

# ACRA 2022

## The 10th Asian Conference on Refrigeration and Air-conditioning

April 9-10 2022 Online

Organizer :



Co-organizers:



## Program

ACRA (Asian Conference on Refrigeration and Air-conditioning) is a forum for presenting and exchanging scientific and industrial knowledge in the fields of HVAC&R. It began in 2002 in Kobe (2002) and followed by Beijing (2004), Gyeongju (2006), Taipei (2009), Tokyo (2010), Xi'an (2012), Jeju Island (2014), Taipei (2016), and Sapporo (2018). The 10th Asian Conference on Refrigeration and Air-conditioning (ACRA2022) will be held during **April 9-10, 2022 as Virtual Conference**.

### Website

<http://www.acra2022.org>

### Conference Language

The official language used in the conference will be English.

### Conference Format

Opening Ceremony & Plenary Session: Live online ( Link: <https://www.aconf.org/live/191630>)

Parallel Sessions: Zoom meetings ( Only registered and paid participants can get zoom meeting password )

Poster Presentations

### Conference Organizers

#### **Organizer:**

Chinese Association of Refrigeration

#### **Co-organizers:**

Zhejiang University

Chongqing Institute of Refrigeration

## Program at a glance

April 9, Saturday		
Beijing Time	Activity	
09:00-09:20	<b>Opening Ceremony</b> Chair: Prof. Guangming Chen, Conference Chair of ACRA 2022, Zhejiang University	
09:20-11:20	<b>Plenary Session</b> Chair: Prof. Ruzhu Wang, Shanghai Jiao Tong University	
09:20-09:50	<b>Plenary Lecture 1</b> Core technologies for performance enhancement of absorption systems and the next generation applications Prof. Yong Tae Kang, Korea University	
09:50-10:20	<b>Plenary Lecture 2</b> Novel Open Absorption Heat Pump Technologies for the Utilization of Low Grade Energy and Latent Heat Recovery Prof. Xiangguo Xu, Zhejiang University	
10:20-10:50	<b>Plenary Lecture 3</b> Current status on the development of fundamental equations of state for low GWP refrigerants Prof. Ryo AKASAKA, Kyushu Sangyo University	
10:50-11:20	<b>Plenary Lecture 4</b> Investigation on the Characteristic of a High Speed Centrifugal Refrigeration Compressor adopting Different Refrigerants via CFD Simulation Prof. Yean-Der Kuan, National Chin-Yi University of Technology	
Parallel Sessions		
Beijing Time	Sessions	Room/Zoom ID
13:30-15:30	<b>Refrigerants (1)</b> Chair: Prof. Zhao Yang, Tianjin University	Room A ID: 965 2747 7648 Password: 712655
15:40-17:40	<b>Refrigerants (2)</b> Chair: Prof. Xinrong Zhang, Peking University	
13:30-15:30	<b>Thermal/Fluid Science (1)</b> Chair: Prof. Minsung Kim, Chung-Ang University	Room B ID: 926 2319 8088 Password: 990387
15:40-17:40	<b>Thermal/Fluid Science (2)</b> Chair: Prof. Yew Khoy Chuah, National Taipei University of Technology	
13:30-15:30	<b>Heat exchanger technologies (1)</b> Chair: Prof. Norihiro Inoue, Tokyo University of Marine Science and Technology	Room C ID: 929 6347 8185 Password: 294281
15:40-17:40	<b>Heat exchanger technologies (2)</b> Chair: Prof. Guoliang Ding, Shanghai Jiao Tong University	
13:30-15:30	<b>Renewable energy application (1)</b> Chair: Prof. Xuejun Zhang, Zhejiang University	Room D ID: 957 6634 4405 Password: 572934
15:40-17:40	<b>Renewable energy application (2)</b> Chair: Prof. Xuejun Zhang, Zhejiang University	
13:30-15:30	<b>Chiller and heat pump (1)</b> Chair: Prof. Liang-Han Chien, National Taipei University of Technology	Room E ID: 961 3342 1136 Password: 737311
15:40-17:40	<b>Chiller and heat pump (2)</b> Chair: Prof. Jianlin Yu, Xi'an Jiaotong University	

April 10, Sunday

Parallel Sessions

BeijingTime	Sessions	Room/Zoom ID
08:30-10:30	<b>Refrigerants (3)</b> Chair: Prof. Akio Miyara, Saga University	Room A ID: 967 6598 5073
10:40-12:40	<b>Dehumidification</b> Chair: Prof. Xianting Li, Tsinghua University	Password: 297501
08:30-10:30	<b>Thermal/Fluid Science (3)</b> Chair: Prof. Chaobin Dang, University of Fukui	Room B ID: 948 3773 3187
10:40-12:40	<b>Indoor air quality and thermal comfort</b> Chair: Prof. Jun Lu, Chongqing University	Password: 944078
08:30-10:30	<b>Electric vehicle thermal management</b> Chair: Prof. Jong-Taek Oh, Chonnam National University	Room C ID: 988 4987 0588
10:40-12:40	<b>Sorption (absorption, adsorption) refrigeration</b> Chair: Prof. Zhenyuan Xu, Shanghai Jiao Tong University	Password: 907315
08:30-10:30	<b>Energy recovery</b> Chair: Prof. Jun Young CHOI, Korea Testing Laboratory	Room D ID: 996 7761 3263
10:40-12:40	<b>Fault diagnosis</b> Chair: Prof. Huanxin Chen, Huazhong University of Science and Technology	Password: 471057

Poster Presentations

(Website: <http://www.acra2022.org>, Virtual Conference-Poster Presentations)

## Schedule Details

April 9, 2022, Saturday			
<b>Plenary Session</b>			
Link: <a href="https://www.aconf.org/live/191630">https://www.aconf.org/live/191630</a>			
<b>2022-04-09 09:00-09:20 (Beijing Time)</b>			
<b>Opening Ceremony</b>			
<b>President:Guangming Chen, Conference Chair of ACRA 2022, Zhejiang University</b>			
<b>2022-04-09 09:20-11:20 (Beijing Time)</b>			
<b>Plenary Session</b>			
<b>President:Ruzhu Wang, Shanghai Jiao Tong University</b>			
Beijing Time	Title	Speaker	Organization
09:20-09:50	Core technologies for performance enhancement of absorption systems and the next generation applications	Yong Tae Kang	Korea University
09:50-10:20	Novel Open Absorption Heat Pump Technologies for the Utilization of Low Grade Energy and Latent Heat Recovery	Xiangguo Xu	Zhejiang University
10:20-10:50	Current status on the development of fundamental equations of state for low GWP refrigerants	Ryo AKASAKA	Kyushu Sangyo University
10:50-11:20	Investigation on the Characteristic of a High Speed Centrifugal Refrigeration Compressor adopting Different Refrigerants via CFD Simulation	Yean-Der Kuan	National Chin-Yi University of Technology
<b>Room A</b>			
<b>Zoom ID: 965 2747 7648 Password: 712655</b>			
<b>2022-04-09 13:30-15:30 (Beijing Time)</b>			
<b>Refrigerants (1) — Zoom ID: 965 2747 7648 Password: 712655</b>			
<b>President:Zhao Yang, Tianjin University</b>			
Beijing Time	Title	Speaker	Organization
13:30-13:45	Refrigerant charge prediction of an air conditioner using physical-based heat exchanger model	Young Soo Chang	Kookmin University
13:45-14:00	Experiment study on performance improvement and charge reduction of R290 household air conditioners	Qian Ning	Huazhong University of Science and Technology
14:00-14:15	Data-based Model Method of Predicting the Boiling Heat Transfer Coefficient of Alternative Refrigerants Inside the Multiport Mini-Channel	Nurlaily Agustiarini	Chonnam National University

	Tube		
14:15-14:30	Experimental study on flow boiling heat transfer characteristics of low-GWP R1234yf in a minichannel	Ling Li	Nanjing University of Aeronautics and Astronautics
14:30-14:45	Experimental study on condensation heat transfer coefficient of refrigerant mixture HFC-32/HFO-1234yf in a multiport tube	Maika NOBUNAGA	Tokyo University of Marine Science Technology
14:45-15:00	Proposal a novel combined cooling and power system based on the partial heating S-CO <sub>2</sub> power cycle driven by exhaust gas waste heat	Yuemao Jiang	Dalian Maritime University
15:00-15:15	Phase transition and thermophysical properties of low GWP refrigerants' blends investigated by MD simulations	Md. Sarwar Alam	Jagannath University
<b>2022-04-09 15:40-17:40 (Beijing Time)</b>			
<b>Refrigerants (2) — Zoom ID: 965 2747 7648 Password: 712655</b>			
<b>President: Xinrong Zhang, Peking University</b>			
Beijing Time	Title	Speaker	Organization
15:40-15:55	Novel CO <sub>2</sub> Energy station for Urban areas	SAPARGEL DI AMANGEL DIYEV	Peking Univeristy
15:55-16:10	Experimental study on falling film evaporation of HFO-1224yd(Z) on a horizontal smooth tube	Yasuhiro Murata	Tokyo University of Marine Science and Technology
16:10-16:25	Numerical safety evaluation on R32 driven air conditioning system's leakage accident	Gitaek Jung	Korea university
16:25-16:40	Study on nozzle structure design in transcritical carbon dioxide compression-jet refrigeration cycle	Yang Nie	Peking Univeristy
16:40-16:55	Thermodynamic analysis of hybrid two-stage CO <sub>2</sub> mechanical compression–ejector cooling cycle	Volodymyr Ierin	NingboTech University
16:55-17:10	Evaporation heat transfer coefficient of R448A inside multiport mini-channel tube	Hieu Hoang	Chonnam National University
17:10-17:25	Solubility and kinematic viscosity of SHE22PP lubricant and R290 mixture	Xuyao Tang	Xi'an Jiaotong University

<b>Room B</b>			
<b>Zoom ID: 926 2319 8088 Password: 990387</b>			
<b>2022-04-09 13:30-15:30 (Beijing Time)</b>			
<b>Thermal/Fluid Science (1) — Zoom ID: 926 2319 8088 Password: 990387</b>			
<b>President:Minsung Kim, Chung-Ang University</b>			
<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
13:30-13:45	Experimental Study on the Preparation of Binary Ice by Additives Enhanced Vacuum Flash Evaporation	Lingeng Zou	Shanghai Maritime University
13:45-14:00	Study on High-Performance Exhaust Gas Treatment Technology Based on Electrospray	Soyeon Kim	Chung-ang University
14:00-14:15	Experiment and simulation of heat and mass transfer in spray drying tower at low temperature and negative pressure	Yujiang Xia	Nanjing Tech University
14:15-14:30	Effects of dissolved gas on the nucleation and growth of ice crystals in freezing droplets	YINGLING LI	Huazhong University of Science and Technology
14:30-14:45	Numerical prediction of frost formation on a cryogenic plate considering mist generation using general dynamic equation	Akihiro Hattori	Waseda University
14:45-15:00	Dynamic simulation of the growth of condensed droplet clusters on superhydrophobic surface within humid air	Ning Lv	Southeast University
<b>2022-04-09 15:40-17:40 (Beijing Time)</b>			
<b>Thermal/Fluid Science (2) —Zoom ID: 926 2319 8088 Password: 990387</b>			
<b>President:Yew Khoy Chuah, National Taipei University of Technology</b>			
<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
15:40-15:55	Application research of nanofluids in carbon dioxide capture	Lirong Li	Associate professor (on campus), Yangzhou University
15:55-16:10	Defrosting performance improvements in the Variable Refrigerant Flow system	Ken Miura	Toshiba Carrier Corporation
16:10-16:25	Comparison of liquid hydrogen, ammonia and liquid organic hydrogen carrier (LOHC) on energy efficiency and carbon emission	Hongru Liu	Shanghai Jiao Tong University
16:25-16:40	Design and simulation of a mechanically pumped two-phase cooling system for aircraft	Jiale wang	Nanjing University of Aeronautics and Astronautics
16:40-16:55	The Development of the heat dissipation on	TzHan Shiao	Industrial

	outer-rotor permanent magnet synchronous motor for chiller condenser air-cooling fan		Technology Research Institute
16:55-17:10	The Integration of Thermal Diode in the Building Envelop for Energy Saving in Hot Summer and Cold Winter Areas	Yahui Gao	Wuhan University of Technology
<b>Room C</b>			
<b>Zoom ID: 929 6347 8185 Password: 294281</b>			
<b>2022-04-09 13:30-15:30 (Beijing Time)</b>			
<b>Heat exchanger technologies (1) —Zoom ID: 929 6347 8185 Password: 294281</b>			
<b>President:Norihiro Inoue, Tokyo University of Marine Science and Technology</b>			
<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
13:30-13:45	Multi-objective optimization of an offset strip fin heat exchanger with perpendicular flow	YunJae Park	Korea University
13:45-14:00	Influence mechanism of fluid flow and heat transfer processes in induction period on uneven fouling distribution characteristics	Yuan Wang	Tsinghua University
14:00-14:15	Performance Enhancement of an Adsorption Heat Exchanger with Aluminium Foam Coated with Activated Carbon	Zhaosheng Yang	Kyushu University
14:15-14:30	Study on void fraction characteristics of gas-liquid two-phase flows in horizontal non-circular small diameter channel	Masatoshi Hikita	Kobe University
14:30-14:45	Numerical study on heat transfer of salty wastewater spray falling film over a horizontal tube in the mechanical vapor recompression crystallization system	Yanmei Cao	Nanjing Tech University
14:45-15:00	Experiment on Condensation Heat Transfer and Pressure Drop in Layered Microchannel Heat Exchangers	Tatsuki GOTO	Tokyo University of Marine Science and Technology
<b>2022-04-09 15:40-17:40 (Beijing Time)</b>			
<b>Heat exchanger technologies (2) —Zoom ID: 929 6347 8185 Password: 294281</b>			
<b>President:Guoliang Ding, Shanghai Jiao Tong University</b>			
<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
15:40-15:55	Experimental Investigation on Effects of Inlet and Outlet structures in Expanding Micro Channel Heat Sinks	Shaobo Yang	The University of Tokyo
15:55-16:10	Gas-liquid distributions of refrigerant flow in multi-pass channels with vertical headers - 1st report: Measurements of gas-liquid distributions and pressure losses -	Masafumi Hirota	Mie University



16:10-16:25	Basic Experiment and Result Analysis on Continuous Occurrence of Subcooled Water	Pengwei Cheng	Zhejiang Normal University
16:25-16:40	Gas-liquid distributions of refrigerant flow in multi-pass channels with vertical headers - 2nd report: Improvement of uniformity of liquid distribution -	Ayumi Onodera	Toshiba Carrier Corporation
16:40-16:55	Basic Performance of Compact Heat Exchanger Trial-Produced Based on Batch Processing Technology	Solomon Sinkolongo	Zhejiang normal university
16:55-17:10	Simulation of vapor-liquid separation in header-baffle with orifices at various operating condition	Kunteng Huang	Guangdong University of Technology
17:10-17:25	Experimental study of the air condenser characteristics in the presence of external fouling	Viktoriia Sokolovska-Yefymenko	Odessa National Academy of Food Technologies

**Room D**

**Zoom ID: 957 6634 4405 Password: 572934**

**2022-04-09 13:30-15:30 (Beijing Time)**

**Renewable energy application (1) —Zoom ID: 957 6634 4405 Password: 572934**

**President: Xuejun Zhang, Zhejiang University**

<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
13:30-13:45	Heat transfer characteristics of thermosiphon charged with low GWP refrigerant for data center cooling	Buqing Xu	Beijing University of Technology
13:45-14:00	A plan to build a renewable energy-based zero energy building in a hydrogen and power-based society	Yujun Jung	Korea university
14:00-14:15	Enhanced solar absorption of MWCNT ionanofluids	Tsogtbilegt Boldoo	Chosun University
14:15-14:30	Advancements in the research on mechanically driven loop heat pipe systems for data center cooling	Yuexuan Gong	Beijing University of Technology



**2022-04-09 15:40-17:40 (Beijing Time)**

**Renewable energy application (2) —Zoom ID: 957 6634 4405 Password: 572934**

**President:Xuejun Zhang, Zhejiang University**

<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
15:40-15:55	The Case Study of Evaporative Cooling in a Data Center	Chu Yuan Chao	National Taiwan University of Technology
15:55-16:10	Evaluation of optical properties of Fe <sub>3</sub> O <sub>4</sub> -ATO hybrid nanofluid for solar thermal harvesting	Hyemin Kim	Chosun University
16:10-16:25	Continuous thermoelectric power generation based on radiative cooling	Zijie Shi	Nanjing Tech University
16:25-16:40	Optimization study on a radiative cooling film based on Mie theory and Monte Carlo method	Ge Song	Nanjing Tech University

**Room E**

**Zoom ID: 961 3342 1136 Password: 737311**

**2022-04-09 13:30-15:30 (Beijing Time)**

**Chiller and heat pump (1) —Zoom ID: 961 3342 1136 Password: 737311**

**President:Liang-Han Chien, National Taipei University of Technology**

<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
13:30-13:45	Experimental Study on Heat Recovery System Performance of Heat Pump Composite Pump-driven Heat Pipe	Shuailing Liu	Beijing University of Technology
13:45-14:00	An Empirical Study of the Performance of a Reciprocating Magnetic Heat Pump System with Irregular Gadolinium Particles	Jongmin Choi	Seoul National University
14:00-14:15	Study on cycle performance of a novel energy-stored heat pump	Minghui Chang	Institute of Building Energy and Thermal Science
14:15-14:30	A Proposal of Platform Based Design Method using Product Platform and an Application for Room Air Conditioner	Takashi Kobayashi	Mitsubishi Electric Corporation

**2022-04-09 15:40-17:40 (Beijing Time)**

**Chiller and heat pump (2) —Zoom ID: 961 3342 1136 Password: 737311**

**President:Jianlin Yu, Xi'an Jiaotong University**

<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
15:40-15:55	Field test of a hybrid air conditioning system with air and ground heat sources	Tatsuaki Ikuno	Saga University
15:55-16:10	Performance analysis of an all-weather solar-air source hybrid heat pump system	Libei An	Henan University of Science and Technology
16:10-16:25	Matching design and optimization of solar energy and ground source heat pump coupling heating system	Jing hui Luo	Hebei University of Engineering
16:25-16:40	Simulation of Coupled Heat-Mass Transfer in Sea Cucumbers with Heat Pump Drying	Haibo Zhao	Yantai University

**April 10, 2022, Sunday**

**Room A**

**Zoom ID: 967 6598 5073 Password: 297501**

**2022-04-10 08:30-10:30 (Beijing Time)**

**Refrigerants (3) —Zoom ID: 967 6598 5073 Password: 297501**

**President:Akio Miyara, Saga University**

<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
08:30-08:45	Flow boiling heat transfer of alternative refrigerant within multiport mini-channel tube	Hieu Hoang	Chonnam National University
08:45-09:00	Thermodynamic performance and heat transfer characteristics study of mixture refrigerants with low GWP	minqiang zeng	Shanghai Maritime University
09:00-09:15	Performance evaluation of the heat pump system using R-455A as R404A substitute	Kyaw Thu	Kyushu University
09:15-09:30	Investigation of different zeotropic refrigerants on the performance of the dehumidifier	Lu Xu	Gree Electric Appliances Inc. of Zhuhai
09:30-09:45	Condensation Heat Transfer Characteristics and Development of Integrated Correlations of Low GWP Refrigerants in Plate Heat Exchangers	Yun Mo Ko	Korea University
09:45-10:00	Analysis of ice rink refrigeration system using natural working fluid	Zhenying Zhang	North China University of Science and Technology

**2022-04-10 10:40-12:40 (Beijing Time)**

**Dehumidification —Zoom ID: 967 6598 5073 Password: 297501**

**President:Xianting Li, Tsinghua University**

<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
10:40-10:55	Humidity Grades of Latent Heat Loads and Humidity Sinks	Chenjiyu Liang	Tsinghua University
10:55-11:10	Transient Analysis of an Open Cycle Fixed-Bed Desiccant Dehumidification Coupled with a Dew Point Evaporative Cooling System for Hot and Humid Conditions	Marco Lao	Kyushu University
11:10-11:25	Carbon emission reduction potential of a liquid-desiccant air-conditioning system for seed warehouses	Bowen Guan	Tsinghua University
11:25-11:40	A new kind of dehumidifier with temperature adjustment including two heat exchangers	Wenhan Li	South China University of Technology
11:40-11:55	Study on enhanced hygroscopic mechanism of concentrated lithium chloride solution based on electrostatic field	Fangsu Fan	Southeast University
11:55-12:10	A Study on the Performance of Ideal Vacuum Membrane Dehumidification System	Donik ku	Chung-Ang university

**Room B**

**Zoom ID: 948 3773 3187 Password: 944078**

**2022-04-10 08:30-10:30 (Beijing Time)**

**Thermal/Fluid Science (3) —Zoom ID: 948 3773 3187 Password: 944078**

**President:Chaobin Dang, University of Fukui**

<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
08:30-08:45	Removal characteristics of dust particles from a metal plate with different wettability during frosting-defrosting process	YINGLING LI	Huazhong University of Science and Technology
08:45-09:00	Experimental Investigation on Droplet Distribution of High-Voltage Electrospray for Electroscrubber	minkyu Jung	Chung-ang University
09:00-09:15	Study on Dew/Frost Behavior Characteristics of Superhydrophobic Surfaces with Different Microstructures	Hui He	Southeast University
09:15-09:30	Specific heat analysis of HMIN-[cation] ionic liquid and MWCNT ionic nanofluid	nayoung You	Chosun university
09:30-09:45	Experimental and numerical research on the	QIAN NIU	Nanjing Tech

	coverage rate and the heat transfer performance of spray cooling		University
<b>2022-04-10 10:40-12:40 (Beijing Time)</b>			
<b>Indoor air quality and thermal comfort —Zoom ID: 948 3773 3187 Password: 944078</b>			
<b>President:Jun Lu, Chongqing University</b>			
<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
10:40-10:55	Two-dimensional tomographic reconstruction of indoor gas concentrations	yuxiao sun	Nanjing Tech University
10:55-11:10	Optimization of the pipe arrangement of the thermally active radiant floor for space heating system	Xiaochen Yang	Tianjin University
11:10-11:25	Analysis of indoor air pollutants and optimization of airflow organization in a new sports building	Shuai Wang	Zhejiang University
11:25-11:40	Determination of the indoor design parameters of the pension buildings in high temperature weather	Guozhong Zheng	North China Electric Power University
11:40-11:55	An Efficient and Novel Pull-push Ventilation System for Mitigation of Air Pollution inside Urban Tunnel	Bin Zhou	Nanjing Tech University
11:55-12:10	Study on nonlinear evaluation of physiological status of the elderly people in high temperature weather	Meng Ge	North China Electric Power University
<b>Room C</b> <b>Zoom ID: 988 4987 0588 Password: 907315</b>			
<b>2022-04-10 08:30-10:30 (Beijing Time)</b>			
<b>Electric vehicle thermal management —Zoom ID: 988 4987 0588 Password: 907315</b>			
<b>President:Jong-Taek Oh, Chonnam National University</b>			
<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
08:30-08:45	Cooling Effect Analysis Depending on Channel Design of Heat Exchanger in Battery Liquid Cooling System	Hyoseong Lee	Korea University
08:45-09:00	Diverging channel design cooling plate with oblique fins for improving prismatic battery temperature distribution	Hongseok Choi	Korea University
09:00-09:15	A numerical analysis of electric vehicle dehumidification and heating load reduction using regenerative heat exchanger in cold condition	Sangwook Lee	Seoul National University
09:15-09:30	Development of refrigeration oils for electric compressors in new energy vehicles	Satoshi Goto	ENEOS Corporation Lubricants Company
09:30-09:45	Dynamic power and thermal analysis of battery	Ukmin Han	Korea University

	system based on electric vehicle powertrain model		
<b>2022-04-10 10:40-12:40 (Beijing Time)</b>			
<b>Sorption (absorption, adsorption) refrigeration —Zoom ID: 988 4987 0588 Password: 907315</b>			
<b>President:Zhenyuan Xu Shanghai Jiao Tong University</b>			
<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
10:40-10:55	Experimental investigations on the pumping performances of a bubble pump with R134a/R23-DMF solutions under variable system pressures	Yilun Liu	Zhejiang University
10:55-11:10	Experimental study on cycle performance of diffusion absorption refrigerator using R600a/n-octane	Hyung Won Choi	Korea University
11:10-11:25	Study of the desorption characteristics of LiBr-H <sub>2</sub> O solution in hollow fiber membrane generator	Jiacheng He	Guangdong University of Technology
11:25-11:40	R1234yf/[C12MIM][Tf2N] absorption performance analysis	Minjung Lee	Chosun University
11:40-11:55	A double stage output three-phase sorption thermal energy storage driven at low charging temperature	Abel Abebe	Shanghai Jiao Tong University
<b>Room D</b> <b>Zoom ID: 996 7761 3263 Password: 471057</b>			
<b>2022-04-10 08:30-10:30 (Beijing Time)</b>			
<b>Energy recovery —Zoom ID: 996 7761 3263 Password: 471057</b>			
<b>President:Jun Young CHOI, Korea Testing Laboratory</b>			
<b>Beijing Time</b>	<b>Title</b>	<b>Speaker</b>	<b>Organization</b>
08:30-08:45	Waste heat utilization and CO <sub>2</sub> capture in a cascade natural gas liquefaction system	Pinrui Su	Shanghai Jiao Tong University
08:45-09:00	Comparative study of two modified indirect evaporative cooling systems used in exhaust air heat recovery	Wuyan Li	Tsinghua University
09:00-09:15	Optimize the location of embedded pipes by using low-grade natural thermal energy/waste heat for thermal activated façade	Heinz-Axel Guo	Tongji University / Zhejiang College
09:15-09:30	Experimental study of organic Rankine cycle with three-fluid recuperator for cryogenic cold energy recovery	Zhixin Qi	Shanghai Maritime University
09:30-09:45	Performance analysis of a booster pump coupled energy recovery ventilator for buildings	Dongzhe Li	Beijing University of Technology

2022-04-10 10:40-12:40 (Beijing Time)

Fault diagnosis — Zoom ID: 996 7761 3263 Password: 471057

President: Huanxin Chen, Huazhong University of Science and Technology

Beijing Time	Title	Speaker	Organization
10:40-10:55	Knowledge-transfer-based methodology for fault diagnosis in refrigeration and air conditioning systems	Zhengxiong Ren	University of Shanghai for Science and Technology
10:55-11:10	Performance Parameter Analysis of Separate-type Air Conditioner under Single Fault Condition with Temperature	Sanghun Jeong	Chung-ang University
11:10-11:25	CGAN-based data derivation method for fault detection and diagnosis of air-conditioning system	Kang Chen	Shanghai Jiao Tong University
11:25-11:40	An inverse fault detection and diagnosis strategy for chiller product application	Hailong Lu	Midea Building Technologies

**Poster Presentation**

Poster Presentation(Website: <http://www.acra2022.org>, Virtual Conference-Poster Presentations )

Paper ID	Title	Speaker	Organization
32	Heating performances of a hydronic snow melting system in severely cold regions	Wenke Zhao	Harbin Institute of Technology
36	Design and Operation Optimization of CHMFL Cooling Water System Transformation	Jiali Tang	High Magnetic Field Laboratory, Chinese Academy of Sciences
37	A study of PID temperature controller parameters tuning for a refrigeration system with time delay	Chang-Kuang Huang	Tung Nan University
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138	Performance study of thermo-responsive composite coated aluminum sheets for adsorption-based dehumidification	Xu Zheng	Zhejiang Sci-Tech University

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105	Optimal chiller loading by teaching-learning-based optimization algorithm for reducing energy consumption	Qiang Ding	HangZhou DianZi University
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229	Evaluation of indoor thermal comfort of air-conditioned rooms based on data-mining	SHANSHAN CAI	Huazhong University of Science and



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153	Study on operating characteristics of booster-driven heat pipe for data center free cooling	Bo Zheng	Beijing University of Technology
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34	Performance analysis of a novel thermoelectric assisted direct evaporative cooling system	yuanyuan zhou	Nanjing University of Science and Technology

## Registration Fee

Registration Type	Registration Fee
Participants	CNY¥ 950 / US\$ 150

- Registration fee includes the paper included in conference proceedings, oral presentation (15 mins) and poster presentation, attending all technical sessions, conference documents.
- At least one author for each accepted final paper must register.

Please register and complete the payment via Online Payment System(<http://www.acra2022.org>).

## Requirement for Oral and Poster Presentation

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Presentation for oral sessions requires a maximum 12 minutes long PPT presentation and 3 minutes Questions & Answers. We recommend 16:9 PPT format for better screen showing.

Each speaker is required to meet his/her Session Chair online 10 minutes before the session starts.

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### Poster Presentation

Presentation for poster sessions requires one-page-poster.

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Please send the poster to us ([acra2022@car.org.cn](mailto:acra2022@car.org.cn)) before April 3.

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