguchi (Univ. of Hyogo), Seiji Hidaka (MAZDA Motor), *Hibiki Kamei (Univ. of Hyogo)

A313 Study of Joule-Thomson Micro-Cooler,
*Atsushi Tanabe (Kyushu Univ.), Masashi Kuwamoto, Hiromi Kubota, Masamichi Kohno, Yasuyuki Takata, Hiroshi Itoh (Olympus), Shinji Yasunaga

Organized Session OS-10

Next Generation Refrigeration System
Organizers: Hiroo Nakamura (Waseda Univ.), Fumio Matsuoka (The Univ. of Tokyo)

13:40～15:00 OS-10(2) [Chairperson : Hiroo Nakamura (Waseda Univ.)]

A321 Development of the Heat Pump Hot Water Supply System with the Fluorocarbon Refrigerant,
*Satoshi Akagi (Mitsubishi Electric), Kosuke Tanaka, Koji Yamashita, Hironori Yabuuchi, Junichi Kameyama

A322 Development of Refrigerant Gas Injection to Increase Efficiency,
*Satoshi Niigawa (Toho Gas), Hirotada Kikuzawa, Keiji Taniguchi

A323 Thermal Transport in a Closed Loop Thermosiphon using $CO_2$ near the Critical Point,
*Kota Yamasawa (Kansai Univ.), Isao Ishihara, Hiroaki Kaneko, Naritaka Yakura, Ryosuke Matsumoto

A324 Experimental Study of Heat Transfer Characteristics of Pool Boiling using Nanofluids,
Hiroki Sugaya (The Univ. of Tokyo), *Tatsushi Shimada, Shizuo Saitou, Chobin Dang, Eiji Hihara

Room B ＜October 22 (Wednesday) ＞

Organized Session OS-2

Present Status and Future Development of Compressors
Coordinators: Kenji Tojo (Hitachi Appliances), Mitsuhiro Fukuta (Shizuoka Univ.)

8:50～10:20 OS-2(1) [Chairperson : Kazuhiro Furusho (Daikin Industries)]

B311 [Keynote Speech] (30 minutes
Recent Approach of Noise Reduction for Air-Conditioner,
*Kannon Tatsumi (Mitsubishi Heavy Industries), Itoh Takahide

B312 An Experimental Study of Lubrication Mechanism at Thrust Slide-Bearing of Scroll Compressors (Effect of thickness and inside form of thrust plate),
Noriaki Ishii (Osaka Electro-Communication Univ.), Tatsuya Oku (Mayekawa MFG.), Keiko Anami (Ashikaga Institute of Technology), *Takuma Tsuji (Osaka Electro-Communication Univ.), Kiyoshi Sawai (Matsushita Electric Industrial), Takashi Morimoto, Noboru Iida

B313 Investigation on Fluid Phenomenon of Air-Conditioning Compressors using Fluid-Structure Coupling Analysis,
*Kazutaka Hori (Daikin Industries)

B314 Basic Study of Ammonia Gas Leakage Flow through Small Clearances in Scroll Compressors,
*Tatsuya Oku (Mayekawa MFG.), Noriaki Ishii (Osaka Electro-Communication Univ.), Keiko Anami (Ashikaga Institute of Technology), Takuma Tsuji (Osaka Electro-Communication Univ.), Akira Matsui (Mayekawa MFG.), Kiyoshi Sawai (Matsushita Electric Industrial), Harumi Sato (Mayekawa MFG.), Naoya Yoshihiro,

10:40～12:00 OS-2(2) [Chairperson : Mitsuhiro Fukuta (Shizuoka Univ.)]

