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International Conference on Applied Energy

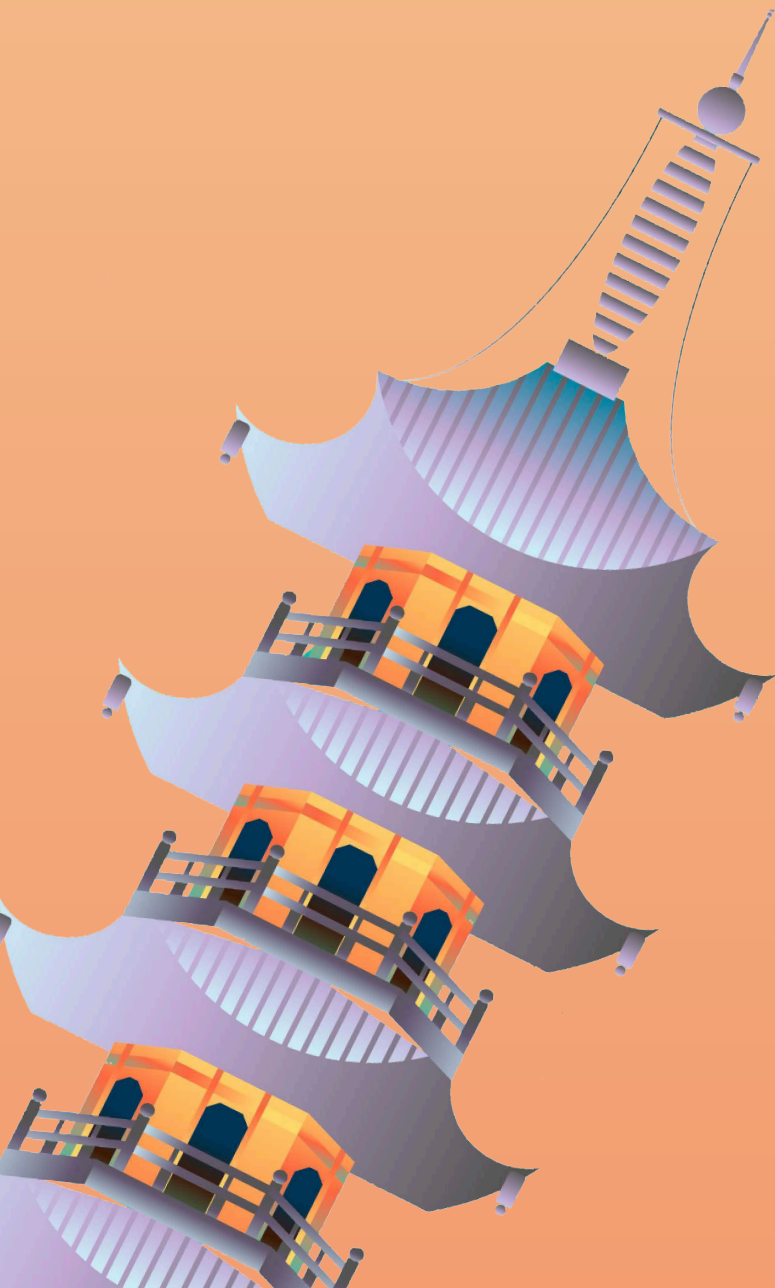
CEN2023: Applied Energy Symposium

CLEAN ENERGY

TOWARDS CARBON NEUTRALITY

April 22-25, 2023

NINGBO, CHINA



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Welcome to the CEN2023-Applied Energy Symposium 2023: Clean Energy towards Carbon Neutrality.

After the resounding success of CEN2022, we are delighted to invite you to the second Applied Energy Symposium in 2023. With another year having passed, it is becoming increasingly crucial to find our way into a sustainable, clean and carbon-free energy future. Hence, we welcome experts from around the world, be it researchers, industrial practitioners or policy makers, to our exciting and cutting edge Ningbo city to discuss this existentially important topic.

Carbon neutrality is a universal mission which requires urgent and global efforts. It presents both opportunities and challenges on many different levels. Most countries, regions and institutions have pledged to be carbon neutral in the very near future, and are working on strategies to achieve this goal. There is no doubt that our common future depends on rising to the sustainable energy for all challenge, and the various approaches that we employ. That being said, there is plenty of shared ground to inspire and learn, and to make the transition happen. The CEN2023 is looking for contributions and innovations on how to reduce energy demand and to decarbonise energy generation and utilisation, whilst transforming energy infrastructure and integrating innovative technologies. Carbon-neutral, and increasingly carbon-free, energy technology will be at the forefront of these endeavours, thus making clean energy the timely focus for CEN2023.

The CEN2023 will be held on April 22-25, 2023 in the city of Ningbo, one of the fastest growing cities in China. The four-day event is jointly organized by Applied Energy and the Applied Energy Innovation Institute (AEii), and jointly hosted by the Nottingham Ningbo China Beacons of Excellence Research and Innovation Institute, University of Nottingham Ningbo China and Zhejiang University.

The symposium will include keynotes, invited talks, plenary sessions, oral presentations and poster sessions. Outstanding papers will be considered for full publication in special issues of top journals including Applied Energy and Advances in Applied Energy.

For more detailed and updated information on the conference, please visit the official website at www.applied-energy.org/cen2023, or contact cen2023@applied-energy.org.

We look forward to welcoming you in Ningbo, China for the CEN2023.

Symposium Co-Chairs

Prof. Tao WU

Vice Provost for China Beacons Institute
Dean of the Faculty of Science and Engineering, University of Nottingham Ningbo, China

Prof. Xiang GAO

Academician of the Chinese Academy of Engineering
Dean of the College of Energy, Zhejiang University

Prof. Jinyue YAN

Editor-in-chief of Applied Energy and Advances in Applied Energy
Chair Professor of Energy and Buildings, Hong Kong Polytechnic University



CONFERENCE CHAIRS

Prof. Tao WU (Co-Chair)
 Prof. Xiang GAO (Co-Chair)
 Prof. Jinyue YAN (Co-Chair)

ORGANIZING COMMITTEE

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INTERNATIONAL SCIENTIFIC COMMITTEE

Prof. Jinyue YAN (Chair), Editor-in-Chief, Applied Energy
 Prof. Jianzhong WU (Co-Chair), Co-Editor-in-Chief, Applied Energy
 Prof. Zita VALE (Co-Chair), Co-Editor-in-Chief, Applied Energy
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A. K. Gupta USA	A. Massardo, Italy	A. Meier, USA
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H. B. Sun, China	H. G. Jin, China	H. L. Li, Sweden
H. M. Xu, UK	J. Hetland, Norway	J. Milewski, Poland
J. Whalen, Canada	J. Z. Wu, UK	K. Hubacek, The Netherlands
K. Yoshikawa, Japan	L. Kazmerski, USA	M. K. H. Leung, Hong Kong
M. Kraft, UK	M. Obersteiner, UK	M. Sorrentino, Italy
N. Hedin, Sweden	N. Zhou, USA	O. Veneri, Italy
P. Lund, Finland	P. Yang, USA	R. Madlener, Germany
R. Span, Germany	S. A. Kalogirou, Cyprus	S. Garimella, USA
S. T. Tu, China	T. Shamim, USA	X. G. Li, Canada
X. H. Xia, South Africa	Y. L. He, China	Y. M. Wei, China
Y. Yamagata, Japan	Z. Y. Luo, China	T. Wu, China
C. H. Pang, Malaysia	X. Gao, China	F. C. Wang, China
E. Lester, UK	G. Zhu, China	L. Chen, China
Y. D. Wang, UK	X. N. Wang, China	



Prof. Shan-Tung Tu

East China University of Science and Technology, China
China Academy of Engineering

Academician Shan-Tung Tu received his B.Eng degree in 1982 and Ph.D degree in 1988 from Nanjing Tech University. He is a Chair Professor of Mechanical Engineering, East China University of Science and Technology. Prior to this, he worked at Nanjing Tech University and East China University of Science and Technology as a Professor and Vice President, and a guest scientist at the Royal Institute of Technology, Sweden. He was elected as an Academician of the China Academy of Engineering in 2019.

Driven by the safety concern of the process and energy equipment, Professor Tu has been trying to develop knowledge in the area of high-temperature engineering, including thermal effect, structural integrity assessment and design of high-temperature equipment against failures. He is an author of more than 400 papers and received a number of distinguished awards, including China National Science and Technology Progress Award, National Technology Invention Award, China Youth Science and Technology Award, ASME Best Paper Award and so on. He has been a Fellow of the Chemical Industry and Engineering Society of China (since 2020), the Honorary President of Chinese Pressure Vessel Institution (since 2010) and the Honorary President of Chinese Materials Institution (since 2015) of China Mechanical Engineering Society, Chairman of China Structural Integrity Consortium, Chairman of Asian Oceanic Regional Committee of International Council for Pressure Vessel Technology, and a member of reliability committee of IFToMM. He is currently an Honorary Professor of the University of Nottingham. He is also serving as an associate editor or editorial board member for a number of journals, including Frontiers of Chemical Sciences and Engineering, Int J Pres Ves and Piping, Applied Energy, J of Materials Science and Technology, Fatigue and Fracture of Engineering Materials and Structures and so on.

Keynote Topic:

GH2: An integrated effort for greener hydrogen production and utilization

Keynote Abstract:

To leverage the role of universities as the main force and major source of basic research, and to provide technological support and talent guarantee for achieving the goal of peak carbon dioxide emissions and carbon neutrality, the Ministry of Education has issued the 'Action Plan for Carbon Neutrality Technology Innovation in Higher Education Institutions'. As a response to the action plan and the pressing need of the country, we have developed an integrated platform for greener hydrogen production and utilization, which joins the effort in hydrogen production, safe storage and transportation, and utilization inside and outside the university. The research platform was launched recently and approved and supported by the ministry of education. The lecture summarizes the recent advances and some initiatives of the platform.



Prof. Wei Wei

Shanghai Advanced Research Institute, Chinese Academy
of Sciences

Prof. Wei Wei currently serves as Vice President, Researcher, and Doctoral Supervisor at the Shanghai Advanced Research Institute of the Chinese Academy of Sciences. In addition, he serves as a member of the International Carbon Capture and Storage Leadership Group, the National Carbon Neutrality Technology Expert Committee, and the National "Ten Thousand Talents Plan" for scientific innovation, as announced by the Central Organization Department. He was selected as a Leading Young Scientific Innovator by the Ministry of Science and Technology in 2014. His research has focused on greenhouse gas strategies and carbon capture, utilization, and storage. He has been granted three international invention patents and has applied for over 100 national invention patents. He has published over 400 high-level papers in major academic journals both domestically and internationally, including Nature, Nature Chemistry, Nature Geoscience, Joule, Environmental Science & Technology, and Angew. Chem. Int. Ed.

Keynote Topic:

China's carbon neutral policy system and analysis of technology priorities in key sectors

Keynote Abstract:

An overview interpretation of China's carbon neutrality policy system is discussed. An evaluation system is established to assess the contribution of technology to carbon neutrality, while a future technology priority analysis is conducted for 14 key areas in China, thus providing an important basis for the deployment of national scientific and technological innovation.



Prof. Jianzhong Wu

Cardiff University, UK

Prof. Jianzhong Wu is a Professor of Multi-Vector Energy Systems and Head of School of Engineering at Cardiff University. His research focuses on Smart Grid and Multi-Vector Energy Systems. He has contributed to more than 60 European Commission, the UK research councils and industry funded projects as a Principal Investigator or a Co-Investigator. He has published more than 300 peer-reviewed papers and is a co-author of books “Smart Grid: Technology and Applications” (2012, Wiley), “Smart Electricity Distribution Networks” (2017, CRC) and “The Future of Gas Networks” (2019, Springer).

He is a Co-Director of the UK Energy Research Centre, Associate-Director of EPSRC Supergen Energy Networks Hub, and a co-Principal Investigator of £24.5m WEFO funded FLEXIS project investigating future integrated energy systems. He is a member of the UK Government BEIS Taxonomy Energy Working Group, the Wales Smart Energy System Group, the Northern Powergrid Science and Technology Committee, the Scottish Power Energy Networks Independent Net Zero Advisory Council, and the Scottish Power Energy Networks Strategic Stakeholder Panel for England and Wales. He is also a member-at-large of the IEEE Technical Committee on Carbon Neutrality. He is co Editor-in-Chief of Applied Energy journal, Fellow of Energy Institute and Fellow of the Learned Society of Wales.

Keynote Topic:

Hydrogen system integration for accelerated energy transitions

Keynote Abstract:

Numerous governments have outlined ambitious plans for the role of hydrogen in their future energy strategies. In the UK, for instance, the goal is for hydrogen to meet between 20% and 35% of the country's total energy demand. This keynote presentation will provide an overview of the current state of hydrogen development, examine the benefits of hydrogen across various sectors, and explore potential pathways for integrating hydrogen into future energy usage.



Prof. Xiaolei Fan

China Beacons Institution, University of Nottingham Ningbo China

Prof. Xiaolei Fan is a researcher with 15-year experience in heterogeneous catalysis (including plasma catalysis) and porous materials and reaction engineering. He has published 155 peer-reviewed articles including ones in Nat. Catal., Nat. Commun., JACS, Angew. Chem., and Appl. Catal. B, etc with a H index of 36. He is the elected Fellow of Royal Society of Chemistry and Higher Education Academy and Ministry of Education Distinguished Professor of Changjiang Scholars. His research was recognised internationally with several awards such as the Chinese Academy of Sciences Lee Hsun Young Scientist Lecture award on Materials Sciences (2018), RSC Emerging Investigators (2019), ACS I&EC Research 2020 Influential Researchers (2020) and International Award for Outstanding Young Chemical Engineer (2022).

Keynote Topic:

Non thermal plasma catalysis, its application for CO₂ conversions and catalyst design

Keynote Abstract:

Non-thermal plasma (NTP), low-temperature plasma or non-equilibrium plasma is a plasma which is not in thermodynamic equilibrium, is a promising, effective, and efficient technique to promote chemical reactions, especially in presence of a catalyst, overcoming thermodynamic and/or kinetic barriers experienced by the conventional thermal catalysis. Activation of the catalytic systems under NTP conditions is fundamentally different from that under thermal conditions, and it is an effective means to achieve process intensification at the molecular level. In this presentation, advantages of NTP catalysis compared to the thermal catalytic counterparts and our recent findings from the research of NTP-catalytic CO₂ conversions will be discussed. Especially, reflections on the catalyst design in NTP-catalysis will be shared as well.



Prof. Zhongwei Chen

University of Waterloo

Dr. Zhongwei Chen is Canada Research Chair (CRC-Tier 1) Professor in Advanced Materials for Clean Energy at the University of Waterloo, Fellow of the Royal Society of Chemistry, Fellow of the Royal Society of Canada, Fellow of the Canadian Academy of Engineering, Director of Waterloo Center for Electrochemical Energy (WCEE), Associate Editor of ACS Applied Materials & Interfaces (ACS-AMI), and Vice President of International Academy of Electrochemical Energy Science (IAOEES). His research interests are in the development of advanced energy materials and systems for fuel cells, metal-air batteries, and lithium-ion batteries. He has published 3 book, and more than 480 peer reviewed journal articles with over 48,000 citations with a H-index of 119 (GoogleScholar) He is also listed as inventor over 50 US/international patents, with several licensed to companies internationally. He was the recipient of the 2016 E.W.R Steacie Memorial Fellowship, the fellow of the Canadian Academy of Engineering in 2017, and the Rutherford memorial medal from The Royal Society of Canada in 2017. since 2018, Dr. Chen was ranked as the Global Highly Cited Researchers by Clarivate Analytics. He was elected as Fellow of the Royal Society of Canada in 2019.

