



22nd International Conference on
Sustainable Energy Technologies

CONFERENCE PROGRAMME

*Advancing Sustainable Energy Technologies for
Climate Resilience and Digital Innovation*



13th – 15th August 2026



Premiera Hotel, Kuala Lumpur, Malaysia



www.set2026.org

Essential Information

Welcome to the 22nd International Conference on Sustainable Energy Technologies in Kuala Lumpur. This guide brings together everything you need to navigate the three-day programme — the schedule at a glance, keynote speakers and their biographies, full parallel-session listings and the poster exhibition.



Keynote venue

Ballroom 2, Level 6



Parallel rooms

Ballroom 2 (Level 6) and ER2–ER4 (Level 8) on Days 1 and 3; Hall and ER2–ER4 (Level 8), plus MR4 (Level 7), on Day 2



Posters & social events

Poster Sessions: Exhibition Area, Level 6 ·
Gala Dinner: Ballroom 1



Early registration

Wednesday 12 August, 15:00–17:00 — Level 7

Research themes — colour key



Energy Storage & Conversion



AI & Renewable Systems



Urban & Environment



Low-Carbon Buildings



Policy & Management

Every parallel session is tagged with its research theme using the colour above, so you can trace a topic across all three days.

How to use this programme

1

Plan your day with the Programme at a Glance — keynotes, breaks and parallel blocks in time order.

2

Meet the speakers on each day's keynote biography page, then follow the detailed listings for room, chair and paper numbers.

3

Explore posters on display all three days in the Exhibition Area, Level 6, with a dedicated session each day.

Day 1 Thursday 13 August 2026

Opening · K1–3 · Sessions A–C

Pre-conference — Wednesday 12 August 2026, 15:00–17:00. Early registration and badge / conference material collection — Level 7, Premiera Hotel

08:00

Registration opens — Level 6 Foyer · Poster display opens — Exhibition Area, Level 6

08:50–09:20

CEREMONY

OPENING CEREMONY — Ballroom 2 (Level 6)

Opening remarks: Professor Saffa Riffat (Conference Chair, President of WSSET) and Professor Ir. Ts. Dr Azli Abd Razak (SET2026 Co-Chair, Dean FKM, UiTM) · Group photograph

09:20–10:05

KEYNOTE 1

From Zero to Negative: The Technological Breakthrough under Double-Carbon Strategy

Professor Xudong Zhao — Harbin Institute of Technology, Shenzhen, China

Chair: Professor Saffa Riffat

10:05–10:50

KEYNOTE 2

From Engagement to Transformation: Co-Creating a Sustainability Strategy for Organisational Resilience and Stakeholder Value

Professor AbuBakr Bahaj — University of Southampton, United Kingdom

Chair: Professor Ir. Ts. Dr Azli Abd Razak

Day 1 continued

10:50–11:15

POSTER SESSION 1 and refreshments — Exhibition Area, Level 6

Posters: #38 · #56 · #138 · #146 · #195 · #196 · #220 · #229 · #238 · #260 · #262 · #263 · #269 · #288 · #344

11:15–12:30

PARALLEL
SESSIONS

A1

Solar Photovoltaic Materials and Applications

Energy Storage & Conversion

Ballroom 2 (Level 6)

Professor K. Srinivas Reddy (Indian Institute of Technology Madras, India)

Papers: #57 · #159 · #134 · #218

A2

Electrochemical Conversion and Green Hydrogen

Energy Storage & Conversion ER2 (Level 8)

Professor Yuanlong Cui (Shandong Jianzhu University, China)

Papers: #62 · #253 · #77 · #254

A3

Bio-Based and Low-Carbon Building Materials

Low-Carbon Buildings ER3 (Level 8)

Professor Fatang Jiang (Wuhan Donghu University, China)

Papers: #107 · #168 · #224 · #108

A4

Artificial Intelligence for Materials, Energy and Environmental Modelling

AI & Renewable Systems ER4 (Level 8)

Professor Bilsay Pastakkaya (Bursa Uludag University, Türkiye)

Papers: #53 · #174 · #40 · #180

12:30–13:30

Lunch

Day 1 continued

13:30–14:15

KEYNOTE 3

Advancements of solar heating and cooling research and its application in buildings

