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June 10, 2024

A11: Food Science and Engineering 1

Chair: Dr. Tetsuya Araki (University of Tokyo)

Room A 13:20 - 14:40

ID	Presentation title
A1-1	Ohmic tempering of Antarctic krill (<i>Euphausia superba</i>) blocks-experimental and computer simulation approach ○ Chancong Jiang, Yvan Llave, Mika Fukuoka (Tokyo University of Marine Science and Technology)
A1-2	Effect of static and oscillating magnetic fields on the freezing kinetics of water and tomato puree ○ Andres Abea (IRTA-TA, Food Processing and Engineering), Yvan Llave, Mika Fukuoka (Tokyo University of Marine Science and Technology), Pere Gou, Maria Dolors Guàrdia, Israel Muñoz (IRTA-TA, Food Processing and Engineering)
A1-3	Electromagnetic fields assisted supercooling preservation technology of fresh-cut cantaloupes: synergistic effect on physicochemical indexes and microbiological analysis ○ Hong Jiang, Songsong Zhao, Bin Liu, Hongyu Wang, Jianyu Liu, Xing Yang, Wenqiang Guan (Tianjin University of Commerce)
A1-4	Investigation of optimal thawing conditions for frozen fish using histological methods ○ Yui Yamada, Mark Anthony Redo, Manabu Watanabe (Tokyo University of Marine Science and Technology)

A12: Food Science and Engineering 2 & Innovative Technologies

Chair: Prof. Changqing Tian (Chinese Academy of Sciences)

Room A 15:00 - 16:40

ID	Presentation title
A1-5	Physicochemical rheological, and functional properties of COD hydrolysates ○ Muhammad Umar Khan, Ignat Tolstobrov, Trygve M Eikevik (Norwegian University of Science and Technology (NTNU)), Manabu Watanabe (Tokyo University of Marine Science and Technology), Livius Gaceus (University of Braşov)
A1-6	The effects of high hydrostatic pressure on grouper fillet aging ○ Hsiuming Liu, Yungtsung Chen, Pinghan Kuo (National Taiwan Ocean University), Hueyjine Chai (Fisheries Research Institute)
A1-7	Melting process of water-based magnetic fluid ○ Kazuto Yamashiro, Yuhiro Iwamoto, Yasushi Ido (Nagoya Institute of Technology), Ignat Tolstorebrov, Trygve M. Eikevik (Norwegian University of Science and Technology)
A1-8	Numerical analysis of absorption refrigeration system using nanofluid as a absorbent ○ Tsogtbilegt Boldoo, Honghyun Cho (Chosun University)
A1-9	Geothermal heat pump applied eggs incubation ○ Alexandre Fernandes Santos (Fapro), Pedro Dinis (UBI), Heraldo Souza (Fapro)

B11: Modelling and predictive tools 1

Chair: Prof. Judith A. Evans (London South Bank University)

Room B 13:20 - 14:40

ID	Presentation title
B1-1	Experimental analysis of various expansion devices for subcritical CO ₂ condensing units ○ Paride Gullo (University of Southern Denmark), Martin Ryhl Kærn (IPU)
B1-2	Improvement of heat transfer in hysteresis region of energy storage system ○ Yijun Wang, Jae Dong Chung (Sejong University)
B1-3	Development of a compressor control logic based on heat load prediction for glass door refrigerated display cabinets ○ Chia-Hsing Hsieh, Guan-Wen Chen, Yu-Ming Chang, Yung-Ming Li, Pei-Yu Yu (Industrial Technology Research Institute)
B1-4	A high-precision systematic simulation method for self-contained refrigeration retail cabinets ○ Shijie Xu, Yujiao Wu, Gang Yan, Jianlin Yu, Suxin Qian (Xi'an Jiaotong University)

B12: Modelling and predictive tools 2 & Commercial Refrigeration

Chair: Dr. Seiichi Yamaguchi (Waseda University)

