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April 7, Saturday

Registration (April 7, 08:00~12:00)

Location: Hotel lobby, First Floor of Grand Mercure Beijing Dongcheng

Poster (April 7, 10:00~18:00)

Location: Function Room 2, First Floor of Grand Mercure Beijing Dongcheng

Opening Ceremony (April 7, 08:40~09:00)

Location: Grand Ball Room, First Floor of Grand Mercure Beijing Dongcheng

Chair: Prof. Ruzhu Wang (Vice president of IIR section B2)

Plenary Lecture 1 (April 7, 09:00~09:30)

Location: Grand Ball Room, First Floor of Grand Mercure Beijing Dongcheng

Chair: Prof. Ruzhu Wang (Vice president of IIR section B2)

State-of-the-art of cold chain equipment in China

——Prof. Changqing TIAN (Chinese Academy of Sciences)

Plenary Lecture 2 (April 7, 09:30~10:00)

Location: Grand Ball Room, First Floor of Grand Mercure Beijing Dongcheng

Chair: Prof. Ruzhu Wang (Vice president of IIR section B2)

Japanese unique cold chain developed by fishery

——Prof. Manabu WATANABE (Vice president of IIR section C2)

Coffee Break (April 7, 10:00~10:20)

Location: First Floor of Grand Mercure Beijing Dongcheng

A1: Food quality and food safety in the cold chain (April 7, 10:20~11:20)

Location: Function Room 3, First Floor of Grand Mercure Beijing Dongcheng

Chair: Prof. Sheng Liu (Member of IIR section C2)

Time	ID	Presentation
10:20-10:40	Invited	Garden stuff cold chain logistics preservation innovative technology- fast precooling and ice temperature storage N/A ——Kang LI (DALIAN REFRIGERATION CO., LTD.)
10:40-11:00	0069	The effect of freeze-thaw cycles on storage quality of prawns 1 ——Zejin WANG, Ermei LIN, Ying HUANG, Wanwei QIU, Zhenshan LIN (Fujian Agriculture and Forestry University)
11:00-11:20	0019	Managing quality changes of green beans and carrots along storage with temperature fluctuations 7 ——Victor Vicent, Fatou-Toutie Ndoye, Pieter Verboven, Bart Nicolai, Graciela Alvarez (IRSTEA, Refrigeration Processes Engineering Research Unit)

B1: Energy efficiency in the cold chain (April 7, 10:20~11:20)		
Location: Function Room 1, First Floor of Grand Mercure Beijing Dongcheng		
Chair: Prof. Bin Liu (Member of IIR section D2)		
Time	ID	Presentation
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10:40-11:00	0006	Benchmarking of supermarket energy consumption 22 —A Foster, J Evans and G Maidment (London South Bank University)

C1: Refrigerants, containment and refrigeration in the future (April 7, 10:20~11:20)		
Location: Meeting Room 2, First Floor of Grand Mercure Beijing Dongcheng		
Chair: Prof. Shuangquan Shao(Chinese Academy of Sciences)		
Time	ID	Presentation
10:20-10:40	0061	Field measurements of a R404A low-temperature supermarket refrigeration system retrofitted with R449A 29 —Pavel MAKHNATCH, Adrián MOTA-BABILONI, Rahmatollah KHODABANDEH, Jorge HARO-ORTUÑO (KTH Royal Institute of Technology)
10:40-11:00	0062	Low GWP refrigerant options and their LCCP impact for transport refrigeration products 36 —Stephen KUJAK, Kenneth SCHULTZ (Ingersoll Rand)
11:00-11:20	0064	Heat transfer characteristics of ammonia during flow boiling in a horizontal small diameter tube 44 —Yuping GAO, Binfei ZHAN, Shuangquan SHAO, Hongbo XU, Changqing TIAN (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences)

A2: Food quality and food safety in the cold chain (April 7, 11:20~12:20)		
Location: Function Room 3, First Floor of Grand Mercure Beijing Dongcheng		
Chair: Prof. Zejin Wang (Member of IIR section D1)		
Time	ID	Presentation
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11:40-12:00	0016	Effect of indirect ice slurry cooling, low temperature transpiration and different retailing methods on the circulation quality of cauliflower 57 —Xiaoming Duan, Sheng Liu, Lijun Sun, Zhongyang Fan, Yan Li, Junyan Wang (Beijing Academy of Agriculture and Forestry Sciences)
12:00-12:20	0070	The effect of freeze-thaw cycles on frozen storage quality of pig trotters 63 —Zejin WANG , Huihuang YOU , Wanwei QIU , Ying HUANG , Zhenshan LIN (Fujian Agriculture and Forestry University)

B2: Energy efficiency in the cold chain (April 7, 11:20~12:20)**Location: Function Room 1, First Floor of Grand Mercure Beijing Dongcheng****Chair:** Prof. Changqing TIAN (Chinese Academy of Sciences)

Time	ID	Presentation
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11:40-12:00	0010	Oil circulation rate in ejector cooling cycles 78 ——Jingwei Zhu, Francesco Botticella, Stefan Elbel (University of Illinois at Urbana-Champaign)
12:00-12:20	0013	The use of ejectors technology: how to boost efficiency in warm climates - a real example from Italy N/A ——Giacomo PISANO (Dorin S.p.A.)

C2: Refrigerants, containment and refrigeration in the future (April 7, 11:20~12:20)**Location: Meeting Room 2, First Floor of Grand Mercure Beijing Dongcheng****Chair:** Prof. Mani Sankar Dasgupta (BITS Pilani)

Time	ID	Presentation
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11:40-12:00	0072	An overview of lower GWP blends for the food cold chain 93 ——Paul de Larminat (Johnson Controls)
12:00-12:20	0073	Characteristics of R454C and R455A as R404A alternatives in commercial refrigeration ——Pavel MAKHNATCH, Adrián MOTA-BABILONI, Rahmatollah KHODABANDEH, Jorge HARO-ORTUÑO (KTH Royal Institute of Technology) 101

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——Mr. Jacques GUILPART (President of IIR section C)**Plenary Lecture 4 (April 7, 14:00~14:30)****Location: Grand Ball Room, First Floor of Grand Mercure Beijing Dongcheng****Chair:** Prof. Changqing TIAN (Chinese Academy of Sciences)Sustainable cooling as emission reduction factor 108
——Dr. Torben Funder Kristensen (Head of Industry Affairs, Danfoss Cooling)**Coffee Break (April 7, 14:30~14:50)****Location: First Floor of Grand Mercure Beijing Dongcheng**

A3: Storage, transportation and logistics (April 7, 14:50~15:50)		
Location: Function Room 3, First Floor of Grand Mercure Beijing Dongcheng		
Chair: Prof. Zejin Wang (Member of IIR section D1)		
Time	ID	Presentation
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15:05-15:20	0057	Experimental characterization of heat transfer in a pallet of cheese 125 —Anh Thu PHAM, Jean MOUREH, Denis FLICK (IRSTEA, Génie des Procédés Frigorifiques (GPAN))
15:20-15:35	0059	Optimization of quality and yield of stock fish by end-drying in climatic controlled storage 132 —Erlend Indergård, Sjurdur Joensen, Kristina Norne Widell (SINTEF Ocean AS)
15:35-15:50	0060	T-Bar floor protection in intermodal refrigerated containers 144 —A. R. Lawton, C. Rhodes (Cambridge Refrigeration Technology)

B3: Process and equipment design innovation (April 7, 14:50~15:50)		
Location: Function Room 1, First Floor of Grand Mercure Beijing Dongcheng		
Chair: Prof. Jong-Taek Oh (Vice president of IIR section D1))		
Time	ID	Presentation
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15:10-15:30	0046	Reduction of energy consumption by applying a new generation of CO2 compressors —Oliver Javerschek, Julian Pfaffl, Julian Karbiner, Wang Yi (BITZER Kuehlmaschinenbau GmbH) 163
15:30-15:50	0047	The comparison of experiment and CFD simulation in the heat pump system using thermo bank and ejector cycle for heating room and cold storage 171 —Cuong Le Ngoc, Kwang-II Choi, Jong-Taek Oh (Chonnam National University)

C3: Refrigerants, containment and refrigeration in the future (April 7, 14:50~15:50)		
Location: Meeting Room 2, First Floor of Grand Mercure Beijing Dongcheng		
Chair: Prof. Mani Sankar Dasgupta (BITS Pilani)		
Time	ID	Presentation
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15:10-15:30	0076	Exergetic analysis of CO2 trans-critical refrigeration system with and without internal heat exchanger using experimental data 192 —Nilesh PUROHIT, Dileep Kumar GUPTA, Mani Sankar DASGUPTA (BITS Pilani)
15:30-15:50	0005	Application of vortex control to a transcritical R744 ejector cycle 201 —Jingwei Zhu, Stefan Elbel (University of Illinois at Urbana-Champaign)

A4: Modeling and predictive tools for cold chain optimization (April 7, 15:50~16:50)		
Location: Function Room 3, First Floor of Grand Mercure Beijing Dongcheng		
Chair: Prof. Shuangquan Shao (Chinese Academy of Sciences)		
Time	ID	Presentation
15:50-16:10	0034	A quick, reliable solution for modelling cheese chilling process 211 —Duy HOANG, Simon LOVATT, James CARSON (University of Waikato)
16:10-16:30	0036	Air distribution optimization of impingement freezer 219 —Junyan TANG, Shuangquan SHAO, Huiming ZOU, Changqing TIAN (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences)
16:30-16:50	0039	Performance evaluation method of heat pump driven refrigerated display cabinets 226 —Keisuke Ohno, Mark Anthony Redo, Niccolo Giannetti, Seiichi Yamaguchi, Kiyoshi Saito (WASEDA University)

B4: Process and equipment design innovation (April 7, 15:50~16:50)		
Location: Function Room 1, First Floor of Grand Mercure Beijing Dongcheng		
Chair: Prof. Bin Liu (Member of IIR section D2)		
Time	ID	Presentation
15:50-16:10	0068	Integration of heating, cooling and heat pumps in an industrial plant internally or connected to local district heating 234 —Alexander Cohr Pachai, Cicci Xi (Johnson Controls Denmark ApS)
16:10-16:30	0001	Analysis of cold chain carbon footprint of fruits and vegetables in China 240 —Xu Runan, Liu Bin, Chen Aiqiang, Yang Wenzhe (Tianjin University of Commerce)
16:30-16:50	0040	Performance enhancement of a vapor-compression cycle with cold storage for freezer applications 249 —Ye Liu, Gang Yan, Jianlin Yu (Xi'an Jiaotong University)

C4: Innovative technologies in the cold chain (April 7, 15:50~16:50)		
Location: Meeting Room 2, First Floor of Grand Mercure Beijing Dongcheng		
Chair: Prof. Alain LE-BAIL (Secretary of IIR section C2)		
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16:10-16:30	0029	Performance comparison between shorter and conventional air curtains in retail display refrigerators N/A —Shaun Pitchers, Catarina Marques, Roland Rees, Edward Hammond (Applied Design and Engineering Limited)
16:30-16:50	0030	Review on the impact of electrical and magnetic disturbances during freezing 264 —Alain LE-BAIL, Piyush Kumar JHA, Epameinondas XANTHAKIS, Mathieu SADOT, Vanessa JURY, Sébastien CURET, Olivier ROUAUD& Michel HAVET (ONIRIS)

C2 commission meeting (April 7, 10:00~12:00)**Location: Meeting Room 1, First Floor of Grand Mercure Beijing Dongcheng****CryoHub: Cryogenic Energy Storage for Renewable Workshop (April 7, 14:00~16:00)****Location: Meeting Room 1, First Floor of Grand Mercure Beijing Dongcheng****Chair:** Judith Evans (President of IIR section C2, CryoHub Project Coordinator, London South Bank University)

Time	ID	Presentation
14:00-14:10	Invited	Introduction to CryoHub N/A — Judith Evans (President of IIR section C2, CryoHub Project Coordinator, London South Bank University, UK)
14:10-14:20	Invited	Refrigeration sector and energy N/A —Didier Coulomb (Director General, International Institute of Refrigeration, France)
14:20-14:40	Invited	Modelling of liquid air energy storage in refrigerated cold storage warehouses N/A —Daniele Negro (London South Bank University, UK)
14:40-15:00	Invited	Overview of CryoHub thermal storage technologies N/A —Graciela Alvarez (IRSTEA, France)
15:00-15:20	Invited	Financial viability of liquid air energy storage applied to cold storage warehouses 272 —Alan Foster (London South Bank University, UK)
15:20-15:40	Invited	Energy storage in the Chinese power supply system - today and tomorrow N/A —Professor Haisheng CHEN (deputy Director of Institute of Engineering Thermophysics (IET), Chinese Academy of Sciences (CAS))
15:40-16:00		Final Questions and Close —Judith Evans (President of IIR section C2, CryoHub Project Coordinator, London South Bank University, UK)

Supermarket Workshop (April 7, 16:00~18:00)**Location: Meeting Room 1, First Floor of Grand Mercure Beijing Dongcheng****Chair:** Judith Evans (President of IIR section C2, London South Bank University)

Maria Kolokotroni (Brunel University)

Time	ID	Presentation
16:00-16:20	Invited	International benchmarking of supermarkets 210 - Results from the Annex 44 project - Results from the UK —Ulla Lindberg (RISE Research Institutes of Sweden) and Alan Foster (LSBU)
16:20-16:40	Invited	A European Eco label for food retail stores N/A —SuperSmart /I. Colombo (IIR)
16:40-17:00	Invited	Market and policy trends in the food retail/cold chain sector in the Asian region N/A —SuperSmart/Jan Dusek (Schecco)
17:00-17:20	Invited	The retail refrigeration road map – What technologies are available to reduce carbon emissions in supermarkets? N/A —Judith Evans and Alan Foster (LSBU)
17:20-17:40	Invited	A study of improving energy efficiency of small supermarkets by modelling interactions between building, HVAC, refrigeration and display product. N/A —Maria Kolokotroni (Brunel University)

17:40-18:00	Invited	Non-technological and expertise barriers to uptake of efficient supermarket technologies ——SuperSmart/Mazyar Karampour (KTH) N/A
		Discussion

Gala Dinner (April 7, 18:30~21:00)

Location: Grand Ball Room, First Floor of Grand Mercure Beijing Dongcheng

April 8, Sunday

Poster (April 8, 09:00~12:00)

Location: Function Room 2, First Floor of Grand Mercure Beijing Dongcheng

A5 WG Cold Chain for Pharmaceutical Products (April 8, 08:00~10:00)

Location: Function Room 3, First Floor of Grand Mercure Beijing Dongcheng

B5 WG Cold Chain in Hot countries (April 8, 08:00~10:00)

Location: Function Room 1, First Floor of Grand Mercure Beijing Dongcheng

Chair: Halima Thraya (Chair of the WG on Cold Chain in Hot Countries)

Presentation of the UN Environment-IIR Cold Chain Technology briefs

08:10-08:20	Invited	Introduction —Halima Thraya (Chair of the WG on Cold Chain in Hot Countries) Mr. Didier Coulomb (Director General, IIR)
08:20-08:35	Invited	Refrigeration in Food Production and Processing N/A —Mr. Jacques Guilpart (President of IIR Section C on Biology and Food Technology)
08:35-08:50	Invited	Commercial, Professional and Domestic Refrigeration N/A —Prof. Judith Evans (President of IIR Commission C2 on Food Science and Engineering)
08:50-09:05	Invited	Cold Storage/Refrigerated Warehouses N/A —Prof. Judith Evans (President of IIR Commission C2 on Food Science and Engineering)
09:05-09:20	Invited	Transport Refrigeration N/A —Mr. Richard Lawton (President of IIR Commission D2 on Refrigerated Transport)
09:20-09:35	Invited	Fishing Vessel Applications N/A —Mr. Paul de Larminat (IIR Expert)
09:35-10:00		Q & A

C5: Innovative technologies in the cold chain (April 8, 08:00~10:00)

Location: Meeting Room 2, First Floor of Grand Mercure Beijing Dongcheng

Chair: Prof. Jianlin Yu (Xi'an Jiaotong University)

Time	ID	Presentation
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08:40-09:00	0024	Evaluation of Microwave Assisted Freezing (MAF) impact on meat and fish matrices —Epeameinondas XANTHAKIS, Julien HUEN, Lovisa ELIASSON, Piyush Kumar JHA, Alain LE-BAIL, Marie SHRESTHA (RISE-Agrifood & Bioscience) 298
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09:40-10:00	0031	Theoretical study on a frost-free household refrigerator-freezer 320 —Li Zhang, Takeshi Fujinawa, Takenobu Kaida, Michiyuki Saikawa (Central Research Institute of Electric Power Industry)

Coffee Break (April 8, 10:00~10:10)

Location: First Floor of Grand Mercure Beijing Dongcheng

B6 WG Careers in Refrigeration CaRe (April 8, 10:10~11:00)

+ Refrigeration Social Media Workshop (April 8, 11:00~12:10)

Location: Function Room 1, First Floor of Grand Mercure Beijing Dongcheng

Time	ID	Presentation
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10:30-11:00		Q & A
11:00-12:10		Refrigeration Social Media Workshop

C6: Progress in domestic, retail and commercial refrigeration (April 8, 10:10~11:30)

Location: Meeting Room 2, First Floor of Grand Mercure Beijing Dongcheng

Chair: Prof. Judith Evans (President of IIR section C2)

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10:30-10:50	0050	Energetic and environmental performance evaluation of a R744 multi-ejector enhanced parallel compression system in high ambient temperature locations 344 —Paride Gullo, Nilesh Purohit, Mani Sankar Dasgupta, Armin Hafner (NTNU Norwegian University of Science and Technology)
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11:10-11:30	0049	Certified energy consultant for increased number of retail grocery stores with low energy use, safe operation and low environmental impact 359 —Ulla LINDBERG, Martin BORGQVIST (RISE Research Institutes of Sweden)

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Location: Grand Ball Room, First Floor of Grand Mercure Beijing Dongcheng

Chair: Prof. Manabu WATANABE (Vice president of IIR section C2)

Benchmarking the cold chain

——Prof. Judith Evans (President of IIR section C2)

Closing (April 8, 12:40~13:00)

Location: Grand Ball Room, First Floor of Grand Mercure Beijing Dongcheng

Chair: Prof. Ruzhu Wang (Vice president of IIR section B2)

Lunch (April 8, 13:00~14:00)

Location: Lobby Bar(First Floor) and Abalone Prince Restaurant(Second Floor) of Grand Mercure Beijing Dongcheng

Beijing Hutong Tour (April 8, 14:00~16:00)

14:00 Gather in the hotel lobby

April 9, Monday

Technical Tour——CRH2018(April 9, 09:00~15:00)

09:00 Gather in the hotel lobby

15:00 Gather at CAR's booth (Hall W3, D11)

Poster

Time: April 7, 10:00~18:00, April 8, 09:00~12:00

Location: Function Room 2, First Floor of Grand Mercure Beijing Dongcheng

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