B321 Development of a High Efficient 2-Cylinder Rotary Compressor for the Annual Performance Factor,
*Akinori Ikeda (TOSHIBA Carrier), Shoichiro Kitaichi, Takuya Hirayama, Takeshi Tominaga

B322 Development of High Efficiency Scroll Compressor with MS Motor,
*Masashi Miyake (Hitachi Appliances), Masaru Ohtahara, Kenji Tojo, Tomio Yosikawa, Keiji Tanaka, Baiying Huang, Satoshi Kikuchi (Hitachi)

B323 Development of the New Capacity Control Technique for the High Efficiency Scroll Compressor,
*Kei Fujii (Daikin Industries), Hiroshi Kitaura, Shuichi Jomura, Kazuhiko Matsukawa, Masahiro Yamada, Nobuo Takahashi

B324 Performance of a Double-Sided Scroll Compressor for $CO_2$ Refrigerant,
*Mihoko Shimoji (Mitsubishi Electric), Fumihiko Ishizono, Masaaki Sugawa, Toshiyuki Nakamura (Mitsubishi Electric Engineering), Tatsuya Sasaki (Mitsubishi Electric), Masayuki Kakuda, Shin Sekiya, Toshihide Kouda,

Organized Session OS-1

Technological Development in Heat Exchangers
Organizers: Shigeru Koyama (Kyushu Univ.), Akio Miyara (Saga Univ.), Hideo Mori (Kyushu Univ.)

13:00～14:20 OS-1(7) [Chairperson : Norihiro Inoue (Tokyo Univ. of Marine Science and Technology)]

B331 Effect of Ammonia/Water Mixture Composition on the Local Heat Transfer in Forced Convective Boiling on the Vertical Flat Plate,
*Hirofumi Arima (Saga Univ.), Akio Okamoto, Yasuyuki Yasuyuki

B332 Effect of Flow Direction on Heat Transfer and Flow Characteristics in a Plate-Type Evaporator,
*Toshiya Baba (Kobe Univ.), Hitoshi Asano, Shinsuke Harada, Nobuyuki Takenaka, Ko-ichi Mochiki (Musashi Institute of Technology)

B333 The Enhanced Performance of Refrigeration Cycle with an Ejector for Recirculation (Evaporative heat transfer characteristics of plate-type evaporator),
*Tatsunori Man'o (Takasago Thermal Engineering), Masayuki Tanino, Takashi Okazaki (Mitsubishi Electric), Shigeru Koyama (Kyushu Univ.)

B334 Heat Transfer and Pressure Drop Characteristics of Serrated Fin Placed Perpendicularly to Fluid Flow Applied into Plate Type $CO_2$ Gas Cooler,
*Norio Sawada (SANYO Electric), Kazuaki Shikichi

Workshop WS-2

Present Status and Development in Heat Exchanger
Coordinators: Hitoshi Asano (Kobe Univ.), Kousaku Nishida (Mayekawa MFG.)

14:40～18:00 WS-2 [Chairpersons : Hitoshi Asano (Kobe Univ.), Kousaku Nishida (Mayekawa MFG.)]

B341 Activity of the Research Project on Advanced Heat Transfer Technology for Future Refrigerants Including $CO_2$,
Akio Miyara (Saga Univ.)

B342 Recent Trends of Overseas R&D on Heat Exchange Technology (From the viewpoint of the activities of IEA HP Annex 33),
Shigeru Koyama (Kyushu Univ.)

B343 Creation of Capillary Tube Selection Charts for HFC Refrigerants,
Lei Gao (Fukuoka Univ.)

B344 Optimizing the Fin-and-Tube Heat Exchangers for Maximum Heat Transfer with a Genetic Algorithm,
*Gaiken Oh (Fujitsu General), Guoliang Ding (Shanghai Jiao Tong Univ.), Zhigang Wu, Masaharu Fukaya (Fujitsu General)

B345 Design of Compact Heat Exchanger for Air Conditioner Indoor Unit,
*Akira Ishibashi (Mitsubishi Electric), Kunihiko Kaga, Takuma Mukouyama, Takahide Tadokoro

B346 A Sewage Source Heat Pump System,
*Kazutoshi Ito (Mayekawa MFG.), Yoshiki Konno, Yoshihito Nakashima

B347 An Experimental Results of Louvered Fin Performance under the Condition of Humid Air Applied into a Parallel Flow Type $CO_2$ Evaporator,
Norio Sawada (SANYO Electric)

B348 Enhancement Technology of Gas-Cooler for $CO_2$ Heat Pump Sanitary Water Heater Unit,
*Kazuhiko Machida (Matsushita Electric Industrial), Takumi Kida, Shoichi Yokoyama

B349 Steps of Energy Saving Technology of a $CO_2$ Heat Pump Water Heater,
*Shigeharu Taira (Daikin Industries), Hiroshi Nakayama, Eiji Kumakura, Mitsuharu Numata, Katsumi Sakitani

Room C ＜October 22 (Wednesday) ＞

Organized Session OS-1

Technological Development in Heat Exchangers
Organizers: Shigeru Koyama (Kyushu Univ.), Akio Miyara (Saga Univ.), Hideo Mori (Kyushu Univ.)