Room B 15:00 - 16:40

ID	Presentation title
B1-5	Modelling of energy use and greenhouse gas emissions from a quick service restaurant ○ Elias Eid, Alan M. Foster, Judith A. Evans, Robin Campbell (London South Bank University), Graciela Alvarez (Université Paris-Saclay, INRAE, FRISE)
B1-6	Energy efficient control strategies in supermarket refrigeration systems ○ Andreas Schulte (Technische Universität Braunschweig), Lars Larsen (Danfoss A/S), Sven Försterling (TLK Thermo GmbH), Christian Heerup (Danish Technological Institute), Wilhelm Tegethoff (Technische Universität Braunschweig), Benjamin Zühlsdorf (Danish Technological Institute), Juergen Koehler (Technische Universität Braunschweig)
B1-7	Sizing and optimization of a cold thermal energy storage (CTES) for a dairy: a case study ○ Jan Bengsch, Lukas Köster, Eirik Starheim Svendsen (SINTEF Ocean), Håkon Selvnes (Cartesian), Kristina Norne Widell (SINTEF Ocean)
B1-8	Building digital twins for refrigeration systems using artificial intelligence ○ Andy Pearson, John Clark (Star Refrigeration Ltd)
B1-9	Modeling and prediction of refrigerated trucks environmental performance using real-life data and data science ○ Mathilde Marcy, Camille Fertel (Cemafroid), Jean-Marc Petit, Marian Scuturici (Univ Lyon, CNRS, INSA-Lyon, Université Claude Bernard Lyon 1), Gérald Cavalier (Cemafroid), Jocelyn Bonjour (Univ Lyon, CNRS, INSA-Lyon, Université Claude Bernard Lyon 1)

C11: Renewable Energies 1

Chair: Dr. Andy Pearson (Star Refrigeration Ltd.)

Room C 13:20 - 14:40

ID	Presentation title
C1-1	Heat recovery from supermarkets, a UK case study Philip Jones (Building Low Carbon Solutions Ltd), Chris Dunham (Carbon Descent Ltd.), Russell Fenner (Revolution9 Consulting Ltd.), Ana Catarina Marques, Henrique Lagoeiro, Kristina Roszynski, Graeme Maidment (London South Bank University)
C1-2	Research on influencing factors of vaccine refrigerated truck Xiumin Feng, Zhongbin Zhang (Nanjing Normal University), Huaqian Jing, Enyuan Gao (Chinese Association of Refrigeration), Xiaosong Zhang (Southeast University), Xue Hua (Foreign Environmental Cooperation Center)
C1-3	A comparison of heat integration methods for heat pump and refrigeration placement on industrial food processing sites Elsa Klinac, James K. Carson, Timothy G. Walmsley (The University of Waikato), Don J. Cleland (Massey University), Duy K. Hoang (The University of Waikato)
C1-4	Hydraulic permeability and characteristics analysis of lithium hydroxide based bulk composite adsorbent for sorption thermal battery application Daeyoung Jung, Hyungwon Choi, Jinhee Jeong, Yong Tae Kang (Korea University)

C12: Renewable Energies 2 & Sustainability 1

Chair: Prof. Norihiro Inoue (Tokyo University of Marine Science and Technology)

Room C 15:00 - 16:40

ID	Presentation title
C1-5	Study on thermally regenerative battery based on copper/ammonia with low-grade waste heat Yun Mo Ko, Sunghun Lee, Yong Tae Kang (Korea University)
C1-6	A study on the performance of dish solar collector by receiver type Hyemin Kim, Jeonggyun Ham, Honghyun Cho (Chosun University)
C1-7	Commercial professional and domestic refrigeration equipment efficiency in the UK; current and future trends Alan Foster, Judith Evans (London South Bank University)
C1-8	Thermodynamic analysis of a transcritical CO ₂ refrigeration system sub-cooled with evaporative cooling Ravi Beniwal, Himanshu Tyagi (Indian Institute of Technology Ropar)
C1-9	Carbon emissions from food refrigeration in transport, commercial and industrial sectors in the UK Ana Catarina Marques, Henrique Lagoeiro, Gareth Davies (London South Bank University), Razaq Lamini, Xinfang Wang (University of Birmingham), Robert Olrog, James Ruel (Carbon Limiting Technologies Ltd.), Graeme Maidment (London South Bank University)

