

Monday, June 7

**[Room Masaru Ibuka Auditorium]
Opening Session (10:00-10:30)**

Keynote Speech 1(10:30-11:30)

Chair: Noboru KAGAWA (National Defense Academy of Japan)

Speaker: Momoki KATAKURA (President of JSRAE)

“The wider deployment of Heat pump and refrigerant management”

A1: Absorption and Adsorption Refrigeration 1 (13:00-14:40)

Chair: Nobuya NISHIMURA (Osaka City University)

A1-016 Study of a two stage air-cooled ammonia-water absorption refrigeration cycle for solar cooling system

Peng Lin, Ruzhu* Wang, Zaizhong Xia, Institute of Refrigeration and Cryogenics, Shanghai Jiao Tong University, China

A1-017 Analytical investigation of a two-stage air-cooled absorber for solar cooling applications

Peng Lin, Ruzhu* Wang, Zaizhong Xia, Institute of Refrigeration and Cryogenics, Shanghai Jiao Tong University, China

A1-023 Application of Ammonia-Water Absorption Cycle to Transfer Cooling and Heating at Ambient Temperature

Atsushi AKISAWA, Takahiko MIYAZAKI, Yuki UEDA, Institute of Symbiotic Science and Technology, Tokyo University of Agriculture and Technology, Japan
Kazumichi ARAKI, Graduate School of Bio-Applications and Systems Engineering, Tokyo University of Agriculture and Technology, Japan
Toshitaka TAKEI, Waseda Research Institute for Science and Engineering, Waseda University, Japan

A1-033 Evaluation and Simulation of a Waste Heat Driven Pressurized Solid-Sorption Chiller

Wai Soong LOH, Kazi Afzalur RAHMAN, Anutosh CHAKRABORTY, Bidyut Baran SAHA, Kim Choon NG†, Department of Mechanical Engineering, Faculty of Engineering, National University of Singapore, Singapore
Won Gee CHUN, Department of Nuclear and Energy Engineering, Cheju National University, Korea

A1-040 The Cycle Time Optimization of a Novel Dual Evaporator Type Three-Bed Adsorption Chiller

Takahiko MIYAZAKI†, Yuki UEDA, Atsushi AKISAWA, Institute of Symbiotic Science and Technology, Tokyo University of Agriculture and Technology, Japan
Masato TAKAKU, Department of Mechanical Systems Engineering, Tokyo University of Agriculture and Technology, Japan

A2: Absorption and Adsorption Refrigeration 2 (15:00-16:20)

Chairs: Atsushi AKISAWA (Tokyo University of Agriculture and Technology)

A2-051 Sorption Rate and Isotherms of Methane on Pitch-Based Activated Carbon using Volumetric Method

Wai Soong LOH, Kazi Afzalur RAHMAN, Bidyut Baran SAHA, Anutosh CHAKRABORTY, Kim Choon NG†, Department of Mechanical Engineering, Faculty of Engineering, National University of Singapore, Singapore
Won Gee CHUN, Department of Nuclear and Energy Engineering, Cheju National University, Korea

A2-054 Experimental investigation on the performance of a waste heat-driven advanced desiccant dehumidifier without moving parts

Aung MYAT, Kim Choon NG†, Hideharu YANAGI, Kyaw THU, Department of Mechanical Engineering, National University of Singapore, Singapore
WonGee CHUN, Department of Nuclear and Energy Engineering, Jeju National University, Korea

A2-101 The effect of oil-droplet on the bubble absorption performance in a binary nanoemulsion

Young-Jin Kim, Jinki Lee, Yong Tae Kang, School of Mechanical and Industrial System Engineering, Kyung Hee University, Korea

A2-137 Development of a Compact Absorption Refrigerator Assisted by Low Temperature Level Heat Sources

Nobuya NISHIMURA, Hiroyuki IYOTA, Department of Mechanical Engineering, Osaka City University, Japan
Tatsuya FUKUDA, Graduate School of Mechanical Engineering, Osaka City University, Japan

[Room 1]

B1: Effective Usage and Saving Energy 1 (13:00-14:20)

Chair: Kuniaki KAWAMURA (Mayekawa MFG. Co., Ltd)

B1-038 Transport Energy Supply System with Heat Utilizing Ejector Automobile Air Conditioner

Dmytro Buyadgie, Olexiy Buyadgie, Igor Vasil'ev, Wilson Ltd. Ukraine
Sergii Nichenko, Vitaliy Sechenyh†, Odessa State Academy of Refrigeration

B1-002 Optimal Environmental Performance of Water-cooled Chiller System with All Variable Speed Configurations

Fu Wing YU, Hong Kong Community College, PolyU, Hong Kong
Kwok Tai CHAN, Department of Building Services Engineering, The Hong Kong Polytechnic University, Hong Kong

B1-007 Using Saturation Temperature Up Gliding to Save Energy for Industrial Makeup Air Reheat

Jin Taung Lin, Jih Hway Lou, Yew Khoy Chuah Department of Energy and

Refrigerating Air-Conditioning Engineering, Taipei National University of
Technology
, Taiwan

**B1-100 Heat Transfer Rate and Efficiency of Thermoelectric Heat Pumps Equipped
with Fins at both Sides**

Jau-Huai Lu, Chi-Hung Lin, Department of Mechanical Engineering National
Chung Hsing University, Taiwan