Keynote Topic:

Rechargeable Zinc-Air Battery

Keynote Abstract:

Development of low cost, high energy, safe and long-life energy storage systems is critical for widespread commercialization of smart grid and electric vehicles. Rechargeable zinc-air battery has been considered as the most promising candidate as energy storage system for transportation, smart grids, and stationary power. They can display a considerably several times higher specific energy and volumetric energy density than that of the Li-ion battery. Besides, zinc-air batteries also demonstrate other desirable characteristics, such as abundant raw materials, environmental friendliness, safety, and low cost. The current zinc-air battery is typically composed of four main components: an air electrode, an alkaline electrolyte, a separator, and a zinc electrode. For the electrically rechargeable zinc-air battery, each main structural component faces its own challenges. In this presentation, we will present our recent work on advanced energy materials development for next generation rechargeable zinc-air batteries by focusing on the nanostructured bifunctional oxygen electrocatalysts and mechanical studies on their corresponding electrochemical behaviors during battery cycling. More specifically, we will discuss: 1) how the nanoengineered materials can enhance the catalytic activity and durability of oxygen electrocatalysts, 2) what is the structural evolution and actual species of oxygen electrocatalysts in the zinc-air batteries operation, 3) how the 3D air electrode architectures and mechanical understandings can advance the practical performance of the zinc-air batteries, as well as their extended applications include portable, flexible, and diversely shaped zinc-air batteries.



Prof. Martin Blunt

Imperial College London, UK

Prof. Martin Blunt joined Imperial College London in June 1999 as a Professor of Petroleum Engineering. He served as Head of the Department of Earth Science and Engineering from 2006-2011. Previous to this he was Associate Professor of Petroleum Engineering at Stanford University in California. Before joining Stanford in 1992, he was a research reservoir engineer with BP in Sunbury-on-Thames. He holds MA and PhD (1988) degrees in theoretical physics from Cambridge University. He was elected to the Royal Academy of Engineering in 2019. Professor Blunt's research interests are in multiphase flow in porous media with applications to geological carbon storage, oil and gas recovery, and contaminant transport and clean-up in polluted aquifers. He performs experimental, theoretical and numerical research into many aspects of flow and transport in porous systems.

Over the last five years, Prof. Blunt and his research team have pioneered the use of X-ray micro-tomography to image rocks and fluid displacement within them. Displacement processes at reservoir conditions of high temperature and pressure can be imaged at micron spatial resolution over time periods of an hour to a few seconds, using a combination of laboratory and synchrotron-based instruments. The work has allowed reservoir wettability to be evaluated at the pore scale, quantified the degree of capillary trapping during CO₂ storage, uncovered the dynamic nature of displacement, even at low flow rates, and discovered new flow patterns during dissolution. This research has been complemented by an array of pore-scale modelling techniques that are able to reproduce the behaviour seen experimentally. This work has helped establish the so-called discipline of "digital rock analysis" that combines pore-scale imaging, modelling and analysis to understand and predict displacement processes in porous media. As well as commercial applications on the oil & gas industry, for both conventional and unconventional reservoirs, the work has been used to help design subsurface carbon dioxide storage and contaminant clean-up.

In summary Prof. Blunt's work has helped transform our understanding of how fluids move underground. This research plays a vital role in our energy transition through the better design and management of gas production and carbon dioxide storage.

Keynote Topic:

Design of Carbon Dioxide Storage from Pore-Scale Physics

Keynote Abstract:

The use of pore-scale imaging and analysis will be described with application to the design of large-scale carbon dioxide storage. High-resolution three-dimensional X-ray imaging is used to observe the configuration of two or three fluid phases at high temperature and pressure in the pore space of porous rock where carbon dioxide may be stored. The conditions under which the carbon dioxide is trapped within the pore space, or has restricted flow, are determined. The focus of the work is on storage in depleted oilfields, which is likely to be represent the first sites used globally for gigatonne-scale carbon capture and storage. It is shown that the complex interaction of the three fluids present – carbon dioxide, water and oil – and the surface wettability of the rock control the microscopic flow and trapping behaviour. It is demonstrated that in many circumstances the carbon dioxide becomes trapped immediately on the cessation of injection which implies secure and effective storage in hydrocarbon fields with the added economic benefit of enhanced oil recovery.



Prof. Colin Snape

University of Nottingham, UK



Prof. Colin Snape FRSE has been involved in fuel science and technology for over 40 years and has 380 peer reviewed publications and has successfully supervised over 60 PhDs. He has led many UK Research Council, UK Government and projects and directs the EPSRC Centre for Doctoral Training in CCS and Cleaner Fossil Energy. As well as adsorbents for CO₂ capture, his current research encompasses shale gas resource estimation, biochar and hydrothermal carbonisation for bio-waste utilisation. He currently leads the £4.5M Biochar Demonstrator project funded by the UK Research Councils Greenhouse Gas Removal programme. Honours include winning the Henry H. Storch Award in 2006 from the American Chemical Society and being an Honorary Chair Professor, Shandong University.

Keynote Topic:

A journey from CO₂ Capture to Greenhouse Gas Removal with Biochar

Keynote Abstract:

It was about the year 2000 when I realised that fossil fuel energy not only had to be decarbonized, but consumption reduced drastically to achieve first 80% reductions in CO₂ emissions, and now to achieve “Net Zero” by 2050. I will summarise the research I have conducted on basic adsorbents for CO₂ capture that have potentially significant advantages compared to amine scrubbing, which has been widely used globally in CCS demonstrations. Highlights include a recent patent filed with BASF, the largest producer of polyethyleneimine, the basic polymer supporting silica for both, applications to flue gases and direct air capture, and successfully completing pilot-plant trials on a 100kg scale.

It is now also accepted that to achieve “Net Zero” by 2050, large-scale deployment of Greenhouse Gas removal (GGR) technologies will be needed. Biochar can potentially make a major contribution to GGR, along with other natural approaches, including enhanced rock weathering and peatland restoration. As part of the UK Research Councils programme on GGR, the aim of the Biochar Demonstrator is to address uncertainties regarding the extent and scope of its deployment, and its stability with respect to carbon sequestration, together with quantifying effects on ecosystem services. It is also providing the first comprehensive assessment of biochar stability in the UK and its impact on greenhouse gas soil emissions. This will enable robust policy to be developed, in which payments are based on the amount of carbon sequestered over extended timescales. Integrated life cycle and techno-economic analysis are providing a framework for the climatic impacts of carbon not permanently sequestered.

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Applied Energy
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Applied Energy Innovation Institute

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Professional Committee of Environment and Heat Utilization, China Society for Environmental Sciences

Date

April 22-25, 2023

Time zone

GMT +8

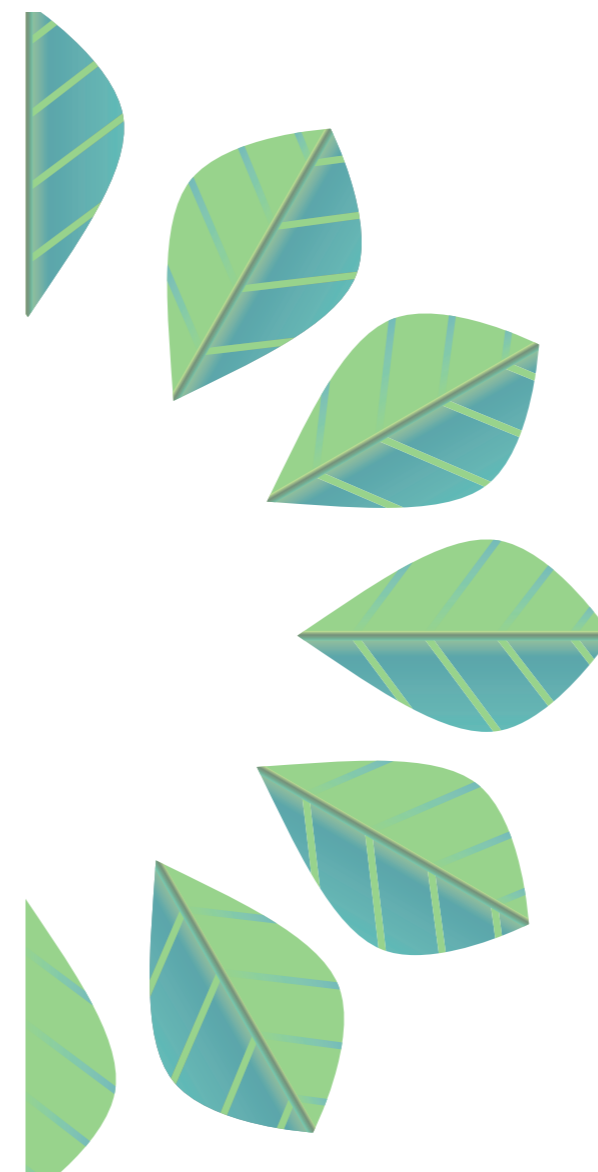
Venue

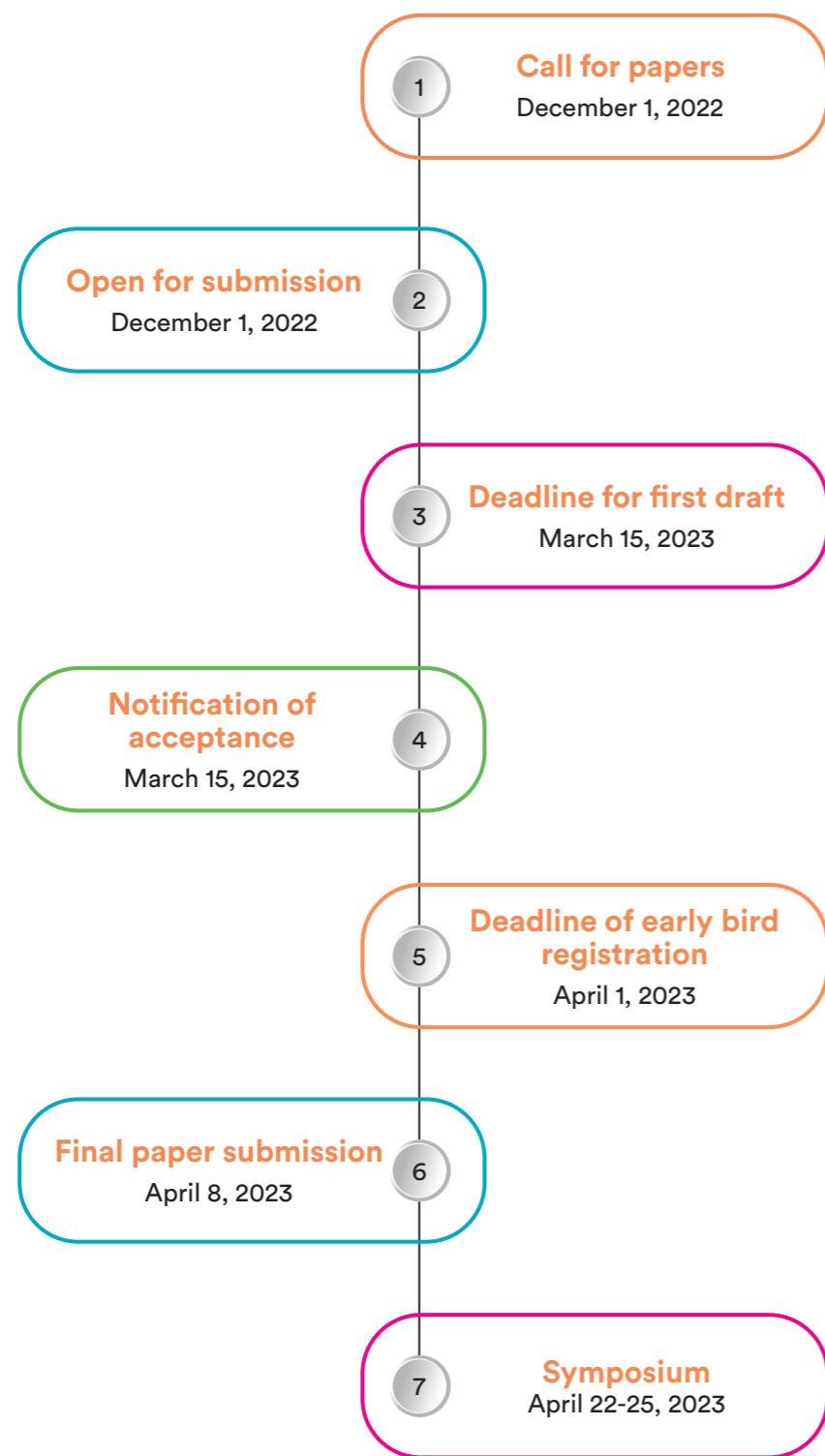
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Conference participants may book their accommodations in nearby hotels in Yinzhou District.

Conference topics include, but not limited to:

- Carbon mitigation technologies and solutions towards carbon-neutrality
- Clean energy conversion and storage technologies
- Mitigation and integration in petrochemical industry
- Intelligent energy uses and energy efficiencies
- Hydrogenation and reduction
- Integrated energy systems
- Emission mitigation technologies
- Energy policies and management





CEN2023: Applied Energy Symposium CLEAN ENERGY TOWARDS CARBON NEUTRALITY				
(Registration) April 21, 2023				
2:00 pm – 5:00 pm	Registration for Onsite Delegates		Venue: Gate 1 (welcome booth)	
DAY 1 April 22, 2023				
8:00 am – 9:00 am	Registration and Reception		Venue: New Library	
9:00 am – 9:30 am	Opening and Welcome Speech		Venue: Multifunction Room, New Library	
9:30 am – 10:15 am	Keynote 1	China's Carbon Neutral Policy System and Analysis of Technology Priorities in Key Sectors	Prof. Wei Wei Venue: Multifunction Room, New Library	
10:15 am – 10:30 am	Group Photo Session			
10:30 am – 10:45 am	Tea Break			
10:45 am – 11:30 am	Keynote 2	Rechargeable Zinc-Air Battery	Prof. Zhongwei Chen Venue: Multifunction Room, New Library	
11:30 am – 12:15 pm	Keynote 3	Non Thermal Plasma Catalysis, Its Application for CO₂ Conversions and Catalyst Design	Prof. Xiaolei Fan Venue: Multifunction Room, New Library	
12:15 pm – 1:40 pm	Lunch Venue: Lakeside Dining Hall, Floor 1, LA Hotel			
1:40 pm – 2:25 pm	Keynote 4	GH2: An Integrated Effort for Greener Hydrogen Production and Utilization	Prof. Shan-Tung Tu Venue: Room 122, IEB Building	
2:30 pm – 3:15 pm	Parallel A Carbon Mitigation Technologies and Solutions towards Carbon-neutrality Venue: IEB 122	Parallel B Clean Energy Conversion and Energy Storage Technologies Venue: IEB 123	Parallel D Intelligent Energy Uses and Energy Efficiencies Venue: IEB 131	Special Session Process Development - Difficult or Easy? Venue: IEB132
3:15 pm – 3:30 pm	Tea Break			
3:30 pm – 5:00 pm	Parallel A Carbon Mitigation Technologies and Solutions towards Carbon-neutrality Venue: IEB 122	Parallel B Clean Energy Conversion and Energy Storage Technologies Venue: IEB 123	Special Session Multi-scale and Multi-dimensional Applications of ZEISS Microscopy in Energy Research Venue: IEB 131	
DAY 2 April 23, 2023				
9:00 am – 9:45 am	Keynote 5	Hydrogen System Integration for Accelerated Energy Transitions		Prof. Jianzhong Wu Venue: Room 122, IEB Building
9:45 am – 10:15 am	Parallel A Carbon Mitigation Technologies and Solutions towards Carbon-neutrality Venue: IEB 122	Parallel C Mitigation and Integration in Petrochemical Industry Venue: IEB 123	Parallel F Integrated Energy Systems Venue: IEB 131	Special Session Micromeritics New Technology for Net-Zero

10:15 am – 10:30 am	Tea Break			Venue: IEB132
10:30 am – 12:00 pm	Parallel A Carbon Mitigation Technologies and Solutions towards Carbon-neutrality Venue: IEB 122	Parallel H Energy Policies and Management Venue: IEB 123	Parallel F Integrated Energy Systems Venue: IEB 131	
12:00 pm – 1:30 pm	Lunch Venue: Lakeside Dining Hall, Floor 1, LA Hotel			
1:30 pm – 3:15 pm	Parallel D Intelligent Energy Uses and Energy Efficiencies Venue: IEB 122	Parallel G Emission Mitigation Technologies Venue: IEB 123	Special Session Energy and Built Environment for Carbon Neutrality in Buildings Venue: IEB131	Special Session Green Chemistry and Process Intensification towards Sustainable Future Venue: IEB132
3:15 pm – 3:30 pm	Tea Break			
3:30 pm – 5:00 pm	Tour to Ningbo Museum			
6:00 pm – 8:30 pm	Banquet Venue: New Century Grand Hotel			