D11: Cold Chain

Chair: Prof. Fumihiko Tanaka (Kyushu University)

Room D 13:20 - 14:40

ID	Presentation title
D1-1	Experimental investigation on a Joule-Thomson refrigeration system with hydrocarbon mixtures R1150/R600 for -68° C light commercial low-temperature freezer ○Lingeng Zou, Mengqi Yu, Tao Bai, Suxin Qian, Jianlin Yu (Xi'an Jiaotong University)
D1-2	Effects of different internal and external packaging on precooling rate and cold chain quality of green pepper ○Sheng Liu (Beijing Academy of Agriculture and Forestry Sciences), Yuyi Lu (Shanghai Ocean University), Qing Wang (Beijing Academy of Agriculture and Forestry Sciences), Kuili Shang (Shanghai Ocean University), Jingwen Xue (Beijing Academy of Agriculture and Forestry Sciences)
D1-3	Experimental characterisation of heat transfer within a multi-scale package; application on a pallet of strawberries ○Ahmad Nasser Eddine, Steven Duret (Université Paris-Saclay, INRAE, FRISE), Denis Flick (Université Paris-Saclay, INRAE, AgroParisTech, UMR SayFood), Jean Moureh (Université Paris-Saclay, INRAE, FRISE)
D1-4	Preserving hibiscus harvests: the role of precooling and community cooling hubs in central and eastern Uganda ○Mary Najjuma, Robin Campbell, Alan Foster, Catarina Marques, Graeme Maidment, Judith Evans (London South Bank University)

D12: Workshop

Room D 15:00-16:30

Title : Energy consumption and emissions of the refrigeration sector:
The Elephant in the room

Organizer : Dr. Yosr Allouche, Incoming Director General of the IIR

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A21: Storage, Transportation and Logistics 1

Chair: Dr. Fumina Tanaka (Kyushu University)

Room A 9:00 - 10:20

ID	Presentation title
A2-1	Effects of different initial temperature on precooling rate and cold chain quality of broccoli ○ Sheng Liu (Beijing Academy of Agriculture and Forestry Sciences), Yuyi Lu (Shanghai Ocean University), Qing Wang (Beijing Academy of Agriculture and Forestry Sciences), Kuili Shang (Shanghai Ocean University), Jingwen Xue, Xinkang Wang (Beijing Academy of Agriculture and Forestry Sciences)
A2-2	Industrial cold storage of fruit and berries – specific energy use and operational processes ○ Erlend Indergård, Eirik Starheim Svendsen (SINTEF Ocean AS), Lukas Köster (SINTEF Ocean)
A2-3	Effects of forced-air precooling, low temperature transportation and different retailing methods on the quality of chinese flowering cabbage ○ Sheng Liu (Beijing Academy of Agriculture and Forestry Sciences), Yufu Zhong, Qi Zhang, Yuyi Lu (Shanghai Ocean University)
A2-4	Freshness prolongation of kimchi cabbage using plasma-nano particle humidifier during cold storage ○ Byeongsam Kim, Sejin Park, Andri J. Laksana, Jiyoung Kim (Korea Food Research Institute)

A22: Storage, Transportation and Logistics 2

Chair: Prof. Xinfang Wang (University of Birmingham)

Room A 10:40 - 12:00

ID	Presentation title
A2-5	Subchilling of head on gutted salmon (<i>Salmo salar</i>) before filleting; effect on storage quality ○ Bjørn Tore Rotabakk (Nofima), Emma Vangen, Jørgen Lerfall (NTNU)
A2-6	Empirical evaluation of CO ₂ -based cold storage with innovative design for enhanced food preservation Yi-Zhou Wang (Peking University), Yu-Wei Fan, Xiao-Long Li, Jian-Guo Yang (Jingkelun Refrigeration Equipment Co., Ltd.), ○ Xin-Rong Zhang (Peking University)
A2-7	Investigation of characteristics of ice containing ozone microbubbles at different cooling plate temperatures ○ Yohei Makino, Koki Ito, Jumpei Takeuchi, Koji Matsumoto (Chuo University)
A2-8	Influence of cheese heat generation inside a ventilated pallet on cooling rate and heterogeneity ○ Dihia Aguenihanai (Université Paris-Saclay, INRAE, FRISE), Denis Flick (Université Paris-Saclay, INRAE, AgroParisTech, UMR SayFood), Steven Duret, Jean Moureh (Université Paris-Saclay, INRAE, FRISE)