B2: Effective Usage and Saving Energy 2 (15:00-16:20)

Chair: Yew Khoy Chuah (National Taipei University of Technology)

B2-031 Development of Heat pump Clothes Dryer

Kuei Tien LIN, Kuo Hsiang CHIEN, Energy and Environment Laboratories,
Industrial Technology Research Institute, Taiwan

**B2-032 Refrigerating and Air-Conditioning Technologies in a Smart Energy Network
Type Food Industrial Park**

Yoichi SHIMAZAKI, Social System Engineering, Division of Engineering,
Interdisciplinary Graduate School of Medical and Engineering, University of
Yamanashi, Japan

**B2-060 Study on the Optimization of Ground Water-Source Heat Pumps System with
Mixing Water Pump**

Zhiwei WANG†, Huihua CAI, Xiaohong CAO, School of Envir. & Muni. Eng.,
Xi'an University of Architecture & Technology, China
Peng LI, Wei CAO, Silian Intelligence Technology Share Co., Ltd, China

**B2-019 Dehumidification Characteristics of Direct Expansion (DX) Air Conditioning
(A/C) Systems**

MY CHAN, Department of Building Services Engineering, The Hong Kong
Polytechnic University, Hong Kong

[Room 2]

C1: Frost, Snow, Ice (13:00-14:40)

Chair: Seiji OKAWA (Tokyo Institute of Technology)

C1-048 Heat Transfer with Frosting Phenomena under Natural Convection

Ryo YOSHIOKA, Hidetoshi OHKUBO, Department of Mechanical Engineering,
Tamagawa University, Japan
Sho INOUE, Graduate School of Engineering , Tamagawa University, Japan

C1-049 Study on mass transfer with frosting phenomenon under natural convection

Sho INOUE, Hidetoshi OHKUBO, Graduate School of Engineering ,
Tamagawa University, Japan

C1-050 Effect of initial ice formation near a cooling surface on progressive

freeze-concentration process

Yoshikazu TERAOKA†, Ryo FUKUNO, Koji MATSUMOTO, Department of Precision Mechanics, Faculty of Science and Engineering, Chuo University, Japan

C1-001 Effect of Several Parameters on Frost Growth in Low Temperature Environments - Air Temperature of about -16°C

Koji YAMASHITA†, Air-Conditioning & Refrigeration Systems Works, Mitsubishi Electric Corporation, Japan
Hidetoshi OHKUBO, Department of Mechanical Systems, Tamagawa University, Japan

C1-052 Frost Properties on Cold Surface Simple Geometries

Yoon Suk LEE, Shin Hyuk YOON, Graduate school, Sungkyunkwan University, Korea
Gaku HAYASE, System Appliances Division, Samsung Electronics Co., Ltd, Korea
Keumnam Cho, School of Mechanical Engineering, Sungkyunkwan University, Korea

C2: Ice Slurry (15:00-16:40)

Chair: Keumnam CHO (Sungkyunkwan University)

C2-107 The Structural Stability of Freeze-thawed O/W Emulsions

Yusuke Hashioka, Manabu Watanabe, Toru Suzuki†, Department of Food Science and Technology, Tokyo University of Marine Science and Technology, Japan

C2-003 Effect of Sublimation of Ice on Evaporation Phenomenon of Ethanol Solution

Tatsunori ASAOKA†, Masashi OKADA, Kazuki AIDA, Department of Mechanical Engineering, Aoyama Gakuin University, Japan

C2-044 Study on Tetradecane Nano-emulsion for Thermal Energy Transportation and Storage

Koji FUMOTO†, Department of Mechanical Engineering, Kushiro National College of Technology, Japan
Masahiro KAWAJI, Patrick SHALBART, Department of Chemical Engineering and Applied Chemistry, University of Toronto, Canada
Tsuyoshi KAWANAMI, Department of Mechanical Engineering, Graduate School of Engineering, Kobe University, Japan

C2-122 Cooling Characteristics of Refrigerated Vehicle Using Thermal Storage Material

Maulana Rifaldi, Je-Cheol MUN, Kwang-II CHOI, Graduate School, Chonnam National University, Korea
Jong-Taek OH, Department of Refrigeration and Air Conditioning Engineering, Chonnam National University, Korea
Hoo-kyu OH, Department of Refrigeration and Air Conditioning Engineering,

Pukyong National University, Korea

C2-134 Flow and Heat Transfer Characteristics of Ice Slurry in Narrow Tubes

Hiroyuki KUMANO†, Tetsuo HIRATA, Ryouta SHOUJI, Yousuke HAGIWARA,
Department of Mechanical Systems Engineering, Faculty of Engineering,
Shinshu University, Japan

[Room 3]

D1: CO₂ : Natural Refrigerant (13:00-14:40)

Chair:

D1-009 Development of Commercial Heat Pump Water Heater Using Carbon Dioxide as a Refrigerant

P. Y. YU†, C. C. YANG, S. H. NIAN, Y. C. CHANG, Division of Residential
Commercial Energy-Saving Technology, Laboratories of Energy and
Environment
Research, Institute of Industrial Technology Research, Taiwan