9:00～10:20 OS-1(5) [Chairperson : Lei Gao(Fukuoka Univ.)]

C311 Visualization of Condensate Flow on Horizontal Two Dimensional Finned Tube,
*Hiroyuki Takahashi (Kobelco & Materials Copper Tube), Shigeru Koyama (Kyushu Univ.)

C312 Boiling Heat Transfer Characteristics in Narrow Channel with Heat Transfer Enhancement Surface Coated by Thermal Spraying (Effect of orientation of heat transfer surface),
*Ryohei Tomita (Kobe Univ.), Hitoshi Asano, Masashi Inoue, Nobuyuki Takenaka

C313 Heat Transfer in Single Phase Turbulent Flow inside Internally Helical Horizontal Grooved Tubes,
*Aryo Aono (Tokyo Univ. of Marine Science and Technology), Norihiro Inoue, Masao Goto, Naoe Sasaki (Sumitomo Light Metal Industries)

C314 Evaluation of Prediction Method for Pressure Drop and Condensation Heat Transfer Coefficient inside Internally Helical-Grooved Horizontal Tubes,
*Norihiro Inoue (Tokyo Univ. of Marine Science and Technology), Aryo Aono, Masao Goto, Masaaki Sato (Toshiba Carrier Corporation), Akihiro Kiyotani (Sumitomo Light Metal Industries), Naoe Sasaki

10:40～12:00 OS-1(6) [Chairperson : Ken Kuwahara (Kyushu Univ.)]

C321 Heat Transfer and Pressure Drop Characteristics on Zigzag Arranged Slit Fin,
*Takuya Matsuda (Mitsubishi Electric), Akira Ishibashi, Sangmu Lee, Hirokuni Shiba

C322 The Effects of Contact Condition between Tube and Fin on Heat Exchanger Performance,
Koutaro Tsubaki (Saga Univ.), *Yoshimi Matsuo, Akio Miyara

C323 A Study of Noise Reduction Effect on Blade Shape of Cross Flow Fan,
*Hirnobu Teraoka (Daikin Industries), Akira Komatsu, Tadashi Ohnishi (AAF International)

C324 Experimental Study on Heat Transfer Characteristic of Geothermal Heat Exchanger,
*Shuntarou Inoue (Saga Univ.), Koutaro Tsubaki, Akio Miyara, Tomoyuki Narata (YBM), Tadamasa Inatomi

Organized Session OS-7

Absorption Refrigeration and Heat Pump Cycle
Organizers: Hiroshi Tsuruoka (Osaka Gas), Nobuya Nishimura (Osaka City Univ.)

13:00～14:40 OS-7(1) [Chairperson : Masahiro Oka (Tokyo Gas)]

C331 Hyper-Efficiency Gas Heat-Pump Air-Conditioner (Development of exhaust heat driven air-cooled absorption refrigerator),
*Ryuichiro Kawakami (Osaka Gas), Kazuya Imai, Hidekazu Nakajima

C332 A Study on the Performance of Air-Cooled Subcooled Adiabatic Absorbers,
Yosuke Imai (The Univ. of Tokyo), Toshinori Ohashi, *Hiroaki Okamoto, Eiji Hihara, Ryuichiro Kwakami (Osaka Gas)

C333 Experimental Study on Gas Engine-Driven Hybrid Air Conditioning System,
*Tsutomu Wakabayashi (Osaka Gas), Hiroumi Fujimoto

C334 Development of a Low Temperature Waste Heat Driven Compact Absorption Refrigerator for Home Cogeneration (Investigation on a high performance compact absorption refrigerator),
*Tatsuya Fukuda (Osaka City Univ.), Nobuya Nishimura, HIroyuki Iyota, Norio Uedono (Osaka Gas)