Professor Yanjun Dai — Shanghai Jiao Tong University, China

Chair: Professor Jie Ji

14:15–14:25

Transition to parallel rooms

14:25–16:10

PARALLEL
SESSIONS

B1

Solar Thermal and Photovoltaic-Thermal Systems

Energy Storage & Conversion

Ballroom 2 (Level 6)

Professor Ashmore Mawire (North-West University, South Africa)

Invited talk · #52

Papers: #143 · #43 · #147 · #299

B2

Thermochemical Energy Storage: Materials, Reactors and Seasonal Systems

Energy Storage & Conversion ER2 (Level 8)

Dr Zhiwei Ma (Durham University, United Kingdom)

Invited talk · #85

Papers: #170 · #191 · #166 · #330

B3

Sustainable Heating, Cooling and Refrigeration

Energy Storage & Conversion ER3 (Level 8)

Dr Yi Fan (Shanghai University of Electric Power, China)

Invited talk · #26

Papers: #35 · #175 · #90 · #19

B4

Intelligent Ventilation and Low-Carbon Building Control

AI & Renewable Systems ER4 (Level 8)

Professor Beatrice Bonfanti Pulvirenti (University of Bologna, Italy)

Invited talk · #29

Papers: #23 · #215 · #289 · #311

Day 1 continued

16:10–16:40

POSTER SESSION 1 and refreshments — Exhibition Area, Level 6

Posters: #38 · #56 · #138 · #146 · #195 · #196 · #220 · #229 · #238 · #260 · #262 · #263 · #269 · #288 · #344

16:40–18:25

PARALLEL
SESSIONS

C1

Hydrogen Energy Systems, Electrolysers and Fuel Cells

Energy Storage & Conversion

Ballroom 2 (Level 6)

Dr Arif Karabuga (Istanbul Aydin University, Türkiye)

Papers: #98 · #270 · #111 · #115 · #329 · #328

C2

Carbon Capture, Conversion and Catalytic Processes

Energy Storage & Conversion ER2 (Level 8)

Dr Devrim Aydin (Eastern Mediterranean University, Cyprus)

Papers: #217 · #164 · #171 · #230 · #186 · #11

C3

Indoor Environment, Building Services and Low-Carbon Cooling

Low-Carbon Buildings ER3 (Level 8)

Assoc. Professor Mardiana Idayu Ahmad (Universiti Sains Malaysia, Malaysia)

Papers: #104 · #271 · #70 · #205 · #173 · #208

C4

Digital Twins, Simulation and Optimisation for Energy Systems

AI & Renewable Systems ER4 (Level 8)

Professor Amin Al-Habaibeh (Nottingham Trent University, United Kingdom)

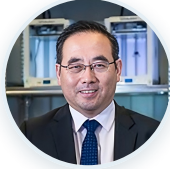
Papers: #194 · #244 · #268 · #59 · #124 · #74

18:25

End of Day 1 programme

Keynote Speakers Thursday 13 August 2026

3 keynote lectures · Ballroom 2, Level 6



KEYNOTE 1

Thu 13 Aug
09:20–10:05
Ballroom 2, Level 6

Professor Xudong Zhao

Harbin Institute of Technology, Shenzhen, China

KEYNOTE LECTURE

From Zero to Negative: The Technological Breakthrough under Double-Carbon Strategy

SESSION CHAIR

Professor Saffa Riffat

BIOGRAPHY

Professor Xudong Zhao is a leading authority in decarbonised heating, cooling, and power systems, with innovations like dew point air cooling and hybrid solar heat & power systems transforming engineering practices. Backed by £28m in research funding and 323 highly-cited papers, he has supervised 31 post-doctoral fellows and 41 PhD students. Recognised by the UN Climate Change Congress and BBC, his work has earned multiple international innovation awards. A fellow of several prestigious institutions, he continues to shape the future of sustainable energy technologies.