D1-036 The experimental study of commercial air source CO₂ heat pump hot water system

Wang Shouguo, Meng Tao, Cao Feng, Xing Ziwen, Xi'an Jiaotong University,
China

D1-041 Evaluation of Void Fraction Prediction Methods for Two-Phase Flow Evaporative Pressure Drop of R-744 and R-290 in Horizontal Small Tubes

Kwang-Il CHOI, Graduate School, Chonnam National University, Korea
A.S. PAMITRAN, Department of Mechanical Engineering, University of
Indonesia, Indonesia
Jong-Taek OH†, Department of Refrigeration and Air Conditioning
Engineering, Chonnam National University, Korea
Hoo-Kyu OH Department of Refrigeration and Air Conditioning Engineering,
Pukyong National University, Korea

D1-046 Performance Analysis of a CO₂ Heat Pump Water Heating System Under a Daily Change in a Simulated Demand

Ryohei YOKOYAMA†, Yasuhiro KOHNO, Tetsuya WAKUI, Department of
Mechanical Engineering, Osaka Prefecture University, Japan
Kazuhisa TAKEMURA, Research and Development Department, Kansai
Electric Power Co., Inc, Japan

D1-104 A Numerical Study on the Performance of CO₂ Air-conditioning System Using an Ejector

Mo Se KIM, Jae Seung LEE, Min Soo KIM†,
School of Mechanical and Aerospace Engineering, Seoul National University,
Japan

D2: Natural Refrigerant and Lubricant (15:00-16:40)

Chair: Jong Taek OH (Chonnam National University)

D2-110 The performance comparison of two-stage compression CO₂ cycle using internal heat exchangers

Kyungjin Bae, Graduate School of Mechanical Engineering, Chosun University, Korea

Myoungseok Kwak, Byun Kang, Jaehyun Bong, School of Mechanical Engineering, Chosun University, Korea

Honghyun Cho, Department Mechanical Engineering, Chosun University, Korea

D2-127 Effects of Throttle Tube Flow Area on Performance of CO₂ Mobile Air Conditioning System

Yu Zhao, Zhaogang Qi, Jiangping Chen, Institute of refrigeration and cryogenics, Shanghai Jiao Tong University, China

D2-035 Flow Boiling Heat Transfer Characteristics of CO₂ and CO₂-oil mixtures in a Horizontal Smooth Thin Tube

Lei GAO, Tomohiro HONDA, Department of Mechanical Engineering, Faculty of Engineering, Fukuoka University, Japan

Yoshihito WATANABE, Madoka SATO, Department of Mechanical Engineering, Graduate School of Engineering, Fukuoka University, Japan

D2-132 Prediction of Flow Boiling Heat Transfer of Carbon Dioxide at Pre-dryout Region inside Horizontal Tubes

Minxia Li, Thermal Energy Research Institute of Tianjin University, China

Chaobin Dang, Shingo Tanaka, Shunsuke Ogasawara, Takasi Yamada, Eiji Hihara, Department of Human and Engineered Environmental Studies, Graduate School of Frontier Sciences, The University of Tokyo, Japan

D2-124 Flow Boiling Heat Transfer and Pressure Drop for Pure Refrigerant R-290 and R-290/Oil Mixture In Horizontal Small-Diameter Tubes

Shizuo SAITOH, Department of Mechanical Engineering, The University of Tokyo, Japan

Chitose TANAKA, Keitarou HOSHIKA, Chaobin DANG, Eiji HIHARA, Institute of Environmental Studies, Graduate School of Frontier Sciences, The University of Tokyo, Japan

Tuesday, June 8

[Room IBUKA Masaru Memorial Hall]

A3: Absorption and Adsorption Refrigeration 3 (9:20-10:20)

Chair: Atsushi Tsujimori (Kanto Gakuin University)

A3-141 Numerical analysis on adsorption characteristics of activated carbon/ethanol pair in finned tube type adsorber

Naoya MAKIMOTO, Department of Energy and Environmental Engineering, Interdisciplinary Graduate School of Engineering Science, Kyushu University,

Japan

Keishi KARIYA , Faculty of Engineering, Kyushu University, Japan

Shigeru KOYAMA, Ken KUWAHARA, Faculty of Engineering Science, Kyushu University, Japan

A3-143 Experimental investigation on a combined double-way thermochemical and adsorption refrigeration system

Xu L, Wang R.Z.†, Li T.X., Wang L.W., Institute of Refrigeration and Cryogenics, Shanghai Jiao Tong University, China

A3-055 Performance analysis of a low temperature waste heat-driven adsorption desalination prototype plant

Kim Choon NG*, Kyaw THU, Hideharu YANAGI, Anutosh CHAKRABORTY Bidyut B. SAHA, Department of Mechanical Engineering, National University of Singapore

A4: Heat Transfer and Heat Exchangers 1 (11:00-12:00)

Chair: Shigeru KOYAMA (Kyushu University)

A4-076 Boiling Heat Transfer Enhancement by Thermal Spray Coating in a Narrow Channel

Hitoshi ASANO†, Ryohei TOMITA, Masashi INOUE, Nobuyuki TAKENAKA, Department of Mechanical Engineering, Graduate School of Engineering, Kobe University, Japan