A23: Storage, Transportation and Logistics 3

Chair: Prof. Graeme Maidment (London South Bank University)

Room A 13:20 - 14:40

ID	Presentation title
A2-9	Method for measuring the thickness of the walls of isothermal cells ○Gérald Cavalier, Thomas Suquet, Frantz Latchan, Nicolas Boudet, Munazzah Al Hashim, Matthieu Hardy, Olivier Valet, Camille Fertel (Cemafroid)
A2-10	Determination of the thermal efficiency of the doors, walls, roof, floor, and refrigeration machine on ISO 40 high cube insulated container ○Richard Lawton, Tobias Mynott, Chris Rhodes (Cambridge Refrigeration Technology), Paul Clarke (Maersk A/S)
A2-11	Measurement of the thermal efficiency of a 1/5 scale mode of an insulated reefer container fitted with three different types of aerogel insulation and expanded foam insulation Richard Lawton, ○Tobias Mynott, Chris Rhodes (Cambridge Refrigeration Technology), Paul Clarke (Maersk A/S)
A2-12	Comparison of standards used for the qualification of standalone isothermal solutions ○Abbes Kacimi, Gilles Labranque (Sofrigam Group), David Stienne (Ater Métrologie)

A24: Storage, Transportation and Logistics 4

Chair: Dr. Graciela Alvarez (INRAE)

Room A 15:00 - 16:00

ID	Presentation title
A2-13	Numerical characterization of a propane-CO ₂ refrigeration system developed for TES last-mile delivery ○Francesco Fabris, Silvia Minetto, Sergio Marinetti, Antonio Rossetti (National Research Council, Construction Technologies Institute (ITC-CNR))
A2-14	Estimation of the UK 2019 baseline year energy demand and emissions of temperature-controlled transport using a bottom-up model Hameed B. Mahood, Leyla Sayin, ○Xinfang Wang, Ahmed Alammar, Rasaq Lamidi, Asha Singh (University of Birmingham), Yosr Allouche (The International Institute of Refrigeration), Toby Peters (University of Birmingham)
A2-15	Evaluation of published data for diesel driven transport refrigeration systems to estimate equivalent electrical requirement Richard Lawton, ○Chris Rhodes, Tobias Mynott (Cambridge Refrigeration Technology)

B21: Life Cycle Assessment

Chair: Prof. Akio Miyara (Saga University)

Room B 9:00 - 10:20

ID	Presentation title
B2-1	Sustainability assessment of novel aquaculture production technologies ○Cristina-Maria Iordan, Andrea Viken, Shraddha Mehta (SINTEF Ocean AS)
B2-2	Study on the transition of environmental impacts from food consumption by Japanese population in the 2000's ○Yui Sakai, Tetsuya Araki (The University of Tokyo), Kenta Itakura (ImVisionLabs Inc.), Ujué Fresán (eHealth group, ISGlobal)
B2-3	Chilled and frozen atlantic salmon: environmental impact assessment and quality evaluation ○Mark Anthony Redo, Mire Che, Manabu Watanabe (Tokyo University of Marine Science and Technology), Ignat Tolstorebrov (Norwegian University of Science and Technology)
B2-4	A comparative assessment of food chain emissions from Norway, UK and Germany ○Shraddha Mehta (SINTEF Ocean), Alan Foster (London South Bank University), Antonio Rosetti (CNR Construction Technology Institute), Jan Bengsch, Lukas Köster (SINTEF Ocean), Judith Evans (London South Bank University), Yosr Allouche (The International Institute of Refrigeration (IIR)), Kristina N. Widell, Cristina Maria Iordan (SINTEF Ocean)

B22: Food Quality and Safety 1

Chair: Dr. Mark Anthony Redo (Tokyo University of Marine Science and Technology)

Room B 10:40 - 12:00

ID	Presentation title
B2-5	Relationship between the amount of frost on the food, temperature of food and ambient temperature during frozen storage in the household refrigerator ○Hitoshi Hoshino, Masaaki Tanaka, Takaya Tateno, Tomoharu Iwamoto, Yoshihiko Yoshida, Shingyoku Shi (Haier Asia R&D Co. Ltd.), Younju Lee, Toru Suzuki (Tokyo University of Marine Science and Technology)
B2-6	Sub-chilling as an initial step in the atlantic salmon cold-chain; effect on microbial growth and freshness ○Jørgen Lerfall, Oda Amalie Kristiansen, Kajsa Røkholt, Synne Hysten Røsten, Anita Nordeng Jakobsen, Sunniva Hoel (NTNU - Norwegian University of Science and Technology)
B2-7	Impact of biobased packaging materials on quality changes of cod (<i>gadus morhua</i>) and haddock (<i>melanogrammus aeglefinus</i>) during frozen storage ○Solveig Uglem, Guro Møen Tveit, Eirik Starheim Svendsen (SINTEF Ocean), Andreas Austnes (SINTEF Ålesund)
B2-8	The effect of two different thawing procedures on product quality of tusk (<i>Brosme brosme</i>) ○Guro Møen Tveit, Solveig Uglem, Hanne Dalsvåg, Eirik Starheim Svendsen, Morten Bondø, Pernille Kristiane Skavang, Leif Grimsmo, Tom Ståle Nordtvedt (SINTEF Ocean)

B23: Food Quality and Safety 2

Chair: Prof. Jørgen Lerfall (Norwegian University of Science and Technology)

Room B 13:20 - 14:40

ID	Presentation title
B2-9	From microstructure development to quality changes and viral risk; multiscale analysis of frozen raspberries ○Gwenaëlle Verbrugge, Hayat Benkhelifa, Steven Duret (Université Paris-Saclay, INRAE, UR FRISE), Sandra Martin-Latil (Université Paris-Est, ANSES, Laboratoire de Sécurité des Aliments), Fatou-Toutie Ndoye (Université Paris-Saclay, INRAE, UR FRISE)
B2-10	Investigation on the effect of freezing temperature on protein denaturation of soy milk ○Risa Fukada, Mark Anthony Redo, Manabu Watanabe (Tokyo University of Marine Science and Technology)
B2-11	The water-sucrose diagram, sucrose hydrates and frozen stability of sweet products ○Alain Le-Bail (ONIRIS-GEPEA UMR CNRS), Yrjö H. Roos (University College Cork), Patricia Le-Bail (INRAE BIA – Nantes FRANCE)
B2-12	Freezing of bakery products with fruit filling ; mitigation of water migration between cake and filling thanks to the sucrose equivalent model ○Alain Le-Bail (ONIRIS-GEPEA UMR CNRS), Guenaëlle Diler, Doina Crucean, Cecile Rannou, Mathilde Roze (Oniris UMR GEPEA CNRS), Patricia Le-Bail (INRAE BIA)

B24: Food Quality and Safety 3

Chair: Prof. Alain Le Bail (ONIRIS-GEPEA)

Room B 15:00 - 16:00

ID	Presentation title
B2-13	Sterilization effect of indirect cold plasma treatment on the beef under cold storage temperature ○Peiru Li, Hainan Zhang, Changqing Tian (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences; University of Chinese Academy of Sciences)
B2-14	Relating microstructure evolving to quality changes in pork meat at different superchilling conditions Romain Tejeiro, Graciela Alvarez, ○Fatou-Toutie Ndoye (Université Paris-Saclay, INRAE, UR FRISE)
B2-15	Quality and nutritional effects of rapid freeze application on raw beef and berries in the home-type refrigerator ○Cihan Kaan Coskun (Arcelik A.S.)

C21: Sustainability 2

Chair: Mr. Richard Lawton (Cambridge Refrigeration Technology Ltd.)

Room C 9:00 - 10:20

ID	Presentation title
C2-1	Quantifying energy consumption and carbon emissions from retail refrigeration in the UK ○Henrique Lagoeiro, Catarina Marques, Gareth Davies, Alan Foster, Judith Evans (London South Bank University), Melanie Jans-Singh, Graeme Maidment (Department for Energy Security and Net Zero)
C2-2	Application of sustainable active packaging to reduce food loss in cold storage of chilled foods ○Nathdanai Harnkarnsujarit (Kasetsart University)
C2-3	Start up behavior of a loop heat pipe with a plate-type evaporator ○Hiroki Niizuma, Yui Sato, Atsushi Tsujimori, Ryosei Sasagawa, Shinnosuke Hashimoto (Kanto-gakuin University)
C2-4	UK cold stores the road to Net Zero ○Dermot Cotter (Star Technical Solution (Star Refrigeration Ltd)), Catarina Marques, Henrique Lagoeiro, Alan Foster, Judith Evans, Gareth Davies (London South Bank University)

C22: Process and equipment design 1

Chair: Dr. Kristina N. Widell (SINTEF Ocean)

Room C 10:40 - 12:00

ID	Presentation title
C2-5	Performance comparisons for ammonia and carbon dioxide cold storage systems ○Andy Pearson, Rob Lamb (Star Refrigeration Ltd)
C2-6	A high humidity cooling system for improvement of fruits and vegetables storability ○Ryou Tanoue, Satoru Kanai, Naoya Hiruma (Mayekawa MFG. CO., LTD.)
C2-7	Vacuum freezing of food samples in a food storage chamber equipped with a cold thermal energy storage system utilising phase change materials ○Jakub Chrobak, Michał Palacz, Dominik Hulak, Jacek Smółka (Silesian University of Technology), Ignat Tolstorebrov (Norwegian University of Science and Technology)
C2-8	Investigation of use of freeze concentration methods for concentration of fish protein hydrolysates ○Muhammad Umar Khan, Ignat Tolstorebrov, Trygve M Eikevik (Norwegian University of Science and Technology (NTNU)), Manabu Watanabe (Tokyo University of Marine Science and Technology), Livius Gaceus (University of Braşov)

C23: Process and equipment design 2

Chair: Prof. Yong-Tae Kang (Korea University)

Room C 13:20 - 14:40

ID	Presentation title
C2-9	Improving energy efficiency in seafood freezing with brine technology ○ Eirik Starheim Svendsen, Erlend Indergård, Jan Bengsch, Kristina Norne Widell, Lukas Köster, Tom Ståle Nordtvedt (SINTEF Ocean)
C2-10	Review of liquid-to-refrigerant heat exchangers for supermarket applications Arpita Das, James Tancabel, ○ Vikrant Aute (University of Maryland)
C2-11	Increasing the energy efficiency of a dairy by implementing a high temperature heat pump ○ Lukas Köster, Jan Bengsch, Eirik Starheim Svendsen, Kristina Norne Widell (SINTEF Ocean), Sigmund Jenssen (Cadio)
C2-12	Numerical optimisation of a cold energy storage accumulator for thermosiphon application in vapour compression refrigeration systems ○ Maria Aurely Yedmel, Denis Leducq, Ella Gbehe (Université Paris-Saclay, INRAE, FRISE)

C24: Process and equipment design 3

Chair: Dr. Alan M. Foster (London South Bank University)

Room C 15:00 - 16:00

ID	Presentation title
C2-13	Temperature measurement of thermosensitive products: update on standards and regulations to take into account innovation and developments ○ Gérald Cavalier (Cemafroid Fresnes), Eric Devin (Association Française du Froid), Camille Fertel, Arnaud-Paul Tsilavindranto (Cemafroid Fresnes)
C2-14	Innovation of cold chain semiconductor chilled/heated portable container installed with VIPs envelopes ○ Ankang Kan (Merchant Marine College, Shanghai Maritime University)
C2-15	Experimental methods for frost load quantification on evaporators used in commercial refrigeration (ASHRAE RP-1831) Brian Yu (Creative Thermal Solutions, Inc.), ○ Stefan Elbel (Technische Universität Berlin & Creative Thermal Solutions, Inc.)

D21: Low GWP Refrigerants 1

Chair: Prof. Hitoshi Asano (Kobe University)

Room D 9:00 - 10:20

ID	Presentation title
D2-1	Ejector evaluation for ultra-low temperature refrigeration using natural refrigerants ○ Cosmin-Mihai Udriou, Adrián Mota-Babiloni, Pau Giménez-Prades, Ángel Barragán-Cervera, Joaquín Navarro-Esbrí (Universitat Jaume I)
D2-2	Study of the pressure gradient of alternative low GWP alternative refrigerants zeotropic mixture inside mini-sized rectangular multiple channel tube ○ Hieu Hoang Ngoc, Oh Jong-Taek (Chonnam National University)
D2-3	Study of the heat transfer characteristic of alternative low GWP alternative refrigerants zeotropic blend inside mini-sized rectangular multiple channel tube ○ Hieu Hoang Ngoc, Oh Jong-Taek (Chonnam National University)
D2-4	Experimental study on heat transfer and pressure drop of R454C and R32 in layered microchannel heat exchanger ○ Shotaro Kamiyama, Ryogo Noguchi, Daisuke Jige, Norihiro Inoue (Tokyo University of Marine Science and Technology)

D22: Low GWP Refrigerants 2

Chair: Dr. Yohei Kayukawa (The National Institute of Advanced Industrial Science and Technology)

Room D 10:40 - 12:00

ID	Presentation title
D2-5	Less than 150 GWP options for transport refrigeration ○ Steve Kujak, Michael Petersen, Alex Schmig (Trane Technologies)
D2-6	Evaluation of lower GWP refrigerant R454A in transport refrigeration Gurudath Nayak, ○ Michael Petersen, Martin Galansky, Steve Kujak (Trane Technologies)
D2-7	Viscosity measurements of binary mixtures R-454B and R-454C at low temperature condition ○ Duc Tran Xuan, Silvia, Tuhin Atiqur Rahman, Akio Miyara (Saga University), Nabel Alfarrazi Rachmat (Sebelas Maret University)
D2-8	Working fluid selection for the high-temperature stage of an ultra low temperature refrigeration system ○ Adrián Mota-Babiloni, Pau Giménez-Prades, Cosmin-Mihai Udriou, Ángel Barragán-Cervera, Joaquín Navarro-Esbrí (Universitat Jaume I)

D23: Low GWP Refrigerants 3

Chair: Prof. Jong-Taek OH (Chonnam National University)

Room D 13:20 - 14:40

ID	Presentation title
D2-9	Performance evaluation of low-GWP refrigerants for refrigerated display cabinet ○ Yoichi Miyaoka, Niccolo Giannetti, Kiyoshi Saito (Waseda University)
D2-10	Low GWP alternatives for an R-449A commercial refrigeration system ○ Pau Giménez-Prades, Joaquín Navarro-Esbrí, Cosmin-Mihai Udriou, Adrián Mota-Babiloni (Universitat Jaume I)
D2-11	Energy efficiency and system performance of R-454C, R-449A, and R-744 in food retail refrigeration systems: a comparison William Ferretto, Luca Molinaroli (Politecnico di Milano), ○ Fabrizio Codella (Chemours Italy srl), Jean-Marc Christmann (Chemours International Operations Meyrin)
D2-12	Multi objective optimization of refrigerant blends for supermarket systems Vijay Meruva, James Tancabel, ○ Vikrant Aute (University of Maryland)

D24: Low GWP Refrigerants 4

Chair: Prof. Yuhiro Iwamoto (Nagoya Institute of Technology)

Room D 15:00 - 16:00

ID	Presentation title
D2-13	A2L and A3 refrigerants testing for commercial refrigerated display cases under whole room scale ○ Xudong Wang (Air-Conditioning, Heating, and Refrigeration Institute)
D2-14	Effect of the monitoring of the mandatory leakages detection on the annual leakage rate of the refrigeration equipments Camille Fertel, Gerald Cavalier, ○ Olivier Valet (Cemafroid)
D2-15	Application of CO ₂ refrigerant in indoor ski resort Jianjun Sun, ○ Tianhui Sun (Hua Shang International Engineering Co., Ltd.), Xianfeng Zhao (National Speed Skating Oval Management Co., Ltd.), Peng Wang (Hua Shang International Engineering Co., Ltd.)