C335 Hydrogen Fueled PEFC CHP for Multi-Unit Housing Complex,
*Norio Uedono (Osaka Gas), Kazuyuki Matsuzawa (Toshiba Fuel Cell Power Systems), Miyamoto Shin (Chofu Seisakusho)

15:00～17:00 OS-7(2) [Chairperson : Hiroshi Tsuruoka (Osaka Gas)]

C341 Performance Analysis on Compact Absorption Heat Pump Water Heater,
*Keiichi Kitajima (The Univ. of Tokyo), Hiroaki Okamoto, Eiji Hihara, Hiroshi Kojima (Tokyo Gas), Masahiro Oka, Tohru Ichikawa

C342 Research and Development of an Energy-Saving System of the Air Conditioning which Utilized Solar Heat,
Katsuyuki Tsuno (SANYO Electric)

C343 Development of the Steam Driven Absorption Chiller with Auxiliary Waste Heat Recovery,
*Keisuke Kajiyama (Tokyo Gas), Ritsu Homma, Youihi Fujita (Hitachi Appliance), Masayuki Shimamura

C344 Expander Incorporated Absorption Heat Pump (Refrigeration/power cogeneration by absorption heat pump),
*Minoru Morita (Morita Consultant), Norihumi Kunugi (Kunugi Consultant Office), Jun Hidari (Tsukishima Kankyo Engineering)

C345 Experimental Investigation of Cooling and Heating Transportation by Solution Transportation Type Absorption Heat Pump,
*Keita Yamamuro (Tokyo Univ. of Agriculture and Technology), Takahiko Miyazaki, Yuki Ueda, Atsushi Akisawa

C346 Field Measurement of Co-generation Package System Consist of High Efficiency Gas Engine and Gas-Fired Absorption Chiller-Heater with Auxiliary Generator Driven by Exhaust Gas of the Gas Engine,
*Ritsu Homma (Tokyo Gas), Masahiro Oka

Room D ＜October 22 (Wednesday) ＞

Organized Session OS-3

Advanced Technology for Food Refrigeration and Cryopreservation
Organizers: Toshitaka Uchino (Kyushu Univ.), Ken-ichi Kudoh (The Univ. of Tokyo)

9:00～10:20 OS-3(2) [Chairperson : Yutaka Fukuda (National Fisheries Univ.)]

D311 Development of Energizing Thawing Technology of Meat and Meat Products,
*kei Tao (Nihon Univ.), Munetoshi Tada (Izumi Food Machinery), Isao Suzuki (Nihon Univ.)

D312 Freezing and Storage Survey of Walleye Pollock Ovary (The effect of the freezing and storage condition on walleye pollock ovary),
*Yu Uchiumi (Tokyo Univ. of Marine Science and Technology), Manabu Watanabe, Toru Suzuki

D313 Prediction of Quality Change during Thawing of Frozen Tuna Meat by Numerical Calculation,
*Natsumi Murakami (Tokyo Univ. of Marine Science and Technology), Toru Suzuki, Manabu Watanabe

D314 Development of Freeze and Thaw Concentration Equipment,
*Naonori Kuroda (Shin Nippon Air Technologies), Naoki Matsumura (Okawara MFG.)

10:40～12:00 OS-3(3) [Chairperson : Fumihiko Tanaka (Kyushu Univ.)]

D321 Application of Electrostatics Atomization in Vegetable Room,
*Toyoshi Kamisako (Matsushita Electric Industrial), Yoshihiro Ueda, Kazuya Nakanishi, Kenichi Kakita, Takayuki Nakada (Matsushita Electric Works)

D322 Prevention of Lipid Oxidation in Roasted and Ground Soybean with Oxygen Absorber during Storage,
*Fumio Takenaga (Nihon Univ.), Yasuyoshi Torii, Shin Abe, Shingo Itoh

D323 Freshness Evaluation Method for Fruits and Vegetables based on Lipid Peroxidation Levels,
*Kohei Nakano (Gifu Univ.)