A4-130 A Study of Falling Film Evaporation on Finned Tubes

Liang-Han CHIEN†, Rong-Hong CHEN, Department of Energy and Refrigerating Air condition, National Taipei University of Technology, Taiwan

A4-096 Effect of Inlet Configuration on the Two-Phase Refrigerant Distribution in a Parallel Flow Heat Exchanger

Do-Young KIM, Nae-Hyun KIM*, Ho-Won BYUN, Wang-Kyu OH, Ji-Hoon PARK, Department of Mechanical Engineering, University of Incheon, Korea

A5: Heat Transfer and Heat Exchangers 2(13:40-15:20)

Chairs: Hoo-kyu OH (Pukyong National University), Hitoshi ASANO (Kobe University)

A5-142 An Experimental Study on Condensation of R744 in a Multi-Port Extruded Tube

Daisuke JIGE† , Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, Japan
Ken KUWAHARA, Shigeru KOYAMA, Faculty of Engineering Sciences, Kyushu University, Japan

A5-010 Cooling Heat Transfer Characteristics of R744 -Experimental Research on the

Cooling Heat Transfer and Pressure Drop in Supercritical Condition-
Masafumi KATSUTA, Faculty of Graduate School of Environment and Energy
Engineering, Waseda University, Japan
Naoyuki MIYACHI, Takahiro OSHIRO, Youhei OHNO, Graduate School of
Environment and Energy Engineering, Waseda University, Japan

**A5-091 Theoretical Study on Condensation Heat Transfer for a Horizontal Elliptical
Tube in Stationary Saturated Vapor with Wall Suction Effect**

Tong Bou Chang†, Wen Yu Yeh, Department of Mechanical Engineering,
Faculty of Engineering, Southern Taiwan University, Taiwan
Fu Jen Wang, Refrigeration, Air Conditioning and Energy Engineering,
National Chin-Yi University of Technology, Taiwan

**A5-069 Experimental Study on Heat Transfer Performances of the Evaporative
Condenser**

Wang Zhiyuan, He tao, Li Pengfei, College of Vehicle & Power, Henan
University of Science and Technology, China)
Xiao Lining, Xi'an Jiao Tong University, China.

**A5-094 Internal Heat Exchanger Performance Study on R134a Mobile Air
Conditioning System**

Bing Li, Shijie Yan, Jiangping Chen, Institute of Refrigeration & Cryogenics,
Shanghai Jiao Tong University, China

Keynote Speech(15:45-16:45)

Chair: Masafumi KATSUTA (Waseda University)

Speaker: Nobutoshi MIYOSHI (Minister's Secretariat Councilor, Ministry of
Environment)

“Japanese Action for Climate Change”

[Room 1]

B3: Effective Usage and Saving Energy 3 (9:20-10:40)

Chair: Yong Tae KANG(Kyung Hee University)

**B3-061 Energy-saving Diagnosis of Ground Water-source Heat Pump System Based
on Artificial Neural Network**

Zhiwei WANG†, Zhonghe ZANG, Lei SHI, Yi PENG, School of Envir. & Muni.
Eng., Xi'an University of Architecture & Technology, China
Wei CAO, Peng LI, Silian Intelligence Technology Share Co., Ltd, China

B3-109 Performance Estimation for the Automotive Air-Conditioning System

Chih-Chiu Shen†, Jau-Huai Lu, Department of Mechanical Engineering,
National Chung Hsing University, Taiwan
Chun-Ta Shih, Zong-Jhe Wu, Automotive Research and Testing Center, Taiwan

B3-062 The Analysis on Influence of Main Factors on Theoretical Value of Energy

Saving Rate for Energy Efficiency Labeling of Civil Buildings

Zhiwei WANG†, Zhenling WANG, Bo JIANG, Fan ZHANG, School of Envir. & Muni. Eng., Xi'an University of Architecture & Technology, China
Peng LI, Wei CAO, Silian Intelligence Technology Share Co., Ltd, , China

B3-063 Theoretical Study on Dynamic Characteristics of Energy Efficiency Standard Value of Ground Water Heat Pump Air-conditioning System

Yi PENG†, Zhiwei WANG, Zhonghe ZHANG, School of Envir. & Muni. Eng., Xi'an University of Architecture & Technology, China
Wei CAO, Peng LI, Silian Intelligence Technology Share Co., Ltd, China

B4: Effective Usage and Saving Energy 4 (11:00-12:20)

Chair: Chaobin DANG (The University of Tokyo)

B4-074 Performance Study of Thermostatic and Electronic Expansion Valves of a Water-Cooled Scroll Chiller

Jayaprakash SATHTHASIVAM, Kim Choon NG†, Department of Mechanical Engineering, National University of Singapore, Singapore

B4-090 Global unsteady state simulation of compression type heat pump with modular analysis -Effect of intermittent driving on system performance-

Keisuke OHNO, Graduate School of Fundamental Science and Engineering, Waseda University, Japan
Kiyoshi SAITO, School of Fundamental Science and Engineering, Waseda University, Japan

B4-080 Conceptual Design of Two-Stage Air-Conditioner

Dmytro Buyadgie, Wilson Ltd. Ukraine
Sergii Nichenko, Vitaliy Sechenyh†, Olexiy Buyadgie, Igor Va-sil'ev, Odessa State Academy of Refrigeration, Ukraine

B4-117 Solar Desiccant Air Conditioning System for the Low-Carbon Society

Ayako INOUE, Sunao KAWAI, Faculty of Fundamental Science and Engineering, Waseda University, Japan
Makoto KOGANEI, Department of Perceptual Science and Design Engineering, Faculty of Engineering, Yamaguchi University, Japan,
Ken KOMATSU, Takumi NAKAMURA, Nippon Light Metal Co., Ltd, ,Japan
Tatsuichiro TASHIRO, Shin Nikkei Co., Ltd, Japan,
Yasutoshi YOSHIDA†, Earthclean-Tohoku Co., Ltd,,Japan

B5: Effective Usage and Saving Energy 5 (14:00-15:00)

Chair: Mitsuhiro FUKUTA(Shizuoka University)

B5-128 Annual Performance and Performance Rating of Air Conditioners

Hayato HORIE†, Chaobin DANG, Eiji HIHARA, Department of Human and Engineered Environmental Studies, Graduate School of Frontier Sciences, The University of Tokyo , Japan

B5-133 Life Cycle Climate Performance of Air Conditioners

Hayato HORIE†, Chaobin Dang, Eiji HIHARA, Department of Human and Engineered Environmental Studies, Graduate School of Frontier Sciences, The University of Tokyo, Japan

B5-139 Experimental research on performance of glazing system, thermal comfort and energy conservation of air-conditioning system in Taiwan

Ruey Lung Hwang†, Han Hsi Liang, Department of Architecture, National United University, Taiwan
Yu Cheng Chang, Taiwan Society of Heating, Refrigerating and Air-Conditioning Engineers, Taiwan

[Room 2]

C3: Application to Foods (9:20-10:20)

Chair: Yasuyuki SAGARA (Food Kansei Communications) , Manabu WATANABE (Tokyo University of Marine Science and Technology)

C3-042 Fundamental research on freezing of refrigerant by making use of membrane

Seiji OKAWA†, Department of Mechanical Sciences and Engineering, Tokyo Institute of Technology, Japan
Yuichi TANIGUCHI, Open Sys, Sap Sys of Infra Division, Sec-#1, IBM Global Services Japan Solution and Services Company, Japan

C3-079 Study on heat application of cryogenic fluids for preservation of fisheries

Toshiaki WATANABE, Yuki SATO, National Fisheries Univ., Japan
Hironori MAEHARA, Kumamoto University, Japan
Shigeru ITOH, Okinawa National College of Technology, Japan

C3-092 Methods of Pre-cooling for Fresh Cod (GADUS MORHUA) and Influences on Quality during Chilled-storage at -1.5°C

Hong Yan GAO, Qiu Kuan WANG, Tao WANG, Xiao Wei DONG, College of Food Engineering, Dalian Fisheries University, China
Sigurjón ARASON, Bjorn MARGEIRSSON, Icelandic Fisheries Laboratory, Iceland

C4: Heat Transfer (11:00-12:20)

Chair: Yoshio HIRASAWA (University of Toyama)

C4-024 Flow Resistance and Heat Transfer Reduction Characteristics of Some Brine Solutions with Surfactant

Naoto HARUKI†, Akihiko HORIBE, Kazuma YAMAGATA, Graduate School of Natural Science and Technology, Okayama University, Japan
Hideo INABA, TSUYAMA National College of Technology, Japan

C4-026 Rayleigh's Instability for a Nano-Scale Liquid Thread

Chun-Lang Yeh, Department of Aeronautical Engineering, National Formosa

University, Taiwan

C4-098 Phase Change Heat Transfer around Horizontal Tubes in Heat Storage Tank

Koichi HIROSE, Michio KURASHIGE, Department of Mechanical System Engineering, Faculty of Engineering, Iwate University, Japan
Masayuki JIDAISHO, ULVAC Tohoku Inc., Japan
Yuuki ONODERA, Faculty of Engineering, Iwate University, Japan

C4-140 The Effect of Periodic Lid-driven Flow on Suppressing the Double-diffusive Convection during Solidification of a Liquid Binary Alloy

Yang-Cheng Shih, Shu-Min Tu, Ming-Hsien Li, Department of Energy and Refrigerating Air-Conditioning Engineering, National Taipei University of Technology, Taiwan

C5: Thermophysical Property (13:40-15:20)

Chair: Hiroyuki KUMANO(Shinshu University)

C5-056 Discussion for Characteristics of Ice Formation and Melting of Latent Heat Thermal Energy Storage Cell using Resin Tube-Mat

Yoshio HIRASAWA, Graduate School of Science and Engineering for Research, University of Toyama, Japan

C5-083 The numerical values of the thermophysical properties for the refrigerant fluids

Mohammad Reza Mobinipouya, Department of Chemistry, Firouzabad Islamic Azad University, Iran
Mohammad Mehdi Papari, Department of Chemistry, Shiraz University of Technology, Iran

C5-084 EVALUATION AND PREDICTING THERMODYNAMIC PROPERTIES OF ALTERNATIVE REFRIGERANT FLUIDS

Mohammad Reza Mobinipouya, Department of Chemistry, Firouzabad Islamic Azad University, Iran
Mohammad Mehdi Papari, Department of Chemistry, Shiraz University of Technology, Iran

C5-087 Visualization temperature and concentration distribution inside desiccant wheel by simulation

Takashi YOSHIDA†, Seiichi YAMAGUCHI, Graduate School of Fundamental Science and Engineering, Waseda University, Japan
Kiyoshi SAITO, Sunao KAWAI, School of Fundamental Science and Engineering, Waseda University, Japan
Naoki ONDA, Solution Technology Dept. Tokyo Gas Co., Ltd., Japan

C5-129 A High Thermal Conductive and Sticky Silicone-based Thermal Pad

Chih-Feng Hsu, Cheng-Kun Liu, Ming-He Chang, Wern-Shiarng Jou†, Institute of Mechanical Engineering, National Taipei University of Technology, Taiwan

[Room 2]

D3: Thermophysical Properties of New Refrigerant (9:20-10:40)

Chair: Eiji HIHARA (The University of Tokyo)

D3-025 Measurement of Isobaric Heat Capacity of Gaseous

Trans-1,3,3,3-tetrafluoropropene (HFO 1234ze (E))

Noboru KAGAWA†, Atsushi MATSUGUCHI, Department of Mechanical Systems Engineering, Faculty of Systems Engineering, National Defense Academy, Japan

Koichi WATANABE, Department of System Design Engineering, Faculty of Science and Technology, Keio University, Japan

D3-089 Surface Tension of Low GWP Refrigerant Mixtures

Katsuyuki TANAKA†, Yukihiro HIGASHI, Department of Mechanical Systems and Design Engineering, Iwaki Meisei University, Japan

Kohei TAKAHASHI, Graduate School of Iwaki Meisei University, Japan

Keizo KOBAYASHI, Research and Development Center, Mayekawa Mfg. Co., Ltd., Japan

D3-085 Effect of Oils on Kinematic Viscosity of R134a

Tomoaki SATO†, Yoshinori TAKAISHI, Kosei OGUCHI, Department of Mechanical Engineering, Faculty of Engineering, Kanagawa Institute of Technology, Japan

D3-004 Performance Simulation of R22 Alternative Refrigerants in a Finned-Tube Condenser for Low Temperature and Transport Applications

Gang YAN, Yongbin FENG, Wenbo QIAN, Institute of Refrigeration and Cryogenic Engineering, School of Energy and Power Engineering, Xi'an Jiaotong University, China

D4: Cryogenics and Low Temperature Applications 1 (11:00-12:20)

Chair: Makoto NOHTOMI (Waseda University)

D4-027 Enhancement of the Lineup of the Next Generation Refrigerator "FPSC" and its Applications

Toshikatsu NOMIZU, SC Operations, Twinbird Corporation, Japan

Kazuya SONE†, SC Development Group, R&D And Production Operations, Twinbird Corporation, Japan

D4-030 Design and performance of a traveling-wave thermoacoustic refrigerator

Mohamed Mehdi BASSEM†, Satoshi SHIMOKAWA, Yuki UEDA, Atsushi AKISAWA, Graduate School of Bio-Applications and Systems Engineering, Tokyo University of Agriculture and Technology, Japan

D4-021 Influence of vacuum gauge and baking of adsorption chamber on the residual gases of the HVMLI cryogenic tank

Shujun CHEN, Rongshun WANG*, Institute of Refrigeration and Cryogenics,
Shanghai Jiao Tong University, China

RIHGA ROYAL HOTEL
Banquet (17:15-19:15)

Wednesday, June 9

[Room 1]

A6: Heat Transfer and Heat Exchangers 3 (10:00-11:00)

Chair: Bidyut Baran SAHA (Kyushu University)

A6-043 Improvement of Adsorption Heat Exchangers by the Enhancement of Contact Points between Adsorbent and Surface

Masakazu SATO†, Graduate School of Bio-Applications and Systems
Engineering, Tokyo University of Agriculture and Technology, Japan

Takahiko MIYAZAKI, Yuki UEDA, Atsushi AKISAWA, Institute of Symbiotic
Science and Technology, Tokyo University of Agriculture and Technology, Japan

A6-045 Effects of Noise-Driven Wave on Steam Absorption in Falling Film of LiBr Aqueous Solution

Akio MIYARA†, Department of Mechanical Engineering, Saga University,
Japan

Mohammad Ariful ISLAM, Department of Mechanical Engineering, Khulna
University of Engineering & Technology, Bangladesh

Rie NAGATOMO, Graduate School of Science and Engineering, Saga
University, Japan

A6-116 Heat Exchanger Design of Liquid-Cooled Inverter for Variable Speed Water Chiller

Kuo-Shu Hung†, Shih-Chang Chiang, Hsu-Cheng Chiang, Bing-Chwen Yang,
Kuo-Hsiang Chien, Energy and Environment Research Laboratories,
Industrial Technology Research Institute, Taiwan

A7: Heat Transfer and Heat Exchangers 4 (12:30-13:30)

Chair: Zhang Peng (Shanghai Jiao Tong University)

A7-144 Study on Thermal Performance of Fresh Water Generator System Applied Plate Heat Exchanger

YongHan Shin, ZhenHua Jin, M. Sq. Rahman, S. Wibowo, HyoungMin Lee,
Department of Mechanical and Precision Engineering, Gyeongsang National
University, Korea

HanShik Chung, HyoMin Jeong†, Department of Mechanical and Precision
Engineering, Gyeongsang National University, Institute of Marine Industry,
Korea

A7-095 Measure System on Fins Processing Quality of Plate-fin Heat Exchanger
SHU JIANGZHOU, GUOHUI HUANG, WEI LIU, DING XU, Inst. of Refrigeration , Hangzhou Dianzi University, Xiasha Higher Education Zone, China

A7-020 Study on a CFD simulation of flow trend in plate heat exchanger
SeongSoo Kim, YongJin Seong, HyunGweon Jeong, Department of Mechanical and precision Engineering, Gyeongsang National University, Korea
HanShik chung, HyoMin Jeong†, Department of Mechanical and precision Engineering, The Institute of marine industry, Gyeongsang National University, Korea

A8: Heat Transfer and Heat Exchangers 5 (13:50-14:50)
Chair: Akio MIYARA (Saga University)

A8-047 Development of General Correlation for Heat Transfer in Single-Phase Turbulent Flow inside Internally Helically-Grooved Tubes
Norihiro INOUE†, Masao GOTO, Department of Electronics and Mechanical Engineering, Tokyo University of Marine Science and Technology, Japan

A8-086 Numerical Study on the Effects of Rib Turbulators in Square Channels
Jusik Woo, Seongsoo Kim, Chenkuan Park, Hyomin Jeong†, Department of Mechanical and Precision Engineering, Gyeongsang National University, Korea
Hanshik Chung, Department of Mechanical and Precision Engineering, Gyeongsang National University, Institute of Marine Science, Korea

A8-099 Study on the numerical modeling of convective heat transfer in turbulent channel flow with semi-circular columns
Gyeonghwan Lee, Juho Choi , Graduate School, Department of Mechanical and Precision Engineering, Gyeongsang National University Korea
Taewhee Joung, Hyomin Jeong, Hanshik Chung†, Department of Mechanical and Precision Engineering, Gyeongsang National University, Institute of Marine Science, Korea

Closing Session(15 : 00-)

[Room2]

B6: Ventilation, Air Distribution and Indoor Air Quality (10:00-11:00)
Chair:Mitsuo HARADA(Tokyo Electric Power Company)

B6-126 The Effect of Vents Arrangement on the Energy Efficiency of a Convenient Store
Yu-LiehWu, Yean-Der Kuan, Jia-YouWang, Kuang-Cheng Yu, Refrigeration, Air-Conditioning and Energy Engineering, National Chin-Yi University of

Technology, Taichung, Taiwan
Wen-Der Hsieh, Energy and Environment Research Laboratories, Industrial
Technology Research Institute, Taiwan

B6-053 Experimental study of determining neutral temperatures for conventional mixing and stratum ventilation modes in environmental chamber
M.L. Fong†, K.F. Fong, Zhang Lin, Building Energy & Environmental
Technology Research Unit, Division of Building Science and Technology,
College of Science and Technology, City University of Hong Kong, Hong Kong

B6-121 A Low-Cost Method for Testing the Performance of Photocatalytic Filter Installed in an Air Cleaner
Hsu-Cheng CHIANG†, Hsi-Sheng WU, Jenn-Chyi CHUNG, Yie-Zu HU,
Energy and Environment Research Laboratories Industrial Technology
Research Institute, Taiwan

B7: Fuel Cell (12:30-13:30)
Chair: Masafumi KATSUTA (Waseda University)

B7-057 A Numerical Study on the Characteristics of Cooling and Water distribution of a passive type PEMFC Stack
Jaehyuk Lee, Bosung Kim, Graduate school of Mechanical Engineering, Korea
University, Korea
Yongchan Kim†, School of Mechanical Engineering, Korea University, Korea
Yongtaek Lee, Department of Mechanical & Mechatronics Engineering,
University of Waterloo, Canada

B7-108 The Efficiency Analysis of DMFCs with Different Hydrophobic Anode Channels
Win-Jet Luo, Jia-You Jiang, Xin-Quan Lin, Yean-Der Kuan, Department of
Refrigeration, Air Conditioning and Energy Engineering, National Chin-Yi
University of Technology, Taiwan

B7-135 Experimental Investigation on the Cathode Airflow Behavior on the Direct Methanol Fuel Cell Stack
Yean-Der Kuan†, Department of Refrigeration, Air Conditioning and Energy
Engineering, National Chin-Yi University of Technology, Taiwan
Tzeng-Yuan Chen, Yu-Chi Chen, Department of Aerospace Engineering,
Tamkang University, Taiwan
Jing-Yi Chang, Integrated Research Center for Green Living Technologies,
National Chin-Yi University of Technology, Taiwan

B8: Front Edge (13:50-14:50)
Chair:

B8-102 CO₂ absorption enhancement in particles/methanol mixture

Jae Won LEE, Jung-Yeul JUNG, Yong Tae KANG†, School of Mechanical and Industrial System Engineering, Kyung Hee University, Korea
Jin-Kyeong KIM, Anshik SHIN, Hyojun Lim, Changdae Byun, Coal Chemicals Group, Energy E&C Div., POSCO E&C, Korea

B8-018 Development of New Material Process for Dehalogenation by Sodium Ion Expression Using the Low-Temperature Plasma
Shigeaki INADA, Advanced Science Research Laboratory, Saitama Institute of Technology, Japan

B8-029 Modeling and Simulation of the Operation of a Rotary Magnetic Refrigerator
Didier VUARNOZ, Tsuyoshi KAWANAMI, Department of Mechanical Engineering, Graduate School of Engineering, Kobe University, Japan
Andrej KITANOVSKI, Cyrill GONIN, Peter W. EGOLF, Institute of Thermal Sciences and Engineering IGT, University of Applied Sciences of Western Switzerland, Switzerland

[Room3]

C6: Heat Pump, Chiller and Refrigerator (9:20-11:00)
Chair: Kiyoshi SAITO (Waseda University)

C6-114 Temperature-Dependent Thermodynamic Chiller Model in Predicting Variable Speed Centrifugal Chiller Performance
Chung-Che LIU*, Jenn-Chyi CHUNG, Hsu-Cheng CHIANG, Jian-Yuan LIN, Energy and Environment Research Laboratories, Industrial Technology Research Institute, Taiwan

C6-005 Theoretical Study and Design of Small-scale Cascade CO₂ Sub-critical Mechanical Compression / Ammonia Ejector Refrigerating Unit
V.O.Petrenko†, B.J.Huang, K.O.Shestopalov, New Energy Center, Department of Mechanical Engineering, National Taiwan University, Taiwan
V.O.Ierin, O.S.Volovyk, Odessa State Academy of Refrigeration, Ejector Refrigeration Technology Center, Ukraine

C6-006 Innovative Low-Grade Heat Driven Ejector Chillers and Air Conditioners Operating with Low Boiling Refrigerants
V.O.Petrenko†, New Energy Center, Department of Mechanical Engineering, National Taiwan University, Taiwan, Odessa State Academy of Refrigeration, Ejector Refrigeration Technology Center, Ukraine

C6-072 Development of New Air-Cooled Heat Pump chiller 'Compact Cube'
Yasushi OOKOSHI, Takuya ITO, Mitsubishi Electric Corporation, Japan
Hiroshi YAMAGUCHI, Mitsubishi Electric Corporation, Japan
Yohei KATO, Yasutaka OCHIAI, Kosuke TANAKA, Mitsubishi Electric Corporation, Japan
Yshihiro UJI, Kansai Electric Power Co., Inc., Japan

Hiroshi NAKAYAMA, Chubu Electric Power Co., Inc., Japan

**C6-015 Design and Performance of a Constant Temperature and Humidity
Air-conditioning System Driven by Ground Source Heat Pumps**

Xin Yu†, Ruzhu Wang, Xiaoqiang Zhai, Institute of Refrigeration & Cryogenics,
Shanghai Jiao Tong University, China

C7: System & Element for HVAC&R (12:30-13:30)

Chair:

C7-039 Performance Characteristics of Bubble pump with Riser height of Separator

Kwangsung Lee, Jusik Woo, Supriyanto Wibowo, Graduate School,
Department of Mechanical and Precision Engineering Department, Korea
Hyomin Jeong, Hanshik Chung, Department of Mechanical and Precision
Engineering, the Institute of Marine Industry, Gyeongsang National
University, Korea

**C7-093 Experiment Study on Fresh Water Generation System Utilizing Vacuum
Evaporation**

Supriyanto Wibowo†, Kwangsung Lee, Doosang Heo, Graduate School,
Department of Energy and Mechanical Engineering, Gyeongsang National
University, Korea
HyoMin Jeong, HanShik Chung, Department of Energy and Mechanical
Engineering, The Institute of Marine Industry, Gyeongsang National
University, Korea

C7-008 An Experimental Study on an Induction Enhanced Flow Cooling Tower

Yew Khoy Chuah, Hong-Jun Zheng, Department of Energy and Refrigerating
Air-Conditioning Engineering, National Taipei University of Technology,
Taiwan

C8: Cycle Control (13:50-14:50)

Chair: Yoshiharu AMANO (Waseda University)

**C8-034 Design of Steady State Detector for Fault Detection and Diagnosis of CO₂ Heat
Pump Water Heater with Decomposition Analysis Technique**

Chul Woo ROH, Jae Seung LEE, Min Soo KIM†, School of Mechanical and
Aerospace Engineering, Seoul National University, Korea
Minsung KIM, Solar Thermal and Geothermal Research Center, Korea
Institute of Energy Research, Korea

**C8-120 Wireless sensor network applied to thermal comfort of convenient stores
customers and monitor the air-conditioning power consumption**

Chih-Sheng Chen, Liang-Cheng Chang, Graduate Institute of Mechanical & Electrical Engineering, National Taipei University of Technology, Taiwan
Da-Sheng Lee, Department of Energy and Refrigerating Air-conditioning Engineering, National Taipei University of Technology, Taiwan

C8-138 The Direct Neural Control Applied to Energy-saving Air Conditioner Systems
Chien-Hsin Hsieh, Zhi-Wei Chen, Der-Ming Chyr, Ming-Huei Chu,
Department of Mechatronic Technology, College of Engineering, The Tungnan University, Taiwan