DAY 3 April 24, 2023				
9:00 am – 10:15 am	Parallel A Carbon Mitigation Technologies and Solutions towards Carbon-neutrality Venue: IEB 122	Parallel D Intelligent Energy Uses and Energy Efficiencies Venue: IEB 123	Parallel H Energy Policies and Management Venue: IEB 131	Parallel B Clean Energy Conversion and Energy Storage Technologies Venue: IEB 132
10:15 am – 10:30 am	Tea Break			
10:30 am – 12:00 pm	Parallel A Carbon Mitigation Technologies and Solutions towards Carbon-neutrality Venue: IEB 122	Parallel B Clean Energy Conversion and Energy Storage Technologies Venue: IEB 123	Parallel E Hydrogenation and Reduction Venue: IEB 131	Parallel D Intelligent Energy Uses and Energy Efficiencies Venue: IEB 132
12:00 pm – 1:30 pm	Lunch Venue: Lakeside Dining Hall, Floor 1, LA Hotel			
1:30 pm – 2:45 pm	Parallel B Clean Energy Conversion and Energy Storage Technologies Venue: IEB 122	Parallel H Energy Policies and Management Venue: IEB 123	Parallel D Intelligent Energy Uses and Energy Efficiencies Venue: IEB 131	Parallel A Carbon Mitigation Technologies and Solutions towards Carbon-neutrality Venue: IEB 132
2:45 pm – 3:00 pm	Tea Break			
3:00 pm – 3:45 pm	Keynote 6 Design of Carbon Dioxide Storage from Pore-Scale Physics Venue: Room 122, IEB Building			Prof. Martin Blunt
3:45 pm – 4:30 pm	Keynote 7 A Journey from CO ₂ Capture to Greenhouse Gas Removal with Biochar Venue: Room 122, IEB Building			Prof. Colin Snape
4:30 pm – 5:30 pm	Closing Ceremony			

DAY 4 April 25, 2023	
8:00 am – 5:30 pm	Site Visit

DAY 1 April 22, 2023			
Venue: New Library, University of Nottingham Ningbo China			
8:00-9:00	Registration and Reception		
9:00-9:30	Opening and Welcome Speech Prof. Tao Wu, Symposium Chair Prof. Jinyue Yan, Symposium Chair Ying Shi, Vice President of Ningbo Association for Science and Technology		
9:30-10:15	Keynote 1	China's Carbon Neutral Policy System and Analysis of Technology Priorities in Key Sectors Prof. Wei Wei	
10:15-10:30	Group Photo Session		
10:30-10:45	Tea Break		
10:45-11:30	Keynote 2	Rechargeable Zinc-Air Battery Prof. Zhongwei Chen	
11:30-12:15	Keynote 3	Non Thermal Plasma Catalysis, Its Application for CO₂ Conversions and Catalyst Design Prof. Xiaolei Fan	
12:15-13:40	Lunch (Lakeside Dining Hall, Floor 1, LA Hotel)		
Venue: Room 122, IEB Building (Keynote)			
13:40-14:25	Keynote 4	GH2: An Integrated Effort for Greener Hydrogen Production and Utilization Prof. Shan-Tung Tu	
Room 1 Venue: IEB 122		(A) Carbon Mitigation Technologies and Solutions towards Carbon-neutrality Session Chair: Dr. Wenlong Shang	
Time	Paper ID	Author(s)	Paper Title
14:30-14:45	9	Yucheng Gu, Zhang Bai, Shuoshuo Wang and Wenxin Hu	Thermodynamic and Economic Analysis of Solar Heating Solid Particle Heat Carrier Driven Biomass Gasification Power Generation System
14:45-15:00	19	Quhan Chen, Huiwen Zhu, Xinyi Mao, Zeyu Guo, Yiqun Xing, Zijun Yan, Gang Yang, Yueying Zheng, Hongfeng Yin and Tao Wu	Hydrophobicity-controlled CuO Electrode for Enhanced Electrochemical CO ₂ Reduction to Ethylene

DAY 1 April 22, 2023			
15:00-15:15	20	Xiang Li, Yu Xin, Xueqing Wang, Chaowei Wang, Hui Hong and Lin Gao	Techno-economic, Environment Analysis of a Novel PV-PEMFC-GT-based Chlor-alkali Process Multi-generation System
Room 2 Venue: IEB 123		(B) Clean Energy Conversion and Energy Storage Technologies Session Chair: Dr. Mengxia Xu	
Time	Paper ID	Author(s)	Paper Title
14:30-14:45	2	Na Wang, Hong Li, Zhenyu Zhao, Xiaolei Fan and Xin Gao	Combining Microwave Irradiation with Cosolvent EL/H ₂ O for Highly Efficient Pretreatment of Biomass
14:45-15:00	4	Xingyu Feng, Nicholas J Miles, Guozhen Li, Zheng Wang and Philip Hall	Numerical Investigation of Thermal Performance of Swirl Generator in a Solar Water Heater
15:00-15:15	13	Chunlin Luo, Shuai Liu, Gang Yang and Tao Wu	Hollow In-situ Ru-doped Co ₃ O ₄ Spheres for High Efficiency Microwave-boosted Hydrolytic Dehydrogenation of Sodium Borohydride
Room 3 Venue: IEB 131		(D) Intelligent Energy Uses and Energy Efficiencies Session Chair: Dr. Kam Loon Fow	
Time	Paper ID	Author(s)	Paper Title
14:30-14:45	1	Jiawen Li and Tao Zhou	Deep Reinforcement Learning Based Adaptive Energy Management for Islanded Microgrids Considering Multi-objective Optimization
14:45-15:00	6	Zhiyue Zhang, Rong Hu and Kaile Zhou	Non-intrusive Load Monitoring Method Based on an Improved TransUNet
15:00-15:15	7	Siyi Zhang, Jingna Yang and Kaile Zhou	Impact of Energy Efficiency Level of Internet Data Center on Regional Carbon Emissions
Room 4 Venue: IEB132		Process Development - Difficult or Easy? Session Chair: Dr. Lionel O'Young, University of Nottingham Ningbo China	
Time	Paper ID	Author(s)	Paper Title
14:30-14:50	1	Prof. Leung Yuk Frank Lam	Titanium Nitride-oxide Composite Cathode Material from Single Step Reaction for Advanced Lithium-sulfur Batteries
14:50-15:10	2	Yuhang Wang	The Application of Regenerative Catalytic Oxidation (RCO) System for Heat Recovery
15:10-15:30	3	Dr. Yong Koy Bong	The R&D of Industrial Enzymes for the Production of Chemicals, with Transamination of (R)- α -phenylethylamine as Example
15:30-15:50	4	Vincent Chan	Practical Green Engineering for the Fine Chemical Manufacturers
15:15-15:30 Tea Break			
Room 1 Venue: IEB 122		(A) Carbon Mitigation Technologies and Solutions towards Carbon-neutrality Session Chair: Prof. Philip Hall	
Time	Paper ID	Author(s)	Paper Title
15:30-15:45	21	Huiwen Zhu, Zeyu Guo, Shuai Liu, Jiahui Yu, Dawei Lan, Jianwen Zhang, Xiang Luo and Tao Wu	Machine Learning-accelerated Screening of N-doped-graphene Based Dual-metal Electrocatalysts for Efficient CO ₂ Reduction
15:45-16:00	25	Wang Zhuo, Zhehao Sun, Zongyou Yin and Cheng Heng Pang	Mechanism of Carbon Dioxide Conversion into Acetic Acid on the Dual-metal Atom Doped Two-dimensional Molybdenum Trioxide: A First-principle Study

DAY 1 April 22, 2023			
16:00-16:15	26	Long Jiang, Wei Liu, Ying Ji, Yan Huang, Xuejun Zhang, Mengxiang Fang and Tao Wang	Performance Analysis on Adsorption Carbon Capture Integrated with Absorption Heating and Cooling
16:15-16:30	28	Donghui Li, Jinjia Wei and Jie Sun	Concentrated Photo-thermo-induced Cu/Cu ₂ O-Ov Sites for the Reduction of CO ₂ to Methanol
16:30-16:45	34	Long Han, Jianglin Zhao and Nai Rong	Energy and Exergy Analyses of Biomass IGCC Power Plant Using Calcium Looping Gasification with In-situ CO ₂ Capture and Negative Carbon Emission
16:45-17:00	67	Tikumporn Kumdokrub, Xueyu Tian and Fengqi You	Cornell University Campus Metabolism and Circular Economy Using a Living Laboratory Approach to Study Major Resource and Material Flows
Room 2 Venue: IEB 123		(B) Clean Energy Conversion and Energy Storage Technologies Session Chairs: Dr. Zheng Wang, Dr. Hongbing Ding	
Time	Paper ID	Author(s)	Paper Title
15:30-15:45	32	Wen-Jiang Zou and Seunghun Jung	Modelling and Performance Characterization of a Laboratory Scale Unit-cell Vanadium Redox Flow Battery
15:45-16:00	39	Yong Ren and Tuo Hou	Hybrid Flow Induced Vibration and Piezoelectric Based Energy Harvesting Structure
16:00-16:15	43	Pengfei Zhu, Jing Yao, Zhen Wu and Zaoxiao Zhang	The Dynamic Response of Solid Oxide Fuel Cell Fueled by Syngas During the Operating Condition Variations
16:15-16:30	46	Longchang Xue, Han Zhang, Like Yue, Zhiguang Qian and Shixue Wang	Design and Research of Test System for Large Reaction Area Proton Exchange Membrane Fuel Cell
16:30-16:45	47	Yuqin Xiao and Cheng Heng Pang	Molecular Dynamics Simulation for Calorific Study of Biogas-Alternative Perspective
16:45-17:00	48	Binxia Yuan, Hong Qian, Weiling Luan and Rui Zhu	Polyvinylpyrrolidone Mediated Synthesis of Ultra-thin Cu/Ag Bimetallic Nanosheets
Room 3 Venue: IEB131		Multi-scale and Multi-dimensional Applications of ZEISS Microscopy in Energy Research Session Chair: Wenhui Yang, ZEISS	
Time	Paper ID	Author(s)	Paper Title
15:30-17:00	1	Wenhui Yang	Multi-scale and Multi-dimensional Applications of ZEISS Microscopy in Energy Research

DAY 2 April 23, 2023			
Venue: Room 122, IEB Building (Keynote)			
9:00-9:45	Keynote 5	Hydrogen System Integration for Accelerated Energy Transitions Prof. Jianzhong Wu	
Room 1 Venue: IEB 122		(A) Carbon Mitigation Technologies and Solutions towards Carbon-neutrality Session Chair: Dr. Hainam Do	
Time	Paper ID	Author(s)	Paper Title
9:45-10:00	37	Chaoju Wang, Tongyu Zhou, Mingyu Zhu and Dengfeng Du	Evaluating the Energy Efficiency and Carbon Footprint of Small-Scale Distributed and Centralized Vertical Farming Systems
10:00-10:15	59	Yongting Shen and Hongxing Yang	Integrating Solar-driven Indoor CO ₂ Capture with Crop Greenhouse to Improve Food-Carbon-Energy Nexus
Room 2 Venue: IEB 123		(C) Mitigation and Integration in Petrochemical Industry Session Chairs: Prof. Cheng Heng Pang, Dr. Mingkun Jiang	
Time	Paper ID	Author(s)	Paper Title
9:45-10:00	16	Jianwen Zhang, Kaiqi Shi and Tao Wu	Microwave-assisted Isopropanol-to-propylene Process with a Structured Co ₃ O ₄ @silicalite-1/SiC Foam Catalyst
10:00-10:15	87	Ting Hu and Zhenhua Rui	Investigation of Synergetic Mechanism Between CO ₂ Enhanced Oil Recovery and Carbon Sequestration: Supported by Data-driven Modeling System
Room 3 Venue: IEB 131		(F) Integrated Energy Systems Session Chair: Dr. Haoran Zhang	
Time	Paper ID	Author(s)	Paper Title
9:45-10:00	3	Zhicong Fang and Shuhao Zhang	Energy Efficiency Analysis of Integrated Solar-assisted SOEC-SOFC System
10:00-10:15	15	Xianlian Wang, Junyi Dong and Li Sun	Deep Reinforcement Learning Based Energy Scheduling of a Hybrid Electricity/Heat/Hydrogen Energy System
Room 4 Venue: IEB132		Micromeritics New Technology for Net-Zero Session Chair: Guijie Dong, Micromeritics	
Time	Paper ID	Author(s)	Paper Title
09:45-11:00	1	Guijie Dong	Micromeritics New Technology for Net-Zero
10:15-10:30 Tea Break			
Room 1 Venue: IEB 122		(A) Carbon Mitigation Technologies and Solutions towards Carbon-neutrality Session Chairs: Dr. Shuai Liu, Dr. Xiang Luo	
Time	Paper ID	Author(s)	Paper Title
10:30-10:45	65	Jin Ma, Meihong Wang, Feifei Shen, Wenli Du and Feng Qian	Modelling and Simulation of Flue Gas Heat Recovery Applied to Carbon Capture Process for the Ethylene Plant

DAY 2 April 23, 2023			
10:45-11:00	70	Xinyun Wu, Yoong Xin Pang, Yuxin Yan, Tao Wu and Cheng Heng Pang	A Biological Perspective on Mineral Migration in Biochar: Effects of Cell Functions and Pyrolysis Temperature
11:00-11:15	78	Yuxin Yan, Yoong Xin Pang, Yang Meng, Xinyun Wu, Emily Tsambika Kosta, Edward Lester, Tao Wu and Cheng Heng Pang	Image-chemical Analysis: The Link Between Lignocellulose and SRGB of Biomass
11:15-11:30	72	Wenrui Shi and Meiyu Guo	Assessment of CO ₂ Fracturing in China's Shale Oil Reservoir: Fracturing Effectiveness and Carbon Storage Potential
11:30-11:45	84	Xuewang Song, Yishui Chen, HuiBo Bi, Jiali Wang and Wen-Long Shang	Analysis of Carbon Footprint Based on Residential Travel Chain
11:45-12:00	0	Wen Xiong	Application of Gas Adsorption Characterization in Net Zero
Room 2 Venue: IEB 123		(H) Energy Policies and Management Session Chair: Dr. Zhiling Guo	
Time	Paper ID	Author(s)	Paper Title
10:30-10:45	10	Yibo Chu, Ning Peng and Kaile Zhou	Supply-demand Balancing Model for Blockchain-based Peer-to-peer Electricity Trading
10:45-11:00	14	Xing Yao, Lei Zhu and Shao-Chao Ma	Synergetic Decarbonizations of the Power and Transport Sectors: the Role of Vehicle-to-Grid
11:00-11:15	22	Jin Li and Can Wang	Spatial Deployment Strategy for Carbon-neutral Steelmaking Technologies in China
11:15-11:30	27	Jiangshan Wang and Yi Liu	Agent-Based Assessment on the Impact of Firms' Bounded Rationality Under Uncertainty of Carbon Price: the Case of China's Iron and Steel Industry
11:30-11:45	42	Hanying Jiang, Jiachen Wang, Sha Yu, Xinzhu Zheng and Can Wang	Efficiency Evaluation of International Carbon Market Link Limit Mechanism in the Context of Carbon Neutrality
11:45-12:00	49	Fuyou Zhao, Yutong He and Tao Ma	A Two-layer Peer-to-peer Energy Sharing Model for Virtual Power Plants Based on Demand-side Management
Room 3 Venue: IEB 131		(F) Integrated Energy Systems Session Chairs: Prof. Chenghang Zheng, Dr. Zhenjia Lin	
Time	Paper ID	Author(s)	Paper Title
10:30-10:45	17	Zening Lyu, Haoshui Yu, Zhidong Chen, Lijun Yang, Sebastian Werle and Zhenyu Ouyang	Integration of Solar- Driven Organic Rankine Cycle (ORC) System with Carbon Capture in Coal-Fired Power Plants
10:45-11:00	18	Anran Du, Dian-Ce Gao and Liyuan Yuan	Performance Analysis of a Coupled Seawater Air-conditioning System for Simultaneous Heating and Cooling Applications
11:00-11:15	31	Zhanyu Guo, Yingzong Liang, Jiacheng He, Zhi Yang, Jianyong Chen, Xianglong Luo and Ying Chen	Design and Optimization of CO ₂ Brayton-Rankine Hybrid Cycle for Concentrated Solar Power Generation
11:15-11:30	35	Ru Guo, Guanghui Shao, Linjing Liu, Xiaojing Cao, Ling Chen and Xiangfeng Huang	Moving towards Carbon Neutrality: an Integrated Technology-policy Framework for Sustainable Transition of Cities
11:30-11:45	76	Wei He, Qing Xu, Shi Zhao and Shengchun Liu	Comparative Performance Analysis of Two Hybrid Energy Systems for Data Centers with Different Replenishment Energy Sources
11:45-12:00	107	Guotao Wang, Zhenjia Lin, Qi Liao, Haoran Zhang and Jinyue Yan	Improving the Flexibility of Energy Systems Based on Demand Side Management: An Interactive Optimization Framework