KEYNOTE 2

Thu 13 Aug
10:05–10:50
Ballroom 2, Level 6

Professor AbuBakr Bahaj

University of Southampton, United Kingdom

KEYNOTE LECTURE

From Engagement to Transformation: Co-Creating a Sustainability Strategy for Organisational Resilience and Stakeholder Value

SESSION CHAIR

Professor Ir. Ts. Dr Azli Abd Razak

BIOGRAPHY

Professor AbuBakr Bahaj is a globally recognised expert in sustainable energy, leading the Energy and Climate Change Division at the University of Southampton. With over 30 years of experience and more than 300 publications, he is a pioneer in renewable energy and environmental research. As Editor-in-Chief of the International Marine Energy Journal and Chief Scientific Advisor to the City of Southampton, he blends academic and practical insights to shape energy policy and innovation. His contributions have earned him recognition as one of the UK's 100 leading practising scientists.

Keynote Speakers continued

**KEYNOTE 3**

Thu 13 Aug
13:30–14:15
Ballroom 2, Level 6

Professor Yanjun Dai

Shanghai Jiao Tong University, China

KEYNOTE LECTURE**Advancements of solar heating and cooling research and its application in buildings****SESSION CHAIR**

Professor Jie Ji

BIOGRAPHY

Professor Yanjun Dai is a Distinguished Professor and Head of the Department of Power and Energy Engineering at Shanghai Jiao Tong University, China, and Vice Director of the Engineering Research Center of Solar Energy. He has also held several international academic positions, including Visiting Professorships at the National University of Singapore (2012–2024) and North Dakota State University, and earlier research experience at the University of Hong Kong. His research focuses on solar energy conversion and utilisation, desiccant dehumidification, and sustainable energy systems for buildings, with particular contributions to solar heating and cooling technologies and green building energy systems, significantly advancing renewable heating and cooling and their application in low-carbon buildings. He has published over 210 peer-reviewed journal papers, authored several books, and holds more than 30 patents. He has led over 40 research projects as Principal Investigator, including major national and international programmes, and his work has received national-level recognition including the National Innovation Award and the National Natural Science Award. His h-index is approximately 75.

Day 2 Friday 14 August 2026

K4-7 · Research Spark · Sessions D-E · Gala Dinner

08:20–08:30

Welcome and daily announcements — Ballroom 2 (Level 6)

08:30–09:15

KEYNOTE 4

Construction and Research of Self-Powered, Self-Purifying Buildings

Professor Jie Ji — University of Science and Technology of China, China

Chair: Professor Hongxing Yang

09:15–10:00

KEYNOTE 5

From Biomass to Built Environment: Innovating Bio-Based Solutions for Smart and Resilient Energy Future

Assoc. Professor Mardiana Idayu Ahmad — Universiti Sains Malaysia, Malaysia

Chair: Professor Xudong Zhao

10:00–10:20

POSTER SESSION 2 and refreshments — Exhibition Area, Level 6

Posters: #83 · #73 · #126 · #177 · #192 · #200 · #227 · #242 · #255 · #283 · #304 · #305 · #307 · #121 · #266 · #248 · #319

10:20–11:55

SET2026 RESEARCH SPARK: FIVE-MINUTE STUDENT INNOVATION SHOWCASE

Ballroom 2 (Level 6)

Chair: Dr Hasila Jarimi (Universiti Kebangsaan Malaysia, Malaysia). Sixteen registered five-minute presentations followed by a shared 15-minute panel Q&A. Judged for the Best 5-Minute Presentation Award (Gala Dinner).

Presentations: #366 · #12 · #297 · #367 · #272 · #155 · #363 · #256 · #293 · #364 · #332 · #290 · #128 · #298 · #172 · #365

11:55–12:30

FUNDING FUTURES FORUM

Marie Skłodowska-Curie Actions Fellowship Insights, Research Mobility and International Collaboration A focused exchange on successful fellowship experience, application lessons, host-partner connections, researcher mobility and collaborative funding opportunities, shared by previous successful Marie Curie fellows. Open discussion with the audience on exchange and funding pathways. All delegates welcome — early-career researchers especially encouraged.

Day 2 continued

10:20–12:30

PARALLEL
SESSIONS

D2

Photocatalysis, Solar Fuels and Renewable Hydrogen

Energy Storage & Conversion Hall (Level 8)

Dr Jingyu Cao (Hunan University, China)

Papers: #95 · #326 · #61 · #197 · #189 · #210 · #321

D3

Thermal Energy Storage, Heat Pumps, Refrigeration and System Integration

Energy Storage & Conversion ER2 (Level 8)

Professor Shuli Liu (Beijing Institute of Technology, China)

Papers: #181 · #67 · #137 · #198 · #24 & #25 · #39 · #222

D4

Building Envelopes, Passive Design and Natural Ventilation

Low-Carbon Buildings ER3 (Level 8)

Dr John Kaiser Calautit (University College London, United Kingdom)

Invited talk · #370

Papers: #130 · #223 · #281 · #131 · #314 · #350

D5

Digital Planning and Forecasting for Renewable Energy Systems

AI & Renewable Systems ER4 (Level 8)

Associate Professor Ir. Ts. Dr. Nik Normunira binti Mat Hassan (Universiti Teknologi MARA)

Invited talk · #100

Papers: #41 · #226 · #265 · #246 · #133

12:30–13:30

Lunch

13:30–14:15

KEYNOTE 6

Low-Resistance Fluid Transport Piping Systems: Theory, Methods, and Engineering Applications

Professor Angui Li — Xi'an University of Architecture and Technology, China

Chair: Professor Yap Pow Seng

14:15–15:00

KEYNOTE 7

Thermal Energy Storage: unlocking the energy transition

Professor Michele Bottarelli — University of Ferrara, Italy

Chair: Professor AbuBakr Bahaj

Day 2 continued

15:00–15:20

Coffee break

15:20–18:15

PARALLEL
SESSIONS

E1

Phase Change, Thermochemical and Adaptive Thermal Storage Materials

Energy Storage & Conversion Hall (Level 8)

Professor Guiqiang Li (University of Science and Technology of China, China)

Invited talk · #94

Papers: #75 · #221 · #201 · #144 · #241 · #16 · #184

E2

Bioenergy, Renewable Fuels and Sustainable Solar Materials

Energy Storage & Conversion ER2 (Level 8)

Ir. Dr. Fauziah Jerai@Junaidi (Universiti Teknologi MARA, Malaysia)

Papers: #261 · #71 · #160 · #213 · #318 · #21 · #308 · #156 · #306

E3

Combustion, Thermal Power and Low-Carbon Fuel Conversion

Energy Storage & Conversion ER3 (Level 8)

Professor Ali Kilicarslan (Hitit University, Türkiye)

Invited talk · #89

Papers: #188 · #267 · #120 · #225 · #178 · #235 · #294 · #179

E4

Thermal Management, Heat Recovery and Cooling Technologies

Energy Storage & Conversion ER4 (Level 8)

Professor Qiliang Wang (University of Science and Technology of China, China)

Invited talk · #259

Papers: #207 · #113 · #251 · #276 · #190 · #320 · #182 · #176

E5

Energy Policy, Techno-Economics and Sustainable Communities

Policy & Management MR4 (Level 7)

Dr Tajul Rosli Razak (Universiti Teknologi MARA, Malaysia)

Papers: #20 · #44 · #82 · #148 · #336 · #349 · #199 · #317 · #233 · #287

19:00–22:00

★ GALA DINNER — Ballroom 1 (doors open 18:30)

Dinner and cultural programme · WSSET Innovation Awards · WSSET Award of Scientific Excellence · Best Paper & Poster Awards · Best 5-Minute Presentation Award

Keynote Speakers Friday 14 August 2026

4 keynote lectures • Ballroom 2, Level 6



Professor Jie Ji

University of Science and Technology of China, China

KEYNOTE LECTURE

Construction and Research of Self-Powered, Self-Purifying Buildings

SESSION CHAIR

Professor Hongxing Yang

BIOGRAPHY

Professor Jie Ji, Chair Professor at the University of Science and Technology of China, is a leading expert in solar energy utilisation. Known for his work in full-spectrum cascade utilisation and photoelectric technology, he has published over 380 papers with 14,000 citations, earning him recognition as an “Elsevier China Highly Cited Scholar”. A recipient of the WSSET Innovation Award, he continues to drive innovation in solar and thermal power technologies.

KEYNOTE 4

Fri 14 Aug
08:30–09:15
Ballroom 2, Level 6



Assoc. Professor Mardiana Idayu Ahmad

Universiti Sains Malaysia, Malaysia

KEYNOTE LECTURE

From Biomass to Built Environment: Innovating Bio-Based Solutions for Smart and Resilient Energy Future

SESSION CHAIR

Professor Xudong Zhao

BIOGRAPHY

Mardiana Idayu Ahmad is an Associate Professor at Universiti Sains Malaysia and an internationally recognised researcher in renewable and sustainable energy technologies, environmental management, and bio-based materials for environmental applications. She holds a PhD in Sustainable Energy Technologies from the University of Nottingham, United Kingdom. She leads multidisciplinary research in sustainable energy systems, energy recovery technologies, and bio-based materials for environmental protection. Her work has secured over RM10 million in competitive research funding and resulted in more than 200 scholarly publications, including research books and high-impact journals. Her research bridges academia, industry, and policy, contributing practical solutions to global sustainability and energy challenges.

KEYNOTE 5

Fri 14 Aug
09:15–10:00
Ballroom 2, Level 6

Keynote Speakers continued


KEYNOTE 6

Fri 14 Aug
13:30–14:15
Ballroom 2, Level 6

Professor Angui Li

Xi'an University of Architecture and Technology, China

KEYNOTE LECTURE

Low-Resistance Fluid Transport Piping Systems: Theory, Methods, and Engineering Applications

SESSION CHAIR

Professor Yap Pow Seng

BIOGRAPHY

Professor Angui Li is the Dean of the School of Building Services Science and Engineering at Xi'an University of Architecture and Technology, China, and Director of the International Joint Laboratory for Low-Carbon Built Environment (Ministry of Education). His research focuses on underground space environments and building environmental technologies. He has led over 80 major national and international projects and published more than 200 SCI-indexed papers. He is a recipient of two National Technology Invention Awards (Second Class, ranked first) and has been recognised among Elsevier's Highly Cited Chinese Researchers.


KEYNOTE 7

Fri 14 Aug
14:15–15:00
Ballroom 2, Level 6

Professor Michele Bottarelli

University of Ferrara, Italy

KEYNOTE LECTURE

Thermal Energy Storage: unlocking the energy transition

SESSION CHAIR

Professor AbuBakr Bahaj

BIOGRAPHY

Michele Bottarelli is a Professor of Applied Physics at the University of Ferrara, specialising in thermal sciences, energy technology and building physics. He is an award-winning researcher and frequent keynote speaker, with publications in leading low-carbon and energy journals. Founder of the RELY laboratory at the UNIFE Technopole, he leads research on renewable energy conversion, thermal storage and advanced building systems, holds multiple patents, and has coordinated major European projects under the Horizon and LIFE programmes.

Day 3 Saturday 15 August 2026

K8-9 · Sessions F · Closing

08:20–08:30

Welcome and daily announcements — Ballroom 2 (Level 6)

08:30–09:15

KEYNOTE 8

Maximising power output from wind farms through yaw controls and wind turbine layout optimisation

Professor Hongxing Yang — Southwest Jiaotong University, China

Chair: Professor Yanjun Dai

09:15–11:45

PARALLEL
SESSIONS

F1

Machine Learning for Thermal Systems and Energy Technologies

AI & Renewable Systems Ballroom 2 (Level 6)

Ts. Dr. Nur Atiqah binti Ramlan (Universiti Teknologi MARA, Malaysia)

Invited talk · #37

Papers: #109 · #69 · #295 · #125 · #219 · #234 · #110

F2

Building Performance, Heritage and Community Energy

Low-Carbon Buildings ER2 (Level 8)

Professor Cruz Li (Chongqing University, China)

Invited talk · #101

Papers: #250 · #351 · #68 · #310 · #132 · #292 · #315

F3

Advanced Heat Transfer, Thermal Systems and Sustainable Building Materials

Energy Storage & Conversion ER3 (Level 8)

Professor Berkah Fajar Tamtomo Kiono (Diponegoro University, Indonesia)

Papers: #334 · #145 · #118 · #150 · #114 · #324 · #285 · #204 · #88

F4

Urban Sustainability, Water and Inclusive City Planning

Urban & Environment ER4 (Level 8)

Dr Norhayati Mat Wajid (Universiti Teknologi MARA, Malaysia)

Papers: #157 · #243 · #183 · #247 · #316 · #331 · #264 · #252 · #286

11:45–12:15

POSTER SESSION 3 and refreshments — Exhibition Area, Level 6

Posters: #119 · #152 · #162 · #163 · #169 · #206 · #231 · #301 · #309 · #323 · #361 · #362 · #312 · #54 · #284 · #273

12:15–12:45

CEREMONY

CLOSING CEREMONY — Ballroom 2

Closing remarks by the Conference Chairs and announcement of SET2027

12:45

End of conference and departures

Keynote Speakers

 Saturday 15 August 2026

1 keynote lectures · Ballroom 2, Level 6

**KEYNOTE 8**

Sat 15 Aug
08:30–09:15
Ballroom 2, Level 6

Professor Hongxing Yang**Southwest Jiaotong University, China****KEYNOTE LECTURE****Maximising power output from wind farms through yaw controls and wind turbine layout optimisation****SESSION CHAIR**

Professor Yanjun Dai

BIOGRAPHY

Professor Hongxing Yang, leader of the Renewable Energy Research Group (RERG) at The Hong Kong Polytechnic University, specialises in renewable energy applications and energy-saving technologies in buildings. His work spans solar photovoltaics, wind power, evaporative cooling, ground-coupled heat pumps, and hybrid renewable systems. Author of over 500 academic works, including 300+ peer-reviewed papers and seven books, he was recognised as a “Highly Cited Researcher” by Elsevier (2016–2020) and ranked 15th among most-cited Chinese scientists in Mechanical and Aerospace Engineering in 2022. An award-winning researcher, Professor Yang is Senior Editor of the International Journal of Applied Energy and serves on the editorial boards of Low Carbon Technologies and Future Cities and Environment.

PART 2

Detailed Session Programme

The following pages list every parallel session in full — each with its room, chair, and the exact time-slot, paper number, title and presenter for all talks.

● Energy Storage & Conversion	Energy Storage and Conversion
● Low-Carbon Buildings	Low-Carbon Building Design and Sustainable Architectural Practices
● AI & Renewable Systems	AI-Enhanced Energy Technologies and Renewable Systems
● Policy & Management	Policies and Management in Sustainable Energy
● Urban & Environment	Sustainable Urban Development, Environmental Stewardship and City Planning

Day 1 • Sessions A

Thursday 13 August • 11:15–12:30

A1 Solar Photovoltaic Materials and Applications

Energy Storage & Conversion

Ballroom 2 (Level 6) • Chair: Professor K. Srinivas Reddy (Indian Institute of Technology Madras, India)

- 11:15–11:30 **#57** **Origin and Suppression Engineering of Non-radiative Recombination in Inorganic Halide Perovskite**
Qun Ji — Southeast of University, China
- 11:30–11:45 **#159** **Cable-supported single-axis solar tracker for agrivoltaic application**
Donato Vincenzi — University of Ferrara and Consorzio Futuro in Ricerca, Italy
- 11:45–12:00 **#134** **Unmasking the Intrinsic Formation Mechanism of Dominant Point Defects in Epitaxial MoS₂**
Jie Ji — Southeast University, China
- 12:00–12:15 **#218** **Design and Optimization of Light-Diffusing Glass Plates for PV Agriculture**
Peizhou Tan — Hubei University of Technology, China
- 12:15–12:30 **Q&A** *Panel Q&A and discussion with all session speakers*

A2 Electrochemical Conversion and Green Hydrogen

Energy Storage & Conversion

ER2 (Level 8) • Chair: Professor Yuanlong Cui (Shandong Jianzhu University, China)

- 11:15–11:30 **#62** **Biomimetic Interfacial Microenvironment Engineering for High-Performance Alkaline Water Electrolysis**
Jiawei Zhu — Southeast University, China
- 11:30–11:45 **#253** **Advanced Electrocatalyst Design for Water Splitting toward Sustainable Energy Storage and Conversion Technologies**
Dilmurod Sayfiddinov — Jeonbuk National University, South Korea

A2 Electrochemical Conversion and Green Hydrogen (continued)

Energy Storage & Conversion

ER2 (Level 8) • Chair: Professor Yuanlong Cui (Shandong Jianzhu University, China)

- 11:45–12:00 **#77** **Fluorine-Modulated RuO₂ Enables Selective Chlorine Evolution and Simultaneous Resource Recovery from High-Salinity Water**
Rui Cui — Southeast University, China
- 12:00–12:15 **#254** **High-Performance Anion Exchange Membranes with Superior Hydroxide Conductivity for Sustainable Energy Systems**
Jeevitha Arunkumar — Jeonbuk National University, South Korea
- 12:15–12:30 **Q&A** *Panel Q&A and discussion with all session speakers*

A3 Bio-Based and Low-Carbon Building Materials

Low-Carbon Buildings

ER3 (Level 8) • Chair: Professor Fatang Jiang (Wuhan Donghu University, China)

- 11:15–11:30 **#107** **Development of Bio-Based Rice Husk Thermal Insulation Panels for Low-Carbon Architectural Applications**
Junfeng Zhu — Universiti Sains Malaysia, Malaysia
- 11:30–11:45 **#168** **Experiment and Simulation Study of a Novel Diatomite/MPCM Composite Gypsum Boards for Building Thermal Management**
Yi Fan — Shanghai University of Electric Power, China
- 11:45–12:00 **#224** **Acrylic-Particle Composite Paints for Passive Radiative Cooling in Building Applications**
Taghreed Al-Gunaid — Hamad Bin Khalifa University, Qatar

Day 1 • Sessions A continued

A3 Bio-Based and Low-Carbon Building Materials Low-Carbon Buildings (continued)

ER3 (Level 8) • Chair: Professor Fatang Jiang (Wuhan Donghu University, China)

12:00–12:15 #108 Bio-Based Insulation Panels from Pine Wood Waste Fiber and Press Mud for Low-Carbon Building Applications
Mengtian Liu — Universiti Sains Malaysia, China

12:15–12:30 Q&A *Panel Q&A and discussion with all session speakers*

A4 Artificial Intelligence for Materials, Energy and Environmental Modelling AI & Renewable Systems

ER4 (Level 8) • Chair: Professor Bilsay Pastakkaya (Bursa Uludag University, Türkiye)

11:15–11:30 #53 Active learning guides the synthesis of two-dimensional organic-inorganic hybrid rare-earth double perovskites with potential multifunctional ferroelectric properties
Rong Guo — Southeast University, China

11:30–11:45 #174 Evidential Ensemble Technique Integrated with Explainable Artificial Intelligence (XAI) for Microplastic Concentration Modelling from a Tropical River: a First Application of Evidential Neural Network Ensemble Approach in Microplastic Pollution
Abdullahi Garba Usman — Near East University, Türkiye

11:45–12:00 #40 Human-Centred AI for Thermal Comfort Optimisation in Smart Buildings
Tajul Rosli Razak — Universiti Teknologi MARA, Malaysia

12:00–12:15 #180 Mechanism of large vibration for bladeless wind energy harvesters with a plate for circular cylinder
Guanbin Chen — Harbin Institute of Technology, China

12:15–12:30 Q&A *Panel Q&A and discussion with all session speakers*

Day 1 • Sessions B

Thursday 13 August • 14:25–16:10

B1 Solar Thermal and Photovoltaic-Thermal Systems

Energy Storage & Conversion

Ballroom 2 (Level 6) • Chair: Professor Ashmore Mawire (North-West University, South Africa)

- 14:25–14:55 #52** **Invited Speaker: Preliminary investigations on the evacuated PVT-driven methanol electrolysis for enhanced solar hydrogen production**
Professor Qiliang Wang — University of Science and Technology of China, China
- 14:55–15:10 #143** **Supercritical CO₂ Nanofluids for Solar Thermal Applications: Dispersion, Deposition, and Photothermal Performance**
Ning Zhao — Southeast University, China
- 15:10–15:25 #43** **Thermal and Electrical Performance of Passive STFPV-VIG Systems under Different Installation Orientations and Ventilation Conditions**
Adam Samsudin — Universiti Teknikal Malaysia Melaka, Malaysia
- 15:25–15:40 #147** **Effects of optical filtration layers on the performance of MXene-based solar PV/T module: an experimental analysis**
Yuanlong Cui — Shandong Jianzhu University, China
- 15:40–15:55 #299** **Optimizing Photovoltaic Bandgaps for Efficient Underwater Solar Energy Harvesting**
Haoliang Bai — Wuhan University of Technology, China
- 15:55–16:10 Q&A** *Panel Q&A and discussion with all session speakers*

B2 Thermochemical Energy Storage: Materials, Reactors and Seasonal Systems

Energy Storage & Conversion

ER2 (Level 8) • Chair: Dr Zhiwei Ma (Durham University, United Kingdom)

- 14:25–14:55 #85** **Invited Speaker: Advances in Reactor Design and Renewable Integration Strategies for Low-Grade Thermochemical Energy Storage**
Dr Devrim Aydin — Eastern Mediterranean University, Cyprus
- 14:55–15:10 #170** **Development and Validation of a Packed-Bed Reactor Discharging Performance Model for Salt Hydrate Thermochemical Energy Storage**
Jianbin Chen — University of Nottingham, United Kingdom
- 15:10–15:25 #191** **Effects of Zonal Design for Seasonal Thermal Energy Storage Systems**
Mengying Cui — Southeast University, China
- 15:25–15:40 #166** **Coupled Effects of Thermodynamic Conditions, Bed Configuration and Airflow Characteristics on the Performance of an Open-Loop Thermochemical Energy Storage Reactor**
Zhuo Chang — University of Ferrara, Italy
- 15:40–15:55 #330** **Study on the Thermal Evolution Mechanism and Temperature Distribution of Solid-State Batteries**
Zhehui Zhang — Wuhan University of Technology, China
- 15:55–16:10 Q&A** *Panel Q&A and discussion with all session speakers*

Day 1 • Sessions B continued

B3 Sustainable Heating, Cooling and Refrigeration

Energy Storage & Conversion

ER3 (Level 8) • Chair: Dr Yi Fan (Shanghai University of Electric Power, China)

- 14:25–14:55 #26** **Invited Speaker: Experimental Energy Analysis of a Trigenation System Based on Outdoor Air Temperature: A Case Study at Fatsa State Hospital, Türkiye**
Professor Ali Kilicarslan — Hitit University, Türkiye
- 14:55–15:10 #35** **Ultrasonic Oscillation Enhanced Mass Transfer in Ammonia–Water Generation Process: Design and Performance Analysis of a Novel Generator**
Chuang Pan — Southeast University, China
- 15:10–15:25 #175** **Decarbonization of Residential Buildings Using Low-Charge R290 Heat Pumps: Experimental and Numerical Approach**
Mohammad Salman — Korea Institute of Energy Research, South Korea
- 15:25–15:40 #90** **Design and performance analysis of a CO2 heat pump thermal storage system decoupled from a coal-fired power plant**
Tengjiao Jia — Central South University, China
- 15:40–15:55 #19** **Zonal control of a heat-pipe system for long-duration lunar habitats**
Jingyu Cao — Hunan University, China
- 15:55–16:10 Q&A** *Panel Q&A and discussion with all session speakers*

B4 Intelligent Ventilation and Low-Carbon Building Control

AI & Renewable Systems

ER4 (Level 8) • Chair: Professor Beatrice Bonfanti Pulvirenti (University of Bologna, Italy)

- 14:25–14:55 #29** **Invited Speaker: Vision-Assisted Event-Triggered Ventilation for Indoor Pollution Control in Low-Carbon Buildings**
Dr John Kaiser Calautit — University College London, United Kingdom
- 14:55–15:10 #23** **An integrated surrogate and optimisation framework for PCM-enhanced energy piles using energy-consistency-enhanced deep operator learning**
Chaokai Zhang — Southeast University, China
- 15:10–15:25 #215** **A Replicable Community Greenhouse Optimisation System for Low-Energy Year-Round Tomato Production**
Yanyue Tong — University of Nottingham, United Kingdom
- 15:25–15:40 #289** **Investigation of influential variations among variables in Semi-Transparent Perovskite Photovoltaic glazing glare metrics using machine learning and SHAP**
Li Zhang — China University of Mining and Technology, China
- 15:40–15:55 #311** **Environmental and economic impact of using IoT sensors combined with IA on the energy efficiency of smart buildings: A comparative econometric assessment of developed and developing countries**
Oumaima Bel Hadj Salah — Chouaib Doukkali University, Morocco
- 15:55–16:10 Q&A** *Panel Q&A and discussion with all session speakers*

Day 1 • Sessions C

Thursday 13 August • 16:40–18:25

C1 Hydrogen Energy Systems, Electrolysers and Fuel Cells

Energy Storage & Conversion

Ballroom 2 (Level 6) • Chair: Dr Arif Karabