

## 5<sup>th</sup> IIR Conference on Sustainability and the Cold Chain

### Preliminary Program

April 6, Friday		
09:00	20:00	Registration
14:00	16:00	Data and Models for Food Refrigeration and the Cold Chain FRISBEE International Workshop
16:00	18:00	D1 and D2 commission meeting
18:30	20:00	Welcome Reception

April 7, Saturday				
08:00	20:00	Registration		
08:40	09:00	Opening Ceremony Chair: Ruzhu Wang (Vice president of IIR section B2)		
09:00	09:30	Plenary Lecture 1 Chair: Ruzhu Wang (Vice president of IIR section B2)  State-of-the-art of cold chain equipment in China ——Prof. Changqing TIAN (Energy-saving Technology in Technical Institute of Physics and Chemistry, Chinese Academy of Sciences)		
09:30	10:00	Plenary Lecture 2 Chair: Ruzhu Wang (Vice president of IIR section B2)  Japanese unique cold chain developed by fishery ——Prof. Manabu WATANABE (Tokyo University of Marine Science and Technology)		
10:00	10:20	Coffee Break		
10:20	11:20	<b>Session A1</b> Food quality and food safety in the cold chain	<b>Session B1</b> Energy efficiency in the cold chain	<b>Session C1</b> Refrigerants, containment and refrigeration in the future
11:20	12:20	<b>Session A2</b> Food quality and food safety in the cold chain	<b>Session B2</b> Energy efficiency in the cold chain	<b>Session C2</b> Refrigerants, containment and refrigeration in the future
12:20	13:30	Lunch		
13:30	14:00	Plenary Lecture 3 Chair: Prof. Changqing TIAN (Energy-saving Technology in Technical Institute of Physics and Chemistry, Chinese Academy of Sciences) The food cold chain: what paradigm in between food preservation, refrigerant use and energy consumption? ——Mr. Jacques GUILPART (French delegate to the International Institute of Refrigeration (IIR) , President of section C “Biology and Food technology”)		

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14:00	14:30	<b>Plenary Lecture 4</b> Chair: Prof. Changqing TIAN (Energy-saving Technology in Technical Institute of Physics and Chemistry, Chinese Academy of Sciences) Sustainable cooling as emission reduction factor ——Dr. Torben Funder Kristensen (Head of Industry Affairs, Danfoss Cooling)		
14:30	14:50	<b>Coffee Break</b>		
14:50	15:50	<b>Session A3</b> Storage, transportation and logistics	<b>Session B3</b> Process and equipment design innovation	<b>Session C3</b> Refrigerants, containment and refrigeration in the future
15:50	16:50	<b>Session A4</b> Modeling and predictive tools for cold chain optimization	<b>Session B4</b> Process and equipment design innovation	<b>Session C4</b> Innovative technologies in the cold chain
10:00	12:00	<b>C2 commission meeting</b>		
14:00	16:00	<b>CryoHub: Cryogenic Energy Storage for Renewable Workshop</b>		
16:00	18:00	<b>Supermarket Workshop</b>		
18:30	21:00	<b>Gala Dinner</b>		

### April 8, Sunday

08:00	10:00	<b>Session A5</b> WG Cold Chain for Pharmaceutical Products	<b>Session B5</b> WG Careers in Refrigeration CaRe	<b>Session C5</b> Innovative technologies in the cold chain
10:00	10:10	<b>Coffee Break</b>		
10:10	12:10	<b>Session A6</b> WG Cold Chain in Hot countries	<b>Session B6</b> Refrigeration Social Media Workshop	<b>Session C6</b> Progress in domestic, retail and commercial refrigeration
12:10	12:40	<b>Plenary Lecture 5</b> Chair: Prof. Manabu WATANABE (Tokyo University of Marine Science and Technology)  Benchmarking the cold chain ——Prof. Judith Evans (School of the Engineering – London South Bank University)		
12:40	13:00	<b>Closing</b> Chair: Ruzhu Wang (Vice president of IIR section B2)		
13:00	14:00	<b>Lunch</b>		
14:00	17:00	<b>Beijing Hutong Tour</b>		

### April 9, Monday

09:00	15:00	<b>Technical Tour——CRH2018</b> <a href="http://www.cr-expo.com/?lang=en">http://www.cr-expo.com/?lang=en</a>
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**5<sup>th</sup> IIR Conference on Sustainability and the Cold Chain**

**April 6, Friday**

**Data and Models for Food Refrigeration and the Cold Chain**

**FRISBEE International Workshop (April 6, 14:00~16:00)**

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

**Chair:**

**D1 and D2 commission meeting (April 6, 16:00~18:00)**

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

**Chair:**

**Welcome Reception (April 6, 18:30~20:00)**

**Location: Lobby Bar, First Floor of Grand Mercure Beijing Dongcheng**

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### April 7, Saturday

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

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

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

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

——Prof. Changqing TIAN (Energy-saving Technology in Technical Institute of Physics and Chemistry, 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:** Ruzhu Wang (Vice president of IIR section B2)

Japanese unique cold chain developed by fishery

——Prof. Manabu WATANABE (Tokyo University of Marine Science and Technology)

**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:**

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

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<b>B1: Energy efficiency in the cold chain (April 7, 10:20~11:20)</b>		
<b>Location: Function Room 1, First Floor of Grand Mercure Beijing Dongcheng</b>		
<b>Chair:</b>		
Time	ID	Presentation
10:20-10:40	0004	A study of improving energy efficiency of small supermarkets by modelling interactions between building, HVAC, refrigeration and display product ——Zoi Mylona, Maria Kolokotroni, Savvas A Tassou (RCUK National Centre for Sustainable Energy Use in Food Chains (CSEF), Brunel University London)
10:40-11:00	0006	Benchmarking of supermarket energy consumption ——A Foster, J Evans and G Maidment (London South Bank University)
11:00-11:20	0008	Criterion for energy use estimation in supermarket ——Michele PRESSIANI, Samer SAWALHA, Jaime ARIAS, Mazyar KARAMPOUR (KTH Royal Institute of Technology)

<b>C1: Refrigerants, containment and refrigeration in the future (April 7, 10:20~11:20)</b>		
<b>Location: Meeting Room 2, First Floor of Grand Mercure Beijing Dongcheng</b>		
<b>Chair:</b>		
Time	ID	Presentation
10:20-10:40	0061	Field measurements of a R404A low-temperature supermarket refrigeration system retrofitted with R449A ——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 ——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 ——Yuping GAO, Binfei ZHAN, Shuangquan SHAO, Hongbo XU, Changqing TIAN (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences)

<b>A2: Food quality and food safety in the cold chain (April 7, 11:20~12:20)</b>		
<b>Location: Function Room 3, First Floor of Grand Mercure Beijing Dongcheng</b>		
<b>Chair:</b>		
Time	ID	Presentation
11:20-11:40	0020	Measurement of food dehydration during freezing: development of an experimental tool and application to tylose ——Violette MULOT, Hayat BENKHELIFA, Didier PATHIER, Fatou-Toutie NDOYE, Denis FLICK (IRSTEA, Génie des Procédés Frigorifiques (GPAN))
11:40-12:00	0016	Effect of indirect ice slurry cooling, low temperature transpiration and different retailing methods on the circulation quality of cauliflower ——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 ——Zejin WANG , Huihuang YOU , Wanwei QIU , Ying HUANG , Zhenshan LIN (Fujian Agriculture and Forestry University)

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### **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:**

Time	ID	Presentation
11:20-11:40	0009	Novel energy efficiency assessment approach of air cooled condensers used in large retail refrigeration pack estates using only a singular metering point ——Niall BRADY (IBM Research)
11:40-12:00	0010	Oil circulation rate in ejector cooling cycles ——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 ——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:**

Time	ID	Presentation
11:20-11:40	0071	A study on the effect of the operating conditions on performance of CO2 hydrate cooling system for district cooling applications ——Sung CHOI, Yong Tae KANG (Korea University)
11:40-12:00	0072	An overview of lower GWP blends for the food cold chain ——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)

### **Lunch (April 7, 12:20~13:30)**

**Location: Lobby Bar, First Floor of Grand Mercure Beijing Dongcheng**

### **Plenary Lecture 3 (April 7, 13:30~14:00)**

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

**Chair:** Chair: Prof. Changqing TIAN (Energy-saving Technology in Technical Institute of Physics and Chemistry, Chinese Academy of Sciences)

The food cold chain: what paradigm in between food preservation, refrigerant use and energy consumption?  
——Mr. Jacques GUILPART (French delegate to the International Institute of Refrigeration (IIR) , President of section C “Biology and Food technology”)

### **Plenary Lecture 4 (April 7, 14:00~14:30)**

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

**Chair:** Prof. Changqing TIAN (Energy-saving Technology in Technical Institute of Physics and Chemistry, Chinese Academy of Sciences)

Sustainable cooling as emission reduction factor  
——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**

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<b>A3: Storage, transportation and logistics (April 7, 14:50~15:50)</b>		
<b>Location: Function Room 3, First Floor of Grand Mercure Beijing Dongcheng</b>		
<b>Chair:</b>		
Time	ID	Presentation
14:50-15:05	<b>0055</b>	Factors affecting the ageing of refrigerated transport equipment ——Claudia CAPO, Frantz LATCHAN, Thomas MICHINEAU, Jean Marc PETIT, Rémi REVELLIN, Jocelyn BONJOUR, Gérald CAVALIER (Cemafroid)
15:05-15:20	<b>0057</b>	Experimental characterization of heat transfer in a pallet of cheese ——Anh Thu PHAM, Jean MOUREH, Denis FLICK (IRSTEA, Génie des Procédés Frigorifiques (GPAN))
15:20-15:35	<b>0059</b>	Optimization of quality and yield of stockfish by end-drying in climatic controlled storage ——Erlend Indergård, Sjurður Joensen, Kristina Norne Widell (SINTEF Ocean AS)
15:35-15:50	<b>0060</b>	T-Bar floor protection in intermodal refrigerated containers ——A. R. Lawton, C. Rhodes (Cambridge Refrigeration Technology)

<b>B3: Process and equipment design innovation (April 7, 14:50~15:50)</b>		
<b>Location: Function Room 1, First Floor of Grand Mercure Beijing Dongcheng</b>		
<b>Chair:</b>		
Time	ID	Presentation
14:50-15:10	<b>0041</b>	Comparative study on electric heater defrosting of gravity feeding refrigeration system ——Wang He, Zang Runqing (Tianjin University of Commerce)
15:10-15:30	<b>0046</b>	Reduction of energy consumption by applying a new generation of CO2 compressors ——Oliver Javerschek, Julian Pfaffl, Julian Karbiner, Wang Yi (BITZER Kuehlmaschinenbau GmbH)
15:30-15:50	<b>0047</b>	The comparison of experiment and CFD simulation in the heat pump system using thermobank and ejector cycle for heating room and cold storage ——Cuong Le Ngoc, Kwang-Il Choi, Jong-Taek Oh (Chonnam National University)

<b>C3: Refrigerants, containment and refrigeration in the future (April 7, 14:50~15:50)</b>		
<b>Location: Meeting Room 2, First Floor of Grand Mercure Beijing Dongcheng</b>		
<b>Chair:</b>		
Time	ID	Presentation
14:50-15:10	<b>0065</b>	Low-charge ammonia technology in North America, China, Japan and Europe ——K. SKAČANOVÁ, D. HAMILTON, J. DUSEK (shecco Europe)
15:10-15:30	<b>0076</b>	Exergetic analysis of CO2 trans-critical refrigeration system with and without internal heat exchanger using experimental data ——Nilesh PUROHIT, Dileep Kumar GUPTA, Mani Sankar DASGUPTA (Pilani Campus)
15:30-15:50	<b>0005</b>	Application of vortex control to a transcritical R744 ejector cycle ——Jingwei Zhu, Stefan Elbel (University of Illinois at Urbana-Champaign)

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

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

<b>C4: Innovative technologies in the cold chain (April 7, 15:50~16:50)</b>		
<b>Location: Meeting Room 2, First Floor of Grand Mercure Beijing Dongcheng</b>		
<b>Chair:</b>		
Time	ID	Presentation
15:50-16:10	<b>0017</b>	Comparative study of various supermarket refrigerating systems in european climate context ——Paride Gullo, Nilesh Purohit, Mani Sankar Dasgupta, Armin Hafner, Krzysztof Banasiak (NTNU Norwegian University of Science and Technology)
16:10-16:30	<b>0029</b>	Performance comparison between shorter and conventional air curtains in retail display refrigerators ——Shaun Pitchers, Catarina Marques, Roland Rees, Edward Hammond (Applied Design and Engineering Limited)
16:30-16:50	<b>0030</b>	Review on the impact of electrical and magnetic disturbances during freezing ——Alain LE-BAIL, Piyush Kumar JHA, Epameinondas XANTHAKIS, Mathieu SADOT, Vanessa JURY, Sébastien CURET, Olivier ROUAUD& Michel HAVET (ONIRIS)

<b>C2 commission meeting (April 7, 10:00~12:00)</b>		
<b>Location: Meeting Room 1, First Floor of Grand Mercure Beijing Dongcheng</b>		
<b>Chair:</b>		



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<b>CryoHub: Cryogenic Energy Storage for Renewable Workshop (April 7, 14:00~16:00)</b>		
<b>Location: Meeting Room 1, First Floor of Grand Mercure Beijing Dongcheng</b>		
<b>Chair:</b> Judith Evans (CryoHub Project Coordinator, London South Bank University, UK)		
<b>Time</b>	<b>ID</b>	<b>Presentation</b>
14:00-14:10	<b>Invited</b>	Introduction to CryoHub —— Judith Evans (CryoHub Project Coordinator, London South Bank University, UK)
14:10-14:20	<b>Invited</b>	Refrigeration sector and energy ——Didier Coulomb (Director General, International Institute of Refrigeration, France)
14:20-14:40	<b>Invited</b>	Modelling of liquid air energy storage in refrigerated cold storage warehouses ——Daniele Negro (London South Bank University, UK)
14:40-15:00	<b>Invited</b>	Overview of CryoHub thermal storage technologies ——Graciela Alvarez (IRSTEA, France)
15:00-15:20	<b>Invited</b>	Financial viability of liquid air energy storage applied to cold storage warehouses ——Alan Foster (London South Bank University, UK)
15:20-15:40	<b>Invited</b>	Energy storage in the Chinese power supply system – today and tomorrow ——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

<b>Supermarket Workshop (April 7, 16:00~18:00)</b>		
<b>Location: Meeting Room 1, First Floor of Grand Mercure Beijing Dongcheng</b>		
<b>Chair:</b> Judith Evans and Maria Kolokotroni		
<b>Time</b>	<b>ID</b>	<b>Presentation</b>
16:00-16:20	<b>Invited</b>	International benchmarking of supermarkets - 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	<b>Invited</b>	A European Ecolabel for food retail stores ——SuperSmart /I. Colombo (IIR)
16:40-17:00	<b>Invited</b>	Market and policy trends in the food retail/cold chain sector in the Asian region ——SuperSmart/Jan Dusek (Schecco)
17:00-17:20	<b>Invited</b>	The retail refrigeration road map – What technologies are available to reduce carbon emissions in supermarkets? ——Judith Evans and Alan Foster (LSBU)
17:20-17:40	<b>Invited</b>	A study of improving energy efficiency of small supermarkets by modelling interactions between building, HVAC, refrigeration and display product. ——Maria Kolokotroni (Brunel University)
17:40-18:00	<b>Invited</b>	Non-technological and expertise barriers to uptake of efficient supermarket technologies ——SuperSmart/Mazyar Karampour (KTH)
		Discussion

<b>Gala Dinner (April 7, 18:30~21:00)</b>		
<b>Location: Grand Ball Room, First Floor of Grand Mercure Beijing Dongcheng</b>		

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### April 8, Sunday

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

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

**Chair:**

#### **B5 WG Careers in Refrigeration CaRe (April 8, 08:00~10:00)**

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

**Chair:**

#### **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:**

Time	ID	Presentation
08:00-08:20	0028	New type of energy efficient heat exchanger for indirectly cooled display cabinets – laboratory and field tests ——Caroline HAGLUND STIGNOR, Pia TILJANDER, Ulla LINDBERG, Peter LIDBOM, Monica AXELL, Marcello MASGRAU (RISE Research Institutes of Sweden)
08:20-08:40	0023	Cryogenic solutions: innovations to serve refrigerated transportation for a sustainable and efficient cold chain ——Jean-Pierre BERNARD, Mohammed YOUNI-IDRISSI, Jean-Patrice QUENEDEY (AIR LIQUIDE R&D)
08:40-09:00	0024	Evaluation of Microwave Assisted Freezing (MAF) impact on meat and fish matrices ——Epeineonondas XANTHAKIS, Julien HUEN, Lovisa ELIASSON, Piyush Kumar JHA, Alain LE-BAIL, Marie SHRESTHA (RISE-Agrifood & Bioscience)
09:00-09:20	0026	Freezewave H2020 project-Microwave Assisted Freezing of potato ——Piyush Kumar JHA, Vanessa JURY, Sylvie CHEVALLIER, Epeineonondas XANTHAKIS, Alain LE-BAIL (ONIRIS)
09:20-09:40	0027	Modelling of liquid air energy storage applied to refrigerated cold stores ——Daniele NEGRO, Tim BROWN, Alan M. FOSTER, Alain DAMAS, Jorge Ernesto TOVAR RAMOS, Judith A. EVANS (London South Bank University)
09:40-10:00	0031	Theoretical study on a frost-free household refrigerator-freezer ——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**

#### **A6 WG Careers in Refrigeration CaRe (April 8, 10:10~12:10)**

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

**Chair:**

#### **B6 Refrigeration Social Media Workshop (April 8, 10:10~12:10)**

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

**Chair:**

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**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:**

Time	ID	Presentation
10:00-10:20	0051	Evaluation of suitability of recycled domestic appliances for re-use ——Judith A. Evans, Helen J. Foster and Andrew J. Gemmell (London South Bank University and RD&T)
10:20-10:40	0050	Energetic and environmental performance evaluation of a R744 multi-ejector enhanced parallel compression system in high ambient temperature locations ——Paride Gullo, Nilesh Purohit, Mani Sankar Dasgupta, Armin Hafner (NTNU Norwegian University of Science and Technology)
10:40-11:00	0052	Performance of an integral display cabinet working with CO <sub>2</sub> in subcritical and transcritical cycle ——Ronja Ben-abdallah, Denis Leducq, Hong Minh Hoang, Olivier Pateau, Bénédicte Ballot-Miguet, Dahmana E., A. Delahaye (Irstea)
11:00-11:20	0049	Certified energy consultant for increased number of retail grocery stores with low energy use, safe operation and low environmental impact ——Ulla LINDBERG, Martin BORGQVIST (RISE Research Institutes of Sweden)

**Plenary Lecture 5 (April 8, 12:10~12:40)**

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

**Chair:** Prof. Manabu WATANABE (Tokyo University of Marine Science and Technology)

Benchmarking the cold chain

——Prof. Judith Evans (School of the Engineering – London South Bank University)

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

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

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

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

**Location: Lobby Bar, First Floor of Grand Mercure Beijing Dongcheng**

**Beijing Hutong Tour (April 8, 14:00~17:00)**

**5<sup>th</sup> IIR Conference on Sustainability and the Cold Chain**

**April 9, Monday**

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

<http://www.cr-expo.com/?lang=en>

**Secretary**

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