DAY 2 April 23, 2023			
12:00-13:30 Lunch (Lakeside Dining Hall, Floor 1, LA Hotel)			
Room 1 Venue: IEB 122		(D) Intelligent Energy Uses and Energy Efficiencies Session Chair: Dr. Weiqi Hua	
Time	Paper ID	Author(s)	Paper Title
13:30-13:45	12	Shuoshuo Wang, Bo Zheng, Zhang Bai and Yucheng Gu	Dynamic Operation Investigation of the Solar Thermochemical Polygeneration System Based on Methane Dry Reforming
13:45-14:00	54	Yimin Li, Dongjiang Han and Jun Sui	Refueling Boundary Based on Heat Utilization for Hybrid SOFC-ICE System
14:00-14:15	58	Jielin Luo, Yongting Shen and Hongxing Yang	Feasibility Investigations on Utilizing Deep Eutectic Solvent Ethaline for Energy Saving and Indoor CO ₂ Concentration Regulation in Air-conditioning Systems
14:15-14:30	64	Hongbing Ding, Yuanyuan Dong, Yu Zhang, Yan Yang and Chuang Wen	Modelling and Flow Characteristics Analysis of a Centrifugal Compressor Based on Supercritical Carbon Dioxide (sCO ₂)
14:30-14:45	99	Bin Xu, Yue Fei, Xing-Ni Chen, Xing Xie and Gang Pei	Influence of Infrared Emissivity Inside and Outside the Atmospheric Window on the Radiative Cooling Effect of Windows: Regularity Exploration and Universality Verification
14:45-15:00	104	Defan Feng, Qing Yu, Zhiheng Chen, Haoran Zhang and Xuan Song	Analysis of the Potential of Battery Swapping, Transporting, and Sharing for Electric Taxi Fleets Based on Agent-Based Model
15:00-15:15	45	Chenjue Wang, Anthony Roskilly and Yaodong Wang	Combined Photovoltaic-Thermal System with Latent Heat Storage Tank for Domestic Heating Supply: A Case Study of UK Conventional House
Room 2 Venue: IEB 123		(G) Emission Mitigation Technologies Session Chairs: Dr. Haitao Zhao, Dr. Yang Meng	
Time	Paper ID	Author(s)	Paper Title
13:30-13:45	36	Zhiyu Xiao and Jun He	One-pot Synthesis of Co(OH) ₂ /CeO ₂ -g-C ₃ N ₄ Ternary Heterostructure: A Synergistic Multi-heterojunction Photocatalyst for Efficient Oxidation of NO _x Under Visible Light
13:45-14:00	38	Yong Ren and Zhiyu Zhang	Microfluidic Synthesis of Hollow Microfibers with Heterostructures for Enhanced Photocatalytic Treatment of Nitrogen Oxides
14:00-14:15	50	Ying Wang, Yuxin Yan, Qingyang Lin, Hanxiao Liu, Xiang Luo, Chenghang Zheng, Tao Wu and Xiang Gao	GHG Emission Footprint for Combined Heat and Power Plant with Co-firing of Biomass Fuels Under a Multi-scope Accounting Framework
14:15-14:30	117	Fanbei Kong, Baisheng Nie, Feifei Yin, Dan Zhao and Yanan Hou	Study of Ventilation Mine Methane Regenerative Oxidization Technology
14:30-14:45	85	Haolin Ye, Xiaoxu Xuan, Mengjie Wang, Jingxuan Sun, Mengqing Yang, Xinyan Zhang and Xun Sun	Designing Nozzle-Like Flow Channel for High CO ₂ One-Way Conversion Rate and Methanol Selectivity in CO ₂ Electrochemical Reduction Reaction
14:45-15:00	88	Gang Yang, Chenggong Sun, Xiang Luo and Tao Wu	Towards Green Ammonia Synthesis Through Reduction of NO _x from the Combustion Process
15:00-15:15	80	Ashkan Bahadoran, Xun Li, Ajinkya Nene, Paul Uchenna and Massimiliano Galluzzi.	Sustainable Architecture of Spatially Ordered Amorphous Bi-TiO ₂ on Wrinkled CuCo ₂ S ₄ Yolk-shell Hollow Spheres for Superb Antibiotic Photodegradation
Room 3 Venue: IEB131		Energy and Built Environment for Carbon Neutrality in Buildings Session Chair: Prof. Gang Tan, Zhejiang University	

DAY 2 April 23, 2023			
Time	Paper ID	Author(s)	Paper Title
13:30-13:50	1	Ronggui Yang	Radiative Cooling: from Scalable-Manufactured Materials to Impactful Applications
13:50-14:10	2	Yi Long	Smart Materials and Smart Devices
14:10-14:30	3	Yujie Wei	Reliability Assessment of Lithium-ion Batteries Based on the Cycle-life and the State-of Health Evaluation Model
14:30-14:50	4	Xiang Zhou	Thermal Comfort in the Built Environment and Achieving Emission Peak-Carbon Neutrality Goals
14:50-15:10	5	Hongwu Fan	The Pathway to Carbon Neutralization of the Building Sector in Shanghai
15:10-15:30	6	Gang Tan	Carbon Neutrality in Buildings: Materials for Energy Efficiency and Renewable Energy Applications
Room 4 Venue: IEB132		Green Chemistry and Process Intensification towards Sustainable Future Session Chair: Dr. Guang Li, University of Nottingham Ningbo China	
Time	Paper ID	Author(s)	Paper Title
13:30-13:50	1	Dongbing Li	Green Process Engineering Based on Fluidization and Supercritical Fluid Technologies for Biochemicals and Specialty Oils/Proteins
13:50-14:10	2	Xiaoyang Wei	Fundamental Study and Commercialization of the Gas-solid Flow Systems
15:15-15:30 Tea Break			
15:30-17:00 Tour to Ningbo Museum			
18:00-20:30 Banquet (New Century Grand Hotel)			

DAY 3 April 24, 2023			
Room 1 Venue: IEB 122		(A) Carbon Mitigation Technologies and Solutions towards Carbon-neutrality Session Chairs: Dr. Xiaoxia Ou, Dr. Jiahui Yu	
Time	Paper ID	Author(s)	Paper Title
9:00-9:15	89	Chenxi Wang, Jianwen Zhang, Jiayou Mou, Jiahui Yu, Fan Wang, Xiang Luo and Tao Wu	Research on Carbon Neutrality of One Typical Refinery from an Energy Transition Perspective.
9:15-9:30	90	Ning Li, Hanshi Qin, Xunpeng Shi and Youmin Hou	Different Precisions Modelling Significantly Deviates the Carbon Accounting of Energy System
9:30-9:45	91	Yoong Xin Pang, Haoliang Hong, Tao Wu and Cheng Heng Pang	Integrating Bio-char into NIR System: A Sustainable Alternative to Laser Technology
9:45-10:00	92	Fanbei Kong, Baisheng Nie, Dan Zhao and Yanan Hou	The Deactivation Factors of Pd-based Nanofilms During Ventilation Mine Methane Oxidation Based on XPS Analysis
10:00-10:15	97	Ishioima Egun, Binjie Hu, Ipeghan Otaraku and Collins Mordi	Reduction of CO ₂ Emission from Crude Oil Refining Using Aspen Hysys Energy Analyser towards Environmental Sustainability
Room 2 Venue: IEB 123		(D) Intelligent Energy Uses and Energy Efficiencies Session Chairs: Prof. Hailong Li, Dr. Rui Jing	
Time	Paper ID	Author(s)	Paper Title
9:00-9:15	105	Dayin Chen, Xiaodan Shi, Xuan Song, Haoran Zhang and Jinyue Yan	A New Training Strategy to Improve the Universality of Phone-based Temperature Measurement Model
9:15-9:30	106	Qianya He, Zhenjia Lin, Haoyong Chen, Xiaodong Zheng and Jinyue Yan	Joint Market Clearing Model for Electricity Energy and Flexible Resource Trading with Demand Response Under Wind Power Uncertainty
9:30-9:45	110	Shibo Zhu, Xiaodan Shi, Haoran Zhang, Xuan Song and Jinyue Yan	Personal Federated Learning Framework for Household Load Prediction
9:45-10:00	111	Xiaodan Shi, Haoran Zhang and Jerry Yan	Latent Variable Generative Electric Vehicle Charging Pattern Extraction
10:00-10:15	112	Hongjun Tan, Zhiling Guo, Haoran Zhang and Jinyue Yan	Semantic Segmentation Method Based on Common Features of City-Level PV Panels
Room 3 Venue: IEB 131		(H) Energy Policies and Management Session Chair: Prof. Qingyang Lin	
Time	Paper ID	Author(s)	Paper Title
9:00-9:15	60	Lintao Shao, Qingrui Wang, Yangxue Wang, Qing Yang and Hanping Chen	Current Status and Prospects of Integrated Assessment Models (IAMs) in the Context of Carbon Neutrality: A Bibliometric Perspective
9:15-9:30	61	Xiangqian Li	A Comparative Study of Statistical and Machine Learning Models on Carbon Dioxide Emissions Prediction of China.
9:30-9:45	66	Bin Wang, Wanshi Hong, Cy Chan, Cong Zhang and Jinyue Yan	Transportation Decarbonization: A Scalable Infrastructure Planning Framework for On-Road Electric Vehicles
9:45-10:00	68	Xueyu Tian and Fengqi You	Life Cycle Optimization of Hybrid Campus Energy Systems with Economic, Environmental, and Sociological Considerations
10:00-10:15	79	Guangming Rao and Yanping Zhu	Gap Analysis on Green and Low-carbon Circular Development towards Carbon Neutrality: A Case of the Yangtze River Economic Belt of China

DAY 3 April 24, 2023			
Room 4 Venue: IEB 132		(B) Clean Energy Conversion and Energy Storage Technologies Session Chairs: Dr. Xiaoyang Wei, Dr. Yuntian Chen	
Time	Paper ID	Author(s)	Paper Title
9:00-9:15	29	Yanwei Zhao, Qi Liu, Guangde Li, Guangyu Qin, Junfu Lyu and Yuxin Wu	An Algorithm Based on CNNs for Extracting Bubble Evolution Information at Pool Boiling Nucleation Sites
9:15-9:30	69	Ji Zhang, Zhi Cao, Hongbing Ding, Yan Yang and Chuang Wen	Combination of Nanoparticles and Fins to Enhance Discharging Process of Phase Change Material for Latent Heat Thermal Energy Storage
9:30-9:45	52	Xinqi Yao, Xinhai Yu and Shan-Tung Tu	Powering Hydrogen Refueling Stations with Local Renewable Curtailment – A Lanzhou Case Study
9:45-10:00	53	Yueying Zheng, Fan Wang, Shu Liu, Quhan Chen, Chenxi Wang, Renmao Ye, Qianyong Zhou and Tao Wu	Construction of Novel Z-scheme Cobalt Tetraphenylporphyrin/ZnIn ₂ S ₄ Heterojunction for Enhanced Photocatalytic Hydrogen Evolution
10:00-10:15	44	Minghao Liu, Jun He, Qing Xu and Gaofeng Zeng	Construction of Catalytic Covalent Organic Frameworks with Redox-active Sites for Oxygen Reduction and Oxygen Evolution Reaction
10:15-10:30	Tea Break		
Room 1 Venue: IEB 122		(A) Carbon Mitigation Technologies and Solutions towards Carbon-neutrality Session Chairs: Dr. Svenja Hanson, Dr. Ying Du	
Time	Paper ID	Author(s)	Paper Title
10:30-10:45	100	Milan Zlatkovikj, Valentina Zaccaria and Hailong Li	Model Predictive Control (MPC) Coupled with NIRS Fuel Characterization for Improved Efficiency N Biomass CHP Plant Transient Operation
10:45-11:00	108	Xuejian Liu, Hailin Huang, Yan Li and Zhenyuan Yin	Investigation on the Kinetics of Liquid CO ₂ to CO ₂ Hydrate: Implication for Hydrate-based CO ₂ Storage
11:00-11:15	109	Zichen Zhang, Yamin Yan, Guotao Wang and Haoran Zhang	Techno-economic Modeling and Analysis of Synergies Between Photovoltaic Power Plants and Landfills
11:15-11:30	115	Lifan Gao, Song He, Dongtai Yang and Xuelan Zeng	Thermodynamic Investigation on the Performance Difference Between Heat Supply Method of Calcium Looping for CO ₂ Capture
11:30-11:45	55	Yu Zhang, Meng Yu, Maoyu Wu, Jiangmin Guo, Tianmeng Ye, Shaojun Liu, Yang Yang, Chenghang Zheng and Xiang Gao	Effect of W-doping on NH ₃ -SCR Performance over Sm _{1-x} W _x Mn ₂ O ₅ : a Modification Strategy for NO Oxidation Catalyst
11:45-12:00	62	Hongjuan He, Zongming Yu, Yue Wang, Yuhua Ai, Weijie Zhao and Baorui Wang	Experimental Investigation of the Combustion Characteristics of Ammonia Addition to the Dry Low NO _x Hydrogen Combustor
Room 2 Venue: IEB 123		(B) Clean Energy Conversion and Energy Storage Technologies Session Chairs: Dr. Di Hu, Dr. Yuxin Yan	
Time	Paper ID	Author(s)	Paper Title
10:30-10:45	57	Zijian Chen, Bobin Wu, Zixuan Wang, Lingjun Wu, Shaohui Liu, Hao Huang, Cheng Heng Pang and Haitao Zhao	Towards Robot Scientists for Digital Manufacturing of Perovskite Solar Cells
10:45-11:00	73	Jiahui Yu, Huiwen Zhu, Shu Liu, Fan Wang, Yueying Zheng, Chenwei Li and Tao Wu	MOF Derived Rare Earth Oxides Catalysts with Tunable Oxygen Vacancies for the Highly Efficient CO ₂ Methanation

DAY 3 April 24, 2023			
11:00-11:15	74	Xin Li and Meihong Wang	Dynamic Modelling and Analysis of Integrated Carbon Capture and Conversion Process Using Dual-function Material
11:15-11:30	81	Jinshan Wang, Shixue Wang and Yu Zhu	Characteristics of High-temperature PEMFC Thermal Management Based on the Pyrolytic Graphite
11:30-11:45	83	Xinshuang Chang, George Z Chen, Kam Loon Fow, Xiayin Yao	Stable Li ₁₀ GeP ₂ S ₁₂ -Based All-Solid-State Lithium Batteries Enabled by an In-situ Formed Li-Mg/LiF Protective Layer
11:45-12:00	102	Yongpeng Guo, Jing Chen, Hualong Song, Tong Liu, Ke Zheng and Hui Kong	Solar Thermochemical Cycle for Fuel Production: A Review
Room 3 Venue: IEB 131		(E) Hydrogenation and Reduction Session Chairs: Dr. Bencan Tang, Dr. Hui Kong	
Time	Paper ID	Author(s)	Paper Title
10:30-10:45	103	Hualong Song, Hongsheng Wang, Hongfei Zheng and Hui Kong	A Novel System for Efficient Hydrogen Production by the Combination of Thermochemical Cycle and SOEC
10:45-11:00	33	Kunyang Shen and Seunghun Jung	Modeling of Sulfuric Acid Decomposition of Hybrid Sulfur Cycle for Hydrogen Generation
11:00-11:15	40	Hengwei Wang, Xue Wang, Jianheng Li and Xuejing Yang	Energy-Saving Hydrogen Harvesting from Ethylene Oxide /Ethylene Glycol (EO/EG) Process Waste Effluent by Electrochemical Reforming
11:15-11:30	77	Juan Fang, Hao Dong, Qibin Liu, Xiangyu Yan, Buchu Lu and Xunliang Liu	Experiment Study of Solar Hydrogen Production by Photo-thermal Driven Steam Methane Reforming with Co/Al ₂ O ₃ Catalyst
11:30-11:45	24	Fan Wang, Yueying Zheng, Xueying Zhang, Zhengyi Wu, Jiahui Yu and Tao Wu	Dual MOFs Derived In ₂ S ₃ /ZnS Corn-like Z-scheme Heterojunction with Enhanced Photocatalytic Hydrogenation Activity
Room 4 Venue: IEB 132		(D) Intelligent Energy Uses and Energy Efficiencies Session Chair: TBC	
Time	Paper ID	Author(s)	Paper Title
10:30-10:45	95	Cheng Qian, Zhenhua Rui, Yueliang Liu, Yang Zhao and Kai Du	Mechanism of Shale Oil Recovery and CO ₂ Storage in Dual Nanopores During the Huff-n-Puff Process: Molecular Perspective
10:45-11:00	23	Yuan Yu, Kengjie Lee and Boon Giin Lee	Spot Electricity Market Bidding Strategy Optimization Based on Risk Analysis with Reinforcement Learning
11:00-11:15	63	Tianqi Xiao and Fengqi You	Physically Consistent Deep Learning-based Modeling of Smart Community Energy System and Thermal Dynamics
11:15-11:30	TBC		
11:30-11:45	TBC		
11:45-12:00	TBC		
12:00-13:30	Lunch (Lakeside Dining Hall, Floor 1, LA Hotel)		
Room 1 Venue: IEB 122		(B) Clean Energy Conversion and Energy Storage Technologies Session Chairs: Dr. Kien Woh Kow, Dr. Hao Yu	
Time	Paper ID	Author(s)	Paper Title