D324 Mechanism of Preservation Technique of Agricultural Product using Structured Water by Hydrophobic Gas,
*Hiroko Ando (The Univ. of Tokyo), Toru Suzuki (Tokyo Univ. of Marine Science and Technology), Yoshinori Kawagoe (The Univ. of Tokyo), Yoshio Makino, Seiichi Oshita

13:00～14:20 OS-3(4) [Chairperson : Toshitaka Uchino (Kyushu Univ.)]

D331 Research on Food Preservation New Feature “Vacuum Chilled”,
*Atsuko Funayama (Hitachi Appliances), Yuko Akagi, Kuninari Araki

D332 Development of New Processing for Livings and Foods with Refrigerating,
*Hirotoshi Suzuki (The Univ. of Tokyo), Ken-ichi Kudoh, Toshiro Higuchi

D333 Application of Dehydro-Freezing and Partial-Freezing to Storage for Fruit-and-Vegetables,
*Jun Shizuka (Chiba Univ.), Yukiharu Ogawa, Akio Tagawa

D334 A Novel Freezing Method using Preliminary Microwave Drying,
*Kazuaki Ueda (Kyushu Institute of Technology), Nurkholis Hamidi, Takaharu Tsuruta

14:40～16:00 OS-3(5) [Chairperson : Toru Suzuki (Tokyo Univ. of Marine Science and Technology)]

D341 Cryostability of Fish Meat Remarkably Decreases by Water-Washing Treatment,
Chunhong Yuan (Hokkaido Univ.), Kefeng Yu, Shunsheng Chen (Shanghai Ocean Univ.), Xichang Wang, Yudong Cheng, Kunihiko Konno (Hokkaido Univ.), *Yutaka Fukuda (National Fisheries Univ.)

D342 Effect of Partially Thawing and Subsequently Refreezing on Expressed Drip of Frozen Minke Whale Meat,
*Yuitirou Takemasa (National Fisheries Univ.), Mitsuhito Ogihara (Kyodo Senpaku Kaisha), Hitoshi Funahashi, Ritsuko Wada (National Fisheries Univ.), Hideto Hukushima, Yutaka Fukuda

D343 Effect of Frozen Holding Temperature on Thaw-Rigor of Frozen Bigeye Tuna Meat,
Hideto Fukushima (National Fisheries Univ.), Yukinobu Abe, *Nobushige Akagi, Ryouichi Hanzawa (Mayekawa MFG.), Kaname Matsumoto (Shinyo Suisan), Ritsuko Wada (National Fisheries Univ.), Yutaka Fukuda

D344 Influence of Frozen Storage Temperature on Formaldehyde Formation of Lizardfish Meat,
*Shinnya Kurokawa (National Fisheries Univ.), Hideto Fukushima, Ritsuko Wada, Yoshiyuki Saitou (General Agriculture and Forestry Research Center Yamaguchi Prefecture), Yutaka Fukuda (National Fisheries Univ.)

16:20～17:40 OS-3(6) [Chairperson : Ken-ichi Kudoh (The Univ. of Tokyo)]

D351 Development of the Visualization Technique of the Moisture Distribution in Starch Food,
*Rui Hoshino (The Univ. of Tokyo), Yasuyuki Sagara, Tetsuya Araki, Gabsoo Do (Nihon Univ.)

D352 Visualization Technique for Mixed Solution of Water-Ethylene Glycol in Ovarian Tissue,

*Rina Takahashi (Nihon Univ.), Gab-Soo Do, Yeonghwan Bae (Sunchon National Univ., Korea), Kahei Sato (Nihon Univ.), Yasuyuki Sagara (The Univ. of Tokyo)

D353 The Evaluation of Food Additive Effects on Shrimp Properties by NIR Spectral Imaging,
*Takehiro Sugiyama (The Univ. of Tokyo), Mizuki Tsuta (NFRI), Junichi Sugiyama, Tetsuya Araki (The Univ. of Tokyo), Yasuyuki Sagara

D354 Prediction of the Temperature Distribution in a Refrigerated Vehicle Chamber using a CFD Model,
*Yoshihiro Konishi (Kyushu Univ.), Ayumi Inoue (Ajinomoto System Techno), Fumihiko Tanaka (Kyushu Univ.), Toshitaka Uchino, Daiskuke Hamanaka