DAY 3 April 24, 2023			
13:30-13:45	93	Lin Gao, Mian Li, Kun Liang, Binjie Hu and Qing Huang	Functional Intercalation of A _{0.33} TiS ₂ (A=Fe, Mn) by Molten Salt for Microwave Absorption Enhancement
13:45-14:00	96	Shuai Liu, Yang Meng, Honglei Zhang, Jianche Lai, Chunlin Luo, Huiwen Zhu and Tao Wu	Photothermal Catalytic Bioethanol Dehydrogenation on CuS/TiO ₂ Heterojunction towards High Production Rate of Hydrogen and Acetaldehyde
14:00-14:15	98	Junnan Zhan, Taixiu Liu and Qibin Liu	Wind-solar-fuel Complementary Distributed Energy System Integrating Solar Thermochemistry
14:15-14:30	71	Shi Jihao, Linda Xiao, Jinyue Yan and Asif Sohail Usmani	Graph Deep Probability Learning for Automated Hydrogen Leakage Detection and Localization Without Anomaly Data
Room 2 Venue: IEB 123		(H) Energy Policies and Management Session Chair: Prof. Chi Zhang	
Time	Paper ID	Author(s)	Paper Title
13:30-13:45	86	Jianxiang Shen and Wenjia Cai	Incorporating Health Co-benefits into Province-Driven Climate Policy: A Case of Banning New Internal Combustion Engine Vehicle Sales in China
13:45-14:00	94	Shuting Fan, Kangxin An, Shihui Zhang and Can Wang	Cost-effective Carbon Reduction Pathway Considering Air Quality Co-benefits: A Case Study of Anhui Province in China
14:00-14:15	114	Zhen Wang, Qing Yu, Xinwei Shen and Hongbin Sun	Grid-based Optimal Planning of Urban Distribution Network and Electric Vehicle Charging Stations: A Case Study in Shanghai
14:15-14:30	119	Junxiang Zhang, Ying Du, Haoran Zhang and Jinyue Yan	Estimating Electric Vehicle Demand Change After Disasters with Human Mobility Patterns
14:30-14:45	51	Tianxi Wei, Yi Zhang, Yuhang Zhang and He Qi	Generic Urban Unit Clustering Based on Urban Form, Energy Consumption and Roof Photovoltaic Potential
Room 3 Venue: IEB 131		(D) Intelligent Energy Uses and Energy Efficiencies Session Chair: Prof. Mingyu Yan	
Time	Paper ID	Author(s)	Paper Title
13:30-13:45	113	Ying Du, Yuntian Chen, Haoran Zhang, Chengshan Wang and Jinyue Yan	Spatiotemporal Impact of Electric Vehicles in Mitigating Damages of Typhoon in Urban Power Systems
13:45-14:00	116	Zhiling Guo, Peiran Li, Haoran Zhang and Jinyue Yan	A Multitask Deep Learning Model for Generalizable Photovoltaic Panel Segmentation
14:00-14:15	118	Wenjie Gong, Ge Li, Qi Chen, Qing Yu and Haoran Zhang	Development of an Augmented Reality Visualization Prototype System for Immersive Display of Building Carbon Emissions Using Urban 3D Models
14:15-14:30	5	Adam Crilly, Yaodong Wang and Ye Huang	A Techno-economic Study of a Net-zero Renewable Energy Supply for a Farm
14:30-14:45	11	Catharina Astrup Horgen, Yaodong Wang and Ye Huang	Techno-economic Analysis of a Cogeneration System in a Norwegian Farm
Room 4 Venue: IEB 132		(A) Carbon Mitigation Technologies and Solutions towards Carbon-neutrality Session Chair: TBC	
Time	Paper ID	Author(s)	Paper Title
13:30-13:45	TBC		
13:45-14:00	TBC		

DAY 3 April 24, 2023			
14:00-14:15	TBC		
14:15-14:30	TBC		
14:30-14:45	TBC		
14:45-15:00	Tea Break		
Venue: Room 122, IEB Building (Keynote)			
15:00-15:45	Keynote 6	Design of Carbon Dioxide Storage from Pore-Scale Physics Prof. Martin Blunt	
15:45-16:30	Keynote 7	A Journey from CO ₂ Capture to Greenhouse Gas Removal with Biochar Prof. Colin Snape	
16:30-17:30	Closing Prof. Tao Wu, Symposium Chair Prof. Xiang Gao, Symposium Chair		

New Library: Building 6 on Map

LA Hotel (Lunch): Building 7 on Map

IEB: Building 30 on Map



Session Topic: Energy and Built Environment for Carbon Neutrality in Buildings

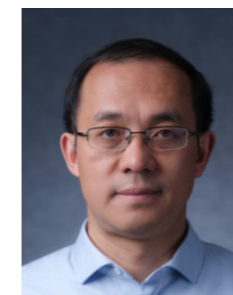
April 23, 2023

1:30 pm – 3:30 pm (GMT+7)

Venue: IEB 131

Session Chair: Prof. Gang Tan

Session Chair Affiliation: Zhejiang University



Short Bio:

Dr. Gang Tan is currently a Qiushi Chair Professor of Zhejiang University. He received his PhD degree from MIT in 2005. He worked in energy consulting firms after that especially focused on building energy efficiency technologies as well as design and implementation of state-wide energy efficiency programs. Starting in 2009 he joined University of Wyoming as an assistant professor. His research interests include innovative building materials, building energy efficient technologies, renewable energy and applications, and indoor environment conditioning and controls. His research work has been published in top journals including Science, Joule, Nature Communications, ACS Energy Letters and more. He is the director of the Smart Materials for Architecture Research Lab at the Innovation Center of Yangtze River Delta, Zhejiang University. He serves as the Associate Editor of Building Simulation, an International Journal.

Introduction

Building energy consumption made up over 45% of the total national energy usage and was responsible for more than 50% of China's national carbon emissions in 2020. The architecture and construction industry is also a major contributor to carbon emissions worldwide. To achieve the goal of "double-carbon" strategic development, the adoption of innovative smart materials and emerging energy technologies will elevate the quality of the built thermal environment, spark groundbreaking inventions, and help pave new pathways towards achieving carbon neutrality.

Objectives

- Emphasize the systematic complexity of achieving carbon neutrality in buildings, taking into account various factors such as materials, energy systems, construction practices, and creation of indoor environment.
- Focus on achieving carbon neutrality through the entire chain of material development, innovative cooling technique, electric energy storage, and improving the quality of indoor thermal environment, as well as provide discussions on the interactive effects of these factors.

Target Participants

Researchers from universities and other institutes, policy makers and experts, practitioners from building and energy sectors, post-graduate students from universities, and other interested people from public.

Output

- Gain knowledge of smart materials and devices that can be utilized in buildings to improve energy efficiency and reduce carbon emissions.
- Acquire a comprehensive understanding of the zero-energy sky radiative cooling technique and its broad impact in real-world applications.
- Systematically familiarize oneself with the significance of energy storage and its role in ensuring building and community resilience, as well as the requirements for the built thermal environment and the practical approaches to achieving carbon neutrality.
- Develop insightful perspectives on the holistic solutions needed to achieve carbon neutrality in the building sector.



Speaker 1: Ronggui Yang

Topic:

Radiative Cooling: from Scalable-Manufactured Materials to Impactful Applications

Short Bio:

Dr. Ronggui Yang is a Professor of Energy and Power Engineering at Huazhong University of Science and Technology in China. Dr. Yang received his PhD from MIT in 2006. He worked as a faculty member from an Assistant Professor to Full Professor at CU-Boulder between 2006 to 2016. His research interests are on the fundamentals of transport phenomena (thermal conduction, thermal radiation, thermoelectrics, liquid-vapor phase-change heat transfer) and the applications of micro/nanotechnologies for thermal, energy, and information systems. Dr. has published >230 journal papers with an H-Index of 81, a total citation > 28,000 times per Google Scholar. His innovative research has won him numerous awards including the 2020 Nukiyama Memorial Award in Thermal Science and Engineering, the 2017 Top 10 Physics Breakthrough by PhysicsWorld, the 2014 ITS Young Investigator in Thermoelectrics from International Thermoelectric Society, the 2010 ASME Bergles-Rohsenow Young Investigator Award in Heat Transfer, an NSF CAREER Award in 2009, the MIT Technology Review's TR35 Award and the DARPA Young Faculty Award in 2008, the 2005 Goldsmid Award for Research Excellence in Thermoelectrics by a Graduate Student from ITS (one selected annually), and a NASA Tech Brief Award for a Technical Innovation in 2004.



Speaker 2: Yi Long

Topic:

Smart Materials and Smart Devices

Short Bio:

Short Bio: Dr. Yi Long graduated from University of Cambridge. She is the Fellow of Royal Society of Chemistry and the STEM scholar/professor in the Chinese University of Hong Kong. Her research focuses on smart materials and devices, thin film technology, energy saving materials and functional nanomaterials. Her early career started with successful lab-to-fab technology transfer to industries including Seagate Technology. She published widely in top journals including Science, Joule, Chemical review, Chemical Society Review and many more. She is serving as the scientific editor for Materials Horizons. Her work was highlighted in Nature and was reported widely by Reuters, AFP, CNA, MIT technology review and many others.



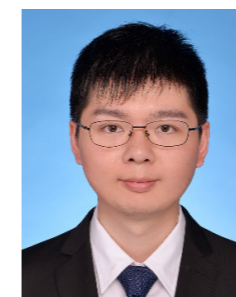
Speaker 3: Yujie Wei

Topic:

Reliability Assessment of Lithium-ion Batteries Based on the Cycle-Life and the State-of-Health Evaluation Model

Short Bio:

Dr. Yujie Wei is a Professor and the Vice-Director of Institute of Mechanics, Chinese Academy of Sciences (CAS), and the Director of State Key Laboratory of Nonlinear Mechanics, Institute of Mechanics, CAS. He received his PhD degree from MIT in 2006. After two years of post-doc experience at Brown University, he joined the University of Alabama as an assistant professor. In 2012, he joined the Institute of Mechanics, Chinese Academy of Sciences and has been a professor there since then. Dr. Wei's research interest is about the strength of solids and their plastic deformation mechanisms, with a focus to build-up the relationship between macroscopic mechanical properties and microscale structures of materials. He is also interested in employing advanced computational techniques and big data for structural healthy analysis of large-scale complex systems like high speed trains. Dr. Wei has published multiple papers, as a leading author and/or the corresponding author, in journals like Nature, Nature Materials, Nature Communications, PNAS, PRL, Nano Letters, J Mech Phys Solids, Adv Mater, Acta Mater and so on. He is a recipient of NSFC Outstanding Young Investigator Award (Year 2014). He was awarded as outstanding advisor by Chinese Academy of Sciences in years 2013, 2019 and 2020.



Speaker 4: Xiang Zhou

Short Bio:

Short Bio: Xiang Zhou, Ph.D., Professor. He is currently the vice dean of the School of Energy Engineering, deputy director of HVAC Research Institute, Tongji university, member of the committee of the national HVAC society, and deputy secretary-general of the Shanghai Society of Refrigeration.

He is mainly engaged in thermal comfort in radiant air conditioning environments, in vehicle cabins, and in individual heating residential buildings, heat transfer characteristics of radiant air conditioning terminals, ground source heat pump, and other aspects of research. As the project leader, he presided over several national, provincial, and ministerial projects, and published more than 40 papers and two monographs. He has won the Yan Qisen Teaching and Education Award, Beijing Science and Technology Award (second prize), the Architecture Design Award of China Architectural Institute (first prize), and other honors.



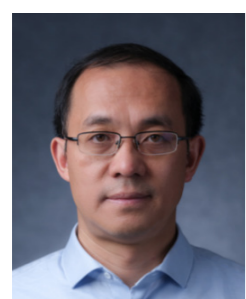
Speaker 5: Hongwu Fan

Topic:

The Pathway to Carbon Neutralization of the Building Sector in Shanghai

Short Bio:

Short Bio: Dr. Hongwu Fan is a Full Professor-level Senior Engineer at Shanghai Research Institute of Building Sciences Co. Ltd. He received his PhD degree from the Harbin Institute of Technology and completed postdoctoral research at Shanghai Jiao Tong University. He is an Evaluation and Review Expert for the Ministry of Housing and Urban-Rural Development's Green Building Evaluation Label, a member of the Expert Committee of the China Building Energy Conservation Association, an Evaluation Expert for Shanghai Building Energy Conservation and Green Building, and an Excellent Technology Leader in Shanghai. He has long been committed to the technological innovation and system development of ultra-low/near-zero energy consumption buildings, renewable energy and building integration, as well as super high-rise green and low-carbon buildings. He has undertaken several national research and development tasks, such as the "Super High-rise Building Safety and Green Low-carbon Smart Operation Framework System Construction Technology" in the 14th Five-Year Plan, the "Near-zero Energy Building Performance Testing and Evaluation Technology" in the 13th Five-Year Plan. He has also participated in the Ministry of Science and Technology's "China Low-carbon Building Technology Development Roadmap in the 21st Century", and the Ministry of Housing and Urban-Rural Development's 14th Five-Year Plan project "Key Technologies and Equipment for Urban Sustainable Development".



Speaker 6: Gang Tan

Topic:

Carbon Neutrality in Buildings: Materials for Energy Efficiency and Renewable Energy Applications

Short Bio:

Dr. Gang Tan is currently a Qiushi Chair Professor of Zhejiang University. He received his PhD degree from MIT in 2005. He worked in energy consulting firms after that especially focused on building energy efficiency technologies as well as design and implementation of state-wide energy efficiency programs. Starting in 2009 he joined University of Wyoming as an assistant professor. His research interests include innovative building materials, building energy efficient technologies, renewable energy and applications, and indoor environment conditioning and controls. His research work has been published in top journals including Science, Joule, Nature Communications, ACS Energy Letters and more. He is the director of the Smart Materials for Architecture Research Lab at the Innovation Center of Yangtze River Delta, Zhejiang University. He serves as the Associate Editor of Building Simulation, an International Journal.

Session Topic: Green Chemistry and Process Intensification towards Sustainable Future

April 23, 2023

1:30 pm – 3:30 pm (GMT+7)

Venue: IEB 132

Session Chair: Dr. Guang Li

Session Chair Affiliation: China Beacon Institute & Department of Mechanical, Materials and Manufacturing Engineering, University of Nottingham Ningbo China



Short Bio:

Dr. Guang Li is an assistant professor at the department of mechanical, materials and manufacturing engineering and in process intensification technologies at CBI. His major interest includes study of transport phenomena in various types of process industrial equipment, development of multiple types of chemical reactors and their applications in synthesis of advanced materials, mass production of fine chemistry and pharmaceuticals. His research work firmly grasps the needs of the industry, and he has established a close cooperative relationship with industry and focuses on solving the problems of efficiency, safety and environmental pollution in industrial production in terms of equipment, process and their coupling innovation. Dr. Guang received his BS and PhD degree in chemical engineering from east China university of science and technology.

Introduction

Global energy and global chemical demand will continue to grow over the next twenty years. EIA expects global energy demand to increase 47% in the next 30 years due to population and economic growth. Global chemicals sales are projected to increase from US\$4.3 trillion in 2019 to US\$ 7.3 trillion in 2030. Under this circumstance, global climate, environmental emissions and carbon emissions are intensifying. Process intensification (PI) technologies, aimed at revolutionizing conventional substance-transforming processes into more cost-effective, productive, greener and safer processes, offers the opportunity to address some urgent challenges encountered in chemical and energy industries, such as energy utilization efficiency, atom-economy, carbon emission, capture and conversion. Therefore, this session will focus on new research, progress and important development directions on process intensification technologies aiming to achieve green and energy efficient production of chemicals.

Objectives

- Highlight the latest advances in process intensification technologies, including process intensification equipment and methods.
- Discuss current challenges and opportunities for current process intensification under the in a dual-carbon context.
- Explore the green chemistry roadmap and solution to address the challenges facing by chemical and energy industries.

CEN2023: Applied Energy Symposium

CLEAN ENERGY TOWARDS CARBON NEUTRALITY

April 22-25, 2023 | NINGBO, CHINA

www.applied-energy.org/CEN2023

Panel Session Agenda

Target Participants

- Researchers and managers from industries companies, universities and other institutions, as well as undergraduates or above and interested publics.

Output

- Identify promising process intensification techniques and potential application fields.
- Understand the pressing challenges facing current chemical and energy industries and form a framework of chemical sustainability.



Speaker 1: Dongbing Li, Associate Professor, China Beacons Institute/UNNC

Topic:

Green Process Engineering Based on Fluidization and Supercritical Fluid Technologies for Biochemicals and Specialty Oils/Proteins

Short Bio:

Dr. Dongbing Li is an Associate Professor in Green Energy and Chemicals at CBI. He is mainly engaged in process intensification and product development of high-temperature or high-pressure multiphase fluid systems based on fluidized bed fast pyrolysis (450-1100 °C) and supercritical fluid (20-100 MPa) technologies. Prior to joining CBI, Dr. Li was a professor in the School of Forestry at Northwest A&F University, making him an experienced researcher combining agroforestry and chemical engineering. Dr. Li received his MS from Tsinghua University and PhD from the University of Western Ontario, Canada.



Speaker 2: Xiaoyang Wei, Assistant Professor, China Beacons Institute, University of Nottingham Ningbo China

Topic:

Fundamental Study and Commercialization of the Gas-Solid Flow Systems

Short Bio:

Dr. Xiaoyang Wei received his B.S. from China University of Petroleum (East China) in 2013 and Ph.D. from the University of Western Ontario in 2019. After graduation, Dr. Wei worked as a postdoctoral fellow at the National Energy Technology Laboratory (Department of Energy, US) from 2019 to 2020 and at the University of British Columbia from 2020 to 2021. His research interests are the development and intensification of gas-solid flow systems for chemical, energy, environmental and pharmaceutical industries. Dr. Wei has published 10 papers on the top journals. After joining the University of Nottingham Ningbo, Dr. Wei will carry out interdisciplinary studies on multiphase flow systems, solve the "bottleneck" problems using high-precision 3D printing technology and artificial intelligence (AI), and serve the industrial upgrading, energy conservation, emission reduction and carbon neutrality in China.

Session Topic: Process Development – Difficult or Easy?

April 22, 2023

2:30 pm – 5:00 pm (GMT+7)

Venue: IEB 132

Session Chair: Dr. Lionel O'Young

President, ClearWaterBay Technology

Director, QingHe Advanced Materials

Visiting Assistant Professor, University of Nottingham Ningbo China

Session Objective:

Chemical engineering/process engineering is an education and practice on designing, developing and operating of chemical processes. We have been around for over one hundred years. Does that mean we know everything that we should know and have solved all the chemical engineering process development issues? If not, what are the shortfalls and what needs to be covered.

In this session, we have invited speakers from academic as well as industry to share their thoughts and practice with a focus on Green chemistry – our future direction. How to be “greener”, “safer”, etc. for out better tomorrow.



Speaker 1: Prof. Leung Yuk Frank Lam

Associate Dean of Students

The Hong Kong University of Science and Technology, 2005

Research Interests

- Environmental pollution treatment
- Nanotechnology
- Catalysis
- Electrocatalysis

Topic:

Titanium Nitride-Oxide Composite Cathode Material from Single Step Reaction for Advanced Lithium-Sulfur Batteries

Abstract:

The performance of lithium-sulfur batteries is heavily constrained by the polysulfides shuttle effect, which results in the uncontrolled dissolution of polysulfides and lowers the battery's electrochemical reaction, so contributing to poor cycling stability. Several cathode materials have been developed in the past to handle this problem, but most of them are either too complex to synthesize or require the use of hazardous conditions or chemicals. In this study, a TiO₂-TiN composite was synthesized by means of a singlestep liquid phase reaction at a temperature of 60°C, which can be used as the cathode material in a lithium-sulfur battery. The TiO₂-TiN/S battery give good electrochemical performance, including high capacity of 1136 mAh/g at 0.05C and 644 mAh/g at 2C, with a very low decay rate of 0.067% per cycle for 800 cycles at 2C. Our work has provided insights into the production of cathode materials that are capable of achieving a balance between electroconductivity and polysulfide trapping capability in a more simple and scalable way.

Speaker 2: Mr. Yuhang Wang

Zhuhai Jinji Chemical Co., Ltd.
Production Supervisor / R&D Engineer / Phase Three Project Leader / Operations Manager

Topic:

The Application of Regenerative Catalytic Oxidation (RCO) System for Heat Recovery.

Abstract:

"Zhuhai Jinji Chemical Co., Ltd. is a Sino-foreign joint venture established in 2005, jointly invested by Zhejiang Jinji Group and Newbund Group from Hong Kong. The company specializes in the production of various papermaking raw materials. It covers an area of 40,000 square meters and is located in the economically developed and scenically beautiful Zhuhai Special Economic Zone, specifically in the Gao Lan Gang Economic Zone Petrochemical Base. The company enjoys convenient sea, land, and air transportation, and has a superior geographical environment with broad prospects for development.

The company's products include carboxylated styrene-butadiene latex and ultrafine heavy calcium carbonate, which are widely used in the coating adhesive and coating pigment industries in the papermaking industry. The company is capable of producing high-quality papermaking raw materials for packaging paper, such as food packaging and cigarette packaging, and can also supply papermaking raw materials of various grades according to customer requirements. Its products are sold to major provinces and cities across the country and gradually expanding to overseas markets. Since its establishment, the company has won the favor and praise of numerous large and medium-sized papermaking enterprises with its high-quality products, reasonable prices, and attentive services, and has established continuous and friendly cooperative relationships with them. Some of the notable partners include Zhuhai Red Tower Renheng Paper, Zhuhai Huafeng Paper, Foshan Huafeng Paper, Guangzhou Weida Gao Paper, Dongguan Jiulong Paper, Dongguan Jianhui Paper, Guangdong Yuejing Group, Guangdong Changzhong Paper Company, as well as many well-known large and medium-sized papermaking enterprises in Zhejiang and Hubei. The company is committed to repaying customers and society with high-quality products, reasonable prices, and attentive services. It adheres to the principles of integrity as the foundation of business operation, quality as the source of survival, service as the permanent life of the enterprise, innovation as the driving force of development, and talents as the precious wealth of the enterprise. The company always follows the motto: "Seeking benefits with quality, building reputation with service, creating brand with technology, and seeking development with scale." Today's "Jinji" is like an eagle spreading its wings, standing proudly by the beautiful riverside of Zhuhai, facing the rising sun."

Speaker 3: Dr. Yong Koy Bong

Dr. Bong Yong Koy received his PhD in Medicinal Chemistry from the National University of Singapore. He has more than 16 years of experience in Bio-manufacturing, with work experience in Codexis Laboratories Singapore and MSD Laboratories Singapore. Dr. Bong co-founded Enzymaster (Ningbo) Bio-Engineering Pte. Ltd. In 2013, focusing on the R&D and commercialization of novel enzymatic catalysis technologies. He is the co-inventor of 32 patent applications, of which 14 patents are granted.

Paper:

The R&D of Industrial Enzymes for the Production of Chemicals, With Transamination of (R)- α -Phenylethylamine as Example.

Abstract:

Enzymes are proteinaceous catalysts known to exhibit high catalytic performance with superior specificity towards the transformation of various functional groups in nature. However, many wild-type enzymes suffer from poor activity/stability performance when applied in chemicals production at industrial scale. Enzyme directed evolution is a proven technology for improving enzyme performance. Coupled with effective process design and development, green and cost-effective synthesis of chemicals have been upscaled and commercialized successfully. For example, the classic transaminase-catalyzed production of (R)- α -phenylethylamine ((R)- α -PEA) from acetophenone generally suffers from poor enzyme performance related to product inhibition, as well as a low space-time yield related to reaction equilibrium limitation. A transaminase (TA) from *Aspergillus fumigatus* Af293 was engineered on BioEngine® Platform, leading to an improved variant with over 3000-fold increase in activity and a tolerance with 2.0 M isopropylamine, as well as the complete absence of product inhibition. A continuous neat organic process was developed, where the biocatalyst and unused reactant can be efficiently recycled, with a very high space-time yield of up to 168 g/L/d of (R)- α -PEA in a pilot scale setup.

Speak 4: Mr. Vincent Chan

Chairman, Oxidation Sciences Laboratory (OSL)

Paper:

Practical Green Engineering for the Fine Chemical Manufacturers

Introduction:

Mr. Vincent Chan is the Chairman of Oxidation Sciences Laboratory (OSL), a firm that focuses on the chemistry exploration, process development, process engineering of chemical, with heavy emphasis in green engineering and innovation, he is also a director in Changyuan Chemical with executive responsibilities in manufacturing and operations. He has working experience in consulting and finance prior to the ventures in chemical industry. He holds chemical engineering, computer engineering, business and legal degrees.



**Session Topic: Multi-Scale and Multi-Dimensional Applications of ZEISS
Microscopy in Energy Research**

April 22, 2023

3:30 pm – 5:00 pm (GMT+7)

Venue: IEB 131

Session Chair: Wenhui Yang

Affiliation: ZEISS

Introduction

Microscopic analysis is already an indispensable part in the field of energy research, and Field Emission Scanning Electron Microscopy (FESEM) can help us observe nanoscale morphology. Focused Ion Beam (FIB) is a multifunctional, high-precision, site-specific processing and characterization equipment, which can be used for nanoscale graphic processing, high-quality TEM samples preparation, 3D reconstruction analysis, internal morphology observation, etc. X-Ray Microscopy (XRM) enables the measurement of non-destructive 3D computed tomographies of the interior microstructure of a region of interest. It can effectively help us to do multi-scale and multi-dimensional research after combining the above three or more types of equipment through coordinate correlation.

Objectives

To achieve the goal of "double carbon" at an early date, ZEISS provides multi-scale and multi-dimensional solutions in energy research and its related fields.

Target Participants

Academics and researchers from Universities, Research Institutions and Industry, as well as undergraduate students and interested members.

Output

We hope that the solutions in the field of new energy brought by ZEISS can help you solve the problems encountered in the research.



Speaker 1: Wenhui Yang

Topic:

Multi-Scale and Multi-Dimensional Applications of ZEISS Microscopy in Energy Research

Short Bio:

Dr. Wenhui Yang, Senior Electron Microscopy Application Engineer at Carl Zeiss Co., LTD. She received her PhD from Kyushu University, Japan. She has also worked at Shanghai Jiaotong University. Since her PhD studies, she has been focusing on the development of energy materials, in which she employed various advanced electronic microscopy techniques, such as ultra-high voltage TEM, Cs-corrected STEM, FESEM and FIB, to clarify the formation of nanostructures and their demonstrated properties. Her research achievements have been published in leading international journals, including *Acta Materiala* and *Scripta Materiala*, both are highly specialized research areas.



Session Topic: Micromeritics New Technology for Net-Zero

April 23, 2023

9:45 am – 11:00 am (GMT+7)

Venue: IEB 132

Introduction

Micromeritics offers the most comprehensive portfolio of high-performance instruments to characterize the materials required to achieve a more sustainable future. The world's largest energy companies with a 2050 NET ZERO commitment are all among Micromeritics' customers. This session will introduce to you Micromeritics' new instruments, such as physical absorption, chemisorption, and new technology updated in the past years, and their function used in next generation battery/catalyze/carbon cycle and so on.

Speaker 1: Dong Guijie

Senior sales manager, Micromeritics

Short Bio:

Mr. Dong Guijie was graduated from the Department of applied chemistry, Beijing university of chemical and technology. He is currently the senior sales manager of Micromeritics Instrument Corp. He has 13 years of catalyst-related instruments sales & application experience.

Supporting Institutes & Sponsors

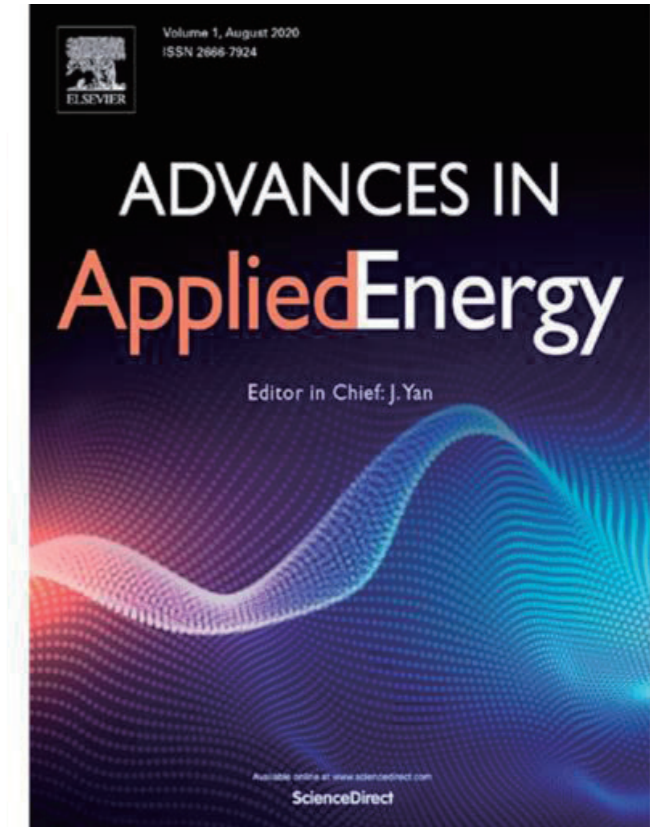
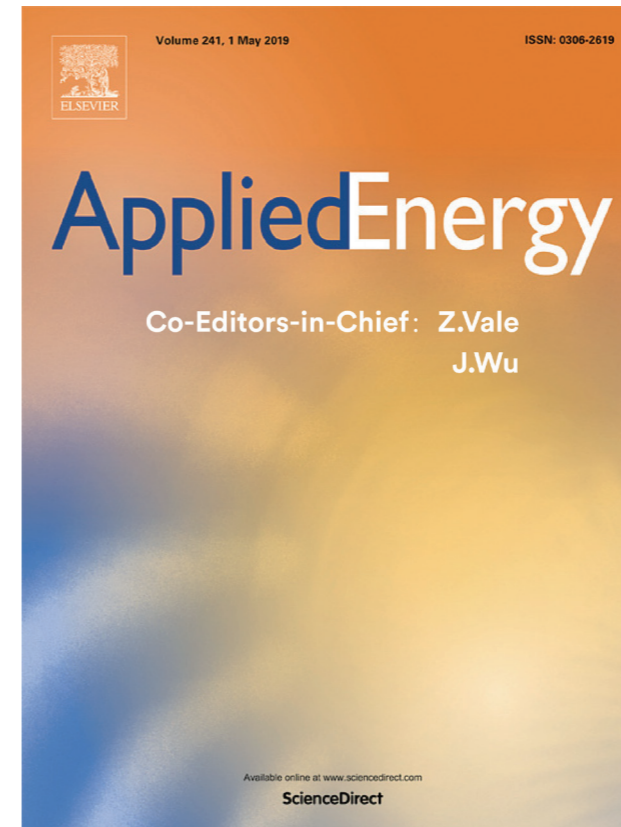


中国环境科学学会环境与热能利用专业委
Professional Committee of Environment and Heat Utilization,
China Society for Environmental Sciences



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SUPPORTING JOURNALS



Meals Arrangement

	April 22, 2023	April 23, 2023	April 24, 2023	April 25, 2023
Morning Refreshment	Library (Building 6), outside Multifunction Room 2	IEB (Building 30), outside IEB 122	IEB (Building 30), outside IEB 122	See Site Visit Arrangement
Lunch	LA Hotel (Building 7), Lakeside Dining Hall	LA Hotel (Building 7), Lakeside Dining Hall	LA Hotel (Building 7), Lakeside Dining Hall	
Afternoon Tea Break	IEB (Building 30), outside IEB 122	IEB (Building 30), outside IEB 122	IEB (Building 30), outside IEB 122	
Dinner	N/A	New Century Grand Hotel (off campus), Zhilexuan Hall	N/A	

Tour of Ningbo Museum (3—5 pm, April 23, 2023)

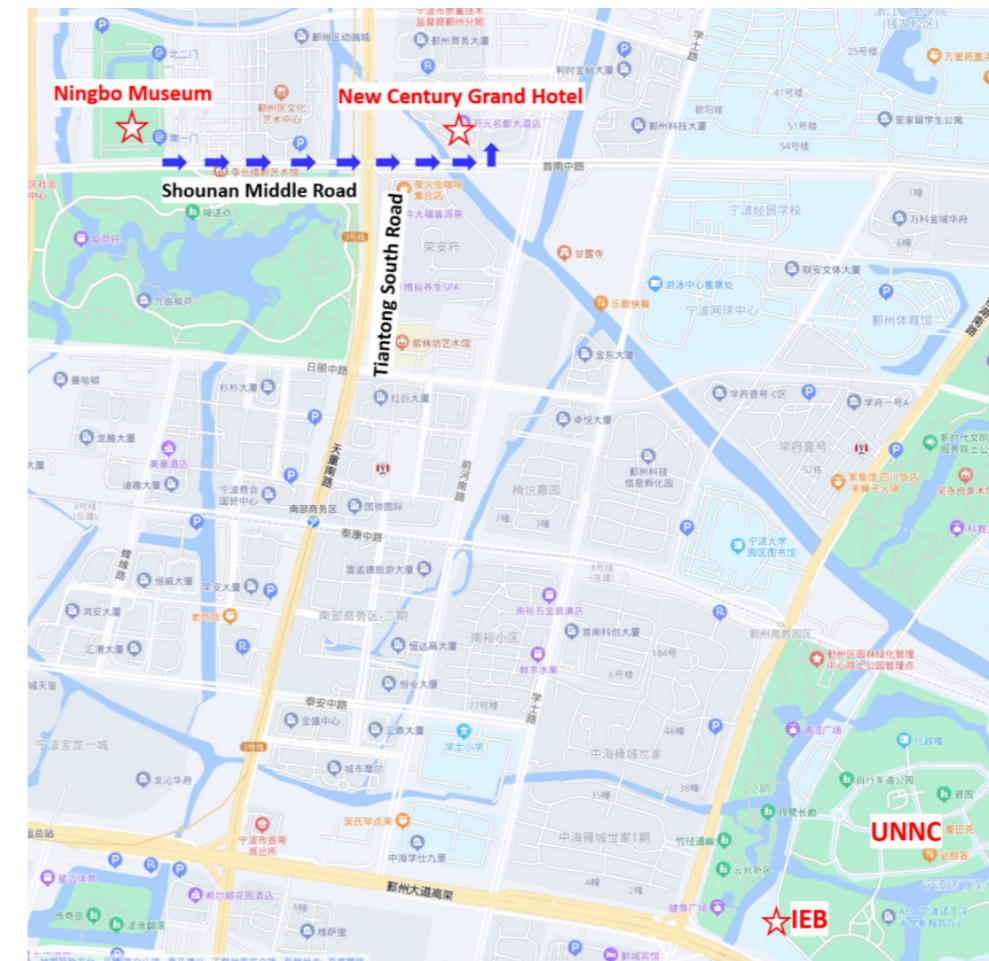
In the afternoon of the second day, a tour has been arranged for delegates. Coaches parked outside IEB (conference venue, building 30) will take delegates to Ningbo Museum (about 10 – 15 min drive away). The narrators at the museum will introduce the history of Ningbo during the tour and the tour will take approximately 1 – 2 hours.



The Ningbo Museum (宁波博物馆), also known as the Yinzhou Museum (鄞州博物馆) or the Ningbo Historic Museum (宁波历史博物馆), is a museum in the city of Ningbo in Zhejiang Province, China. It is located in Yinzhou District and opened on December 5, 2008. The museum focuses on Ningbo area history and traditional customs. Ningbo Museum is designed by Wang Shu, the first Chinese citizen to win the prestigious Pritzker Architecture Prize in 2012. The design is a conceptual combination of mountains, water and oceans, as the East China Sea has played an important role in the history of Ningbo. Ningbo Museum won the Lu Ban Prize in 2009, the top architecture prize in China.

Banquet at New Century Grand Hotel (6 pm onwards, April 23, 2023)

After the museum tour, delegates shall gather at the southern gate of the museum at 5 pm. Then the student volunteers will guide the visitors from the museum to New Century Grand Hotel (along the Shounan Middle Road, <1 km away). The banquet hall (Zhilexuan) is on the second floor of the hotel.



Industrial Site Visit

As part of our continuous efforts to further strengthen academia-industrial collaboration, CEN2023 is organizing industrial site visits on the last day (April 25, 2023) of the symposium. At minimum costs, participants will be able to visit and interact with key stakeholders in local energy industry.

Option A, half-day visit (limited to 30 delegates)

RMB 80/person

Site - Ningbo Iron and Steel Co., Ltd

08:00 – 09:00 Depart from UNNC Main Campus to Beilun
 09:00 – 10:30 Site visit
 10:30 – 11:30 Depart from Beilun to UNNC Main Campus

Group: CEN2023: Option A
Site Visit



Please join this Wechat group chat if you are interested in joining Option A

Option B, full-day visit (limited to 30 delegates)

RMB 200/person*

Site I – Ningbo Beilun Environmental Protection and Solid Waste Disposal Site

Site II – Ningbo Kaseen Ecological Technology Co., Ltd

08:00 – 09:30 Depart from UNNC Main Campus to Beilun
 09:30 – 11:30 Visit Site I
 11:30 – 12:30 Lunch (provided)
 12:30 – 14:00 Depart from Lunch venue to Site B
 14:00 – 16:00 Visit Site II
 16:00 – 17:30 Depart from Beilun to UNNC Main Campus

Group: CEN2023: Option B
Site Visit



Please join this Wechat group chat if you are interested in joining Option B

*Payment

- The price listed includes transportation costs and visits
- Lunch is provided for Option B, full-day visit
- Invoice and fapiao will be provided upon payment

Ningbo Beilun Environmental Protection and Solid Waste Disposal Site

Ningbo Beilun Environmental Protection and Solid Waste Disposal Co., Ltd is a subsidiary of Ningbo Economic and Technological Development Zone Holding Co., Ltd. As a hazardous waste disposal centre and an environmental protection infrastructure in Ningbo, it is included in the National Planning for the Construction of Hazardous Waste and Medical Waste Disposal Facilities. It has disposal facilities and monitoring systems for the collection, transportation, storage, incineration, stabilisation/solidification of hazardous waste, as well as associated sewage treatment and landfill site. Typical hazardous wastes include medical waste, waste electrical and electronic equipment treatment, animal carcass and tissue. The overall manageable disposal capacity is 120,000 tons/year, and with a landfill site of 557,500 cubic metres and a designed service life of 25 years. The site is committed to improving the investment environment and ecological environment of Ningbo, whilst reducing the health and safety impact on ecosystem and the public from hazardous waste.

Ningbo Solid Waste Disposal Industrial Park

Ningbo Beilun Environmental Protection and Solid Waste Disposal Co., Ltd is a subsidiary of Ningbo Economic and Technological Development Zone Holding Co., Ltd. As a hazardous waste disposal centre and an environmental protection infrastructure in Ningbo, it is included in the National Planning for the Construction of Hazardous Waste and Medical Waste Disposal Facilities. It has disposal facilities and monitoring systems for the collection, transportation, storage, incineration, stabilisation/solidification of hazardous waste, as well as associated sewage treatment and landfill site. Typical hazardous wastes include medical waste, waste electrical and electronic equipment treatment, animal carcass and tissue. The overall manageable disposal capacity is 120,000 tons/year, and with a landfill site of 557,500 cubic metres and a designed service life of 25 years. The site is committed to improving the investment environment and ecological environment of Ningbo, whilst reducing the health and safety impact on ecosystem and the public from hazardous waste.

Ningbo Iron and Steel Co., Ltd

Ningbo Iron and Steel Co., Ltd. is a wholly-owned subsidiary of Hangzhou Iron and Steel Group (ranked 336 among the Fortune 500 companies in 2022) and a reputable state-owned steel enterprise in Zhejiang Province. The company is a large-scale modern coastal steel joint enterprise with complete supporting facilities and first-class equipment from raw materials to ironmaking, steelmaking, continuous casting, hot rolling and other processes. The main factory site is located in Beilun District, Ningbo City, Zhejiang Province, adjacent to the world's largest port, Ningbo Zhoushan Port, with unique logistic advantages.

About Ningbo and the University of Nottingham Ningbo China

Ningbo, one of the most vibrant, dynamic and prosperous cities in China, is a sub-provincial city in the northeast of Zhejiang province. It is a coastal city lying in the south of the populous Yangtze River delta and facing the East China Sea to the east. It covers an area of 9816 km² and has a population of 9.4 million, thus making it one of the most populated cities in the world. Ningbo is also a famous historical city with rich cultural heritage. It is home to the "Neolithic Hemudu Culture" dating back to more than 7,000 years. Since ancient times, Ningbo has always had great respect and emphasis on education, and has an outstanding track record. During the Tang to Qing Dynasties, more than 2400 scholars passed the prestigious examination for imperial scholars, of which more than 10 won first places. Such excellence has also inherited into modern times with many world-renowned first class scholars, scientists and artists originating from Ningbo.

Ningbo is a one of the most important port cities in China with Ningbo port being the busiest in the world, thanks to its multi-purpose deep-water port infrastructure. Ningbo has always been known for its crucial role as a trade city along the Silk Road since Tang and Song Dynasties. This has placed Ningbo at the gateway of the import and export of valuable goods, and also the hub for exchanging invaluable knowledge and culture. This, in turn, has fueled Ningbo's social and economic rapid advancement. In 2020, the city's GDP exceeded RMB 1.24 trillion despite the impact from COVID-19, and it is expected to follow a steep rising trend. In the foreseeable future, Ningbo will continue to serve as an important industrial city and foreign trade port in eastern China, whilst being a key chemical/material industrial base in the Yangtze River delta and an economic centre of Zhejiang Province at the same time.

With UNNC strategically positioned in Ningbo, the University of Nottingham, as a whole, has been able to effectively deliver international ground-breaking research to meet local needs and beyond. The University of Nottingham and its international campus, UNNC, have made significant advances and impacts in the area of clean energy development, particularly in the construction of modern energy supply systems, development and optimisation of new energy utilisation, as well as reduction in environmental impacts as highlighted in the action plans of China Energy Development Strategy and the 13th Five-Year Plan for energy development in Zhejiang Province. The University of Nottingham Ningbo China (UNNC), established in 2004 with the full approval of the Chinese Ministry of Education, is the first Sino-foreign university in China. The academic quality of UNNC and the quality of its students are consistent with that of the Nottingham campus in the UK as highlighted in the official Quality Assessment report released by the British Higher Education Quality Assurance Agency (QAA). UNNC has continued to develop into an international hub with excellence in research, innovation and knowledge exchange.

In 2020, the Nottingham Ningbo China Beacons of Excellence Research and Innovation Institute (also known as 'the China Beacons Institute') was jointly established by the Ningbo Municipal Government and the University of Nottingham with a vision to lead the frontiers of (1) green chemicals and energy, (2) life science and healthcare, and (3) intelligent manufacturing, with the integration of advanced technology research, outstanding talent cultivation and research knowledge transfer to transform ideas and concepts into world-class applications. The China Beacons Institute leverages the unique "Ningbo-based and global-oriented" values by serving as an international scientific

and technological innovation platform catalyzing original research and cutting-edge new technology development, while driving the industrial development of Ningbo.



The Centre for Sustainable Energy Technologies (CSET) in UNNC is the first zero-carbon building in China. It was officially opened in September 2008 and accommodates research laboratories as well as teaching and administrative facilities.



Tourism in Ningbo

Tian Yi Pavilion: China's Oldest Library

It is the oldest existing library in China founded in 1561 by Fan Qin during the Ming dynasty. In its heyday, it boasted a collection of 70,000 volume of antique books. Fascinating documents, manuscripts and steles are on display, with many more available for viewing in the reading room. Take some time to appreciate the time-worn building, full of signs of the history chronicled in its collection of books, and don't forget to enjoy the landscape.



About Ningbo

Dongqian Lake: "East Lake"

Dongqian Lake is a natural lake lying in the southeast of Yinzhou District, Ningbo in the Zhejiang province of eastern China. It is the largest natural freshwater lake in Zhejiang province with a water surface area of 20 km², approximately four times larger than the West Lake in Hangzhou. Since ancient times the Lake has been a famous scenic spot in Eastern Zhejiang. October is one of the best seasons of the year to enjoy a boat ride overlooking the sunset.



The Old Bund: Laowaitan

Ningbo's Old Bund used to be the place where ancient British and Dutch traders lived and you can still see remaining architectures as you walk along the brightly lit street. The swooped lines of Chinese-style buildings are replaced by old stone buildings with western-inspired details. Also known as Laowaitan, the area is now a lively street full of bars and restaurants with east-meets-west fusion dishes and drinks.



About China Beacons Institute

Nottingham Ningbo China Beacons of Excellence Research and Innovation Institute

The Nottingham Ningbo China Beacons of Excellence Research and Innovation Institute (hereinafter referred to as "the China Beacons Institute") was jointly established by Ningbo Municipal Government and University of Nottingham in April 2020. The establishment of the China Beacons Institute is a combination of a world-class university with its advanced science and innovation and national development strategies and local social and economic development, as well as an important project and accelerator for the UNNC strategic development.

The China Beacons Institute will leverage the unique "Ningbo-based and global-oriented" advantages of UNNC. By introducing the key international technological and innovative resources of the Beacons of Excellence from the UK, the intention is to attract global technology innovation resources. This will allow the China Beacons Institute to focus on original research and cutting-edge new technology development, the aim being to establish a world-class scientific and technological innovation platform with innovative research, research achievement transformation, technology transfer and talent cultivation, in order to support and drive the industry development of Ningbo.



CEN2023: Applied Energy Symposium

CLEAN ENERGY TOWARDS CARBON NEUTRALITY

April 22-25, 2023 | NINGBO, CHINA

www.applied-energy.org/CEN2023

Vision

To create a Sustainable Innovation Eco-system with the integration of advanced technology research, outstanding talent cultivation and research knowledge transfer to turn ideas and dreams into reality

Mission

- To attract and cultivate outstanding researchers internationally
- To develop the most transformative and innovative research
- To unlock the best commercial potential of advanced technology
- To accelerate local innovation and enhance its global impact

Research Areas



Intelligent Manufacturing



Green Chemicals and Energy



Life Science and Healthcare

Registration

Official Registration Time

Date	Registration Venue	Time
April 21, 2023 (Friday)	Welcome Booth at Gate 1	2.00 pm – 5.00 pm
April 22, 2023 (Saturday)	In front of Library (Building 6)	8.00 am – 9.00 am

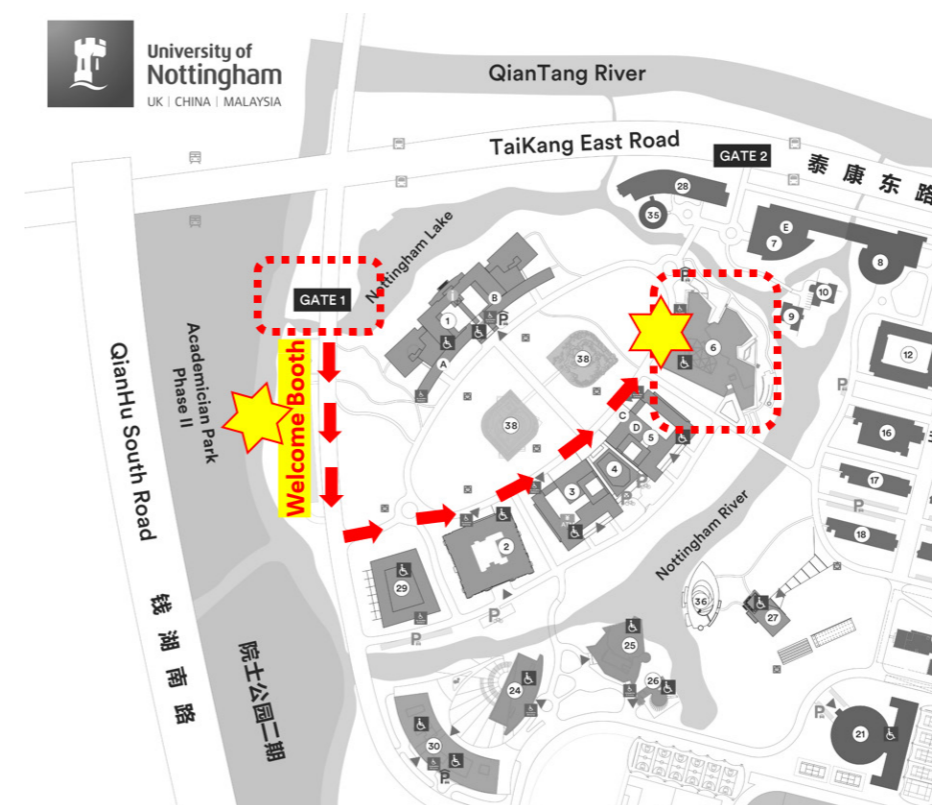
Step 1: Arrive at Gate 1 of University of Nottingham Ningbo China (宁波诺丁汉大学一号门)

Step 2: Check in at the security booth at Gate 1 upon first arrival (the security staff has a list of conference attendees, you may need to present a photo ID).

Step 3: Our volunteers will be at the Welcome Booth (after passing Gate 1) to guide you on registration.

Step 4: After registration, delegates can enter the campus by showing their conference name tag to the security staff at Gate 1.

*Please contact 150 6747 9256 for registration outside of the official registration time.



 Conference Registration Venue

Guide to WiFi

How to connect to the Wi-fi

Connect your device to the 'Uon-welcome' wifi and your device will automatically open the browser which directs to the guest network log in & register page. There are two ways to register to the network: (a) phone number or (b) E-mail.

(a) Register using phone number (Chinese phone number only)

1. The log in page will open the SMS register page by default.
2. Fill in your name, phone number and security code, then check the user terms checkbox, click 'Register'.
3. The username and password will be sent to your phone automatically.
Remarks: Only Chinese phone number supported.
Please note that your phone number is not the username.
4. Click the 'Log in' button on the last page, you will be directed to the log in page, fill in your username and password and click 'Log in' then you will be granted with the access to the network.
5. You will see a Nottingham official web page after you successfully access our network.

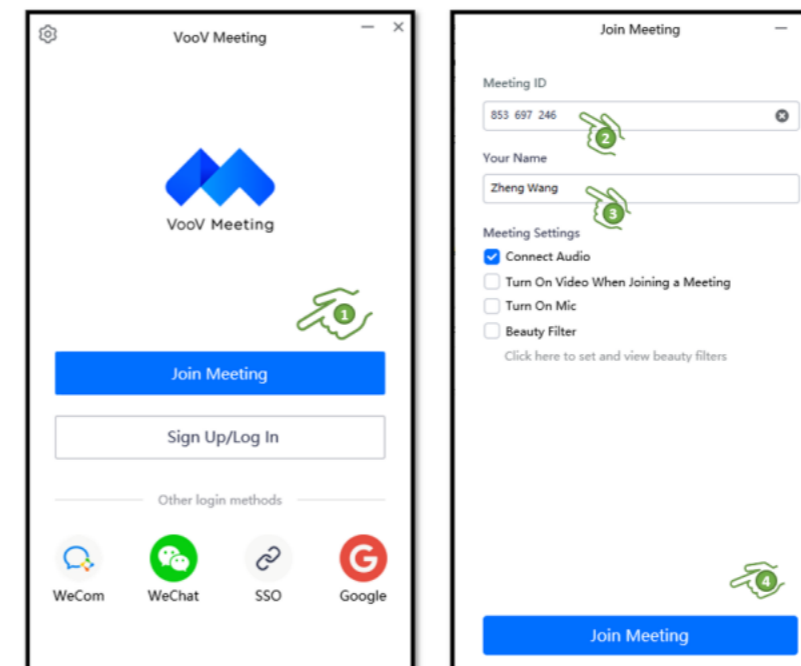
(b) Register using E-mail

1. In the default register page, you will notice there is a link 'I don't have a local phone', click this link and you will be redirected to the E-mail register page.
2. Fill in your name, e-mail address and the security code, then check the user terms checkbox, click 'Register' button at last.
3. You will receive the username & password in your e-mail.
4. Click the 'Log in' button on the last page, you will be directed to the log in page, fill in your username and password and click Log in then you will be granted with the access to our network.
5. You will see a Nottingham official web page after you successfully access our network.

Guide for Tencent Meeting

Guide for Tencent Meeting (CEN2023)

1. Download VOOV Meeting if you are accessing from outside China (<https://voovmeeting.com/download-center.html?from=1001>)
or
Download Tencent Meeting if you are in China.
(<https://meeting.tencent.com/download/>)
2. Install and run the software.
3. Click CEN-Online to join
(<https://meeting.tencent.com/dm/Eu0sx5FiNzQs>)
or
Join Meeting by entering the meeting ID: 853-697-246

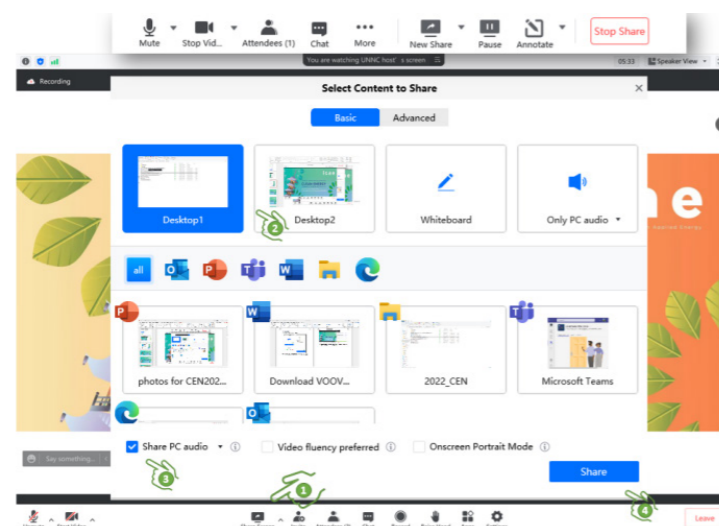


Guide for Tencent Meeting

4. The opening and closing ceremonies, as well as keynotes are held in the 'Main Session'.
5. To join parallel sessions, click 'Breakout Rooms' at the bottom of the window and chose the session to 'Join'. You can switch between the 'Breakout Rooms' during the session. Click 'Leave', then return to 'Main Session'.



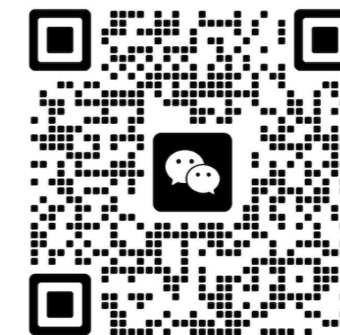
6. When you need to present, click 'Share Screen' at the bottom, if you have video/audio in your presentation, make sure you tick the box 'Share PC audio'.



7. After you finish, click 'Stop Share' from the docked menu on the top.
8. Please contact Zheng.Wang@nottingham.edu.cn should you have any technical inquiries.

WeChat Group

Please scan and join our CEN2023 group chat for latest updates and announcements



Campus Map



University of Nottingham
UK | CHINA | MALAYSIA



- | | | |
|--|---------------------|----------|
| | Fire assembly point | 紧急疏散集合点 |
| | Building entrances | 建筑入口 |
| | Clinic | 诊所 |
| | Reception | 问询处 |
| | ATM | 取款机 |
| | Accessible Toilet | 无障碍卫生间 |
| | Accessible Entrance | 无障碍出入口 |
| | Subway | 地铁口 (在建) |
| | Bus stop | 公交车站 |
| | Bicycle parking | 自行车停放处 |
| | Car parking | 机动车停车场 |
| | Basement parking | 机动车地下停车场 |
| | Academic buildings | 教学办公建筑 |
| | Residences | 宿舍公寓 |
| | Other services | 其他服务 |

- | | |
|---|------------|
| Trent Building (TRENT) | 1 |
| 行政楼 | |
| Student Recruitment and Admission Office | A |
| 招生办 | |
| Arabica Restaurant | B |
| 阿兰碧卡餐厅 | |
| The Sir Peter Mansfield Building (PMB) | 2 |
| 理工楼 | |
| YANG Fujia Building | 3 |
| 杨福家楼 | |
| Auditorium | 4 |
| 思源报告厅 | |
| The Portland Building (PB) | 5 |
| 学生服务楼 | |
| Starbucks Coffee Shop | C |
| 星巴克咖啡 | |
| The Hub | D |
| 学生服务中心 | |
| Li Dak Sum Yip Yio Chin Kenneth Li Library | 6 |
| 李达三葉羅珍伉儷李本俊圖書館 | |
| Staff Hotel | 7 |
| 教师宾馆 | |
| LA Hotel | E |
| 博雅国际交流中心 | |
| Student Canteen | 8 |
| 学生餐厅 | |
| Villas | 9,10 |
| 别墅 | |
| Student Residences | 11-20, 22. |
| 学生宿舍 | |
| The Third Canteen | F |
| 第三餐厅 | |
| The Third Space | G |
| 第三空间 (四食堂) | |
| Sir Colin Campbell Building (Sports Centre) | 21 |
| 体育馆 | |
| Residence | 23 |
| 宿舍楼 | |
| Clinic | H |
| 医务室 | |
| Wellbeing service | I |
| 身心健康指导中心 | |
| The Lord Dearing Building (DB) | 24 |
| 新教学楼 | |
| The D.H. Lawrence Auditorium (New Audi) | 25 |
| 新报告厅 | |
| New International Conference Centre (NICC) | 26 |
| 新国际会议中心 | |
| Centre for Sustainable Energy Technologies (CSET) | 27 |
| 可持续能源技术研究中心 | |
| Staff Apartments | 28 |
| 教师公寓 | |
| Sir David and Lady Susan Greenaway Building (IAMET) | 29 |
| 海洋经济研究院 | |
| Innovation and Enterprise Building (IEB) | 30 |
| 国际创新创业大楼 | |
| International Conference Centre (ICC) | 35 |
| 国际会议中心 | |
| Music Plaza | 36 |
| 小悉尼 | |
| Outdoor Sports Facilities | 37 |
| 室外运动场地 | |
| Ornamental Gardens | 38 |
| 公园 | |



Welcome to ICAE2023, the 15th International Conference on Applied Energy!

After three years of worldwide travel restriction due to Covid-19, the entire world is finally opening up and returning to normal. As a result, after holding online/hybrid International Conference of Applied Energy in the past three years, ICAE 2023, the 15th International Conference on Applied Energy, is now planned as an onsite* event from December 3 to 7, 2023 at Qatar University, Doha, the host city of FIFA World Cup 2022, in the State of Qatar. We are looking forward to seeing as many of you as possible face to face once again. The theme of ICAE2023 is **Energy Transitions towards Carbon Neutrality**. ICAE2023 will include keynotes and invited speeches, plenary sessions, dedicated workshops, oral and poster presentations, and exhibitions. The conference intends to represent the interdisciplinary character of the challenges, which are related to the ultimate goal of Sustainable Future. The list of addressed topics includes (but is not limited to):

- Clean Energy Conversion Technologies
- Renewable Energy including hydrogen energy
- Mitigation Technologies
- Intelligent Energy Systems
- Energy Storage
- Energy Sciences
- Energy Management & Firm Sustainability
- Policy, Ethics, Energy Economics & Regulations

Key Dates:	
• Submission open:	May 1, 2023
• Deadline for draft short papers/abstracts:	Aug. 15, 2023
• Paper update due:	Oct 15, 2023
• Final program online:	Nov. 15, 2023
<hr/>	
• Registration open:	Jun 15, 2023
• End of early bird registration:	Oct. 1, 2023
• Final to change mode of participation:	Oct. 20, 2023
• Closure of online registration:	Nov. 10, 2023
• Conference:	Dec. 3-7, 2023

As a special topic of ICAE 2023, **Hydrogen Energy** will be highlighted.

For more information, please visit www.applied-energy.org, or contact: icae2023@applied-energy.org. Please contact us if you would like to propose and organize a session, a panel, a workshop, or a special forum at the conference.

All papers will be peer-reviewed, and accepted papers are required to be presented orally or as poster at the conference. Selected papers from ICAE2023 will be recommended by the Session Chairs and Scientific Committee for further consideration of publication in prestigious journals including Applied Energy, Advances in Applied Energy and other journals.

We look forward to meeting you at ICAE2023 in Doha, Qatar!



Prof. Saud Ghani, Chair of ICAE2023
Head of Mechanical and Industrial Engineering Dept.
College of Engineering, Qatar University

Prof. J. Yan, Co-Chair of ICAE2023 and
Editor in Chief of Advances in Applied Energy

Call for Papers
Deadline for abstract
Aug. 15, 2023

Call for Papers The 9th Applied Energy Symposium and Forum, **CUE2023**: Low-carbon Cities and Urban Energy Systems Sept. 2-5, 2023, Matsue, Japan

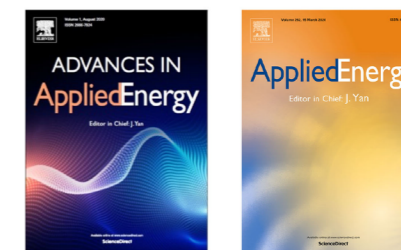
As the world faces the challenge of climate change, there is a growing urgency to transition to low-carbon energy systems. Cities, as major energy consumers, have a critical role to play in this transition. However, the complexity of urban energy systems presents unique challenges that require innovative solutions. The 9th Applied Energy Symposium and Forum, **CUE2023**, organized by the Applied Energy Innovation Institute (AEii) and supported by international journals Applied Energy and Advances in Applied Energy, aims to address these challenges. The event consists of a three-day symposium and one-day lab/site tours to share the latest progress in research and development in urban energy systems, as well as a one-day forum to engage all stakeholders in discussions on how to implement future urban energy systems.

CUE2023 will be held on Sept. 2-5, 2023, in Matsue, Japan. The conference will feature keynote and invited speeches, plenary sessions, oral presentations, and poster sessions. This event provides an excellent opportunity for researchers, engineers, policymakers, and industry professionals to exchange ideas, share knowledge and experiences, and identify new directions for research and development.

Selected best papers from the conference will be considered for publication in a special issue jointly in Applied Energy (<https://www.sciencedirect.com/journal/applied-energy>) (IF=11.46) and Advances in Applied Energy (<https://www.sciencedirect.com/journal/advances-in-applied-energy>). For more detailed and updated information, please visit the conference website at: <https://applied-energy.org/cue2023/index>. If you have any questions regarding this conference or submission, please feel free to contact us at: cue2023@applied-energy.org. We look forward to your participation in CUE2023.

Important Dates

- Submission Due: Jun. 15, 2023
- Notification of Acceptance: Jul. 1, 2023
- Early Bird Registration: Aug. 1, 2023
- Registration Due: Aug. 29, 2023
- Conference Date: Sept. 2-5, 2023



CALL FOR PAPERS
Draft deadline
Jun. 15
2023



CONTACT US

Should you have any inquires please feel free to contact us at cen2023@applied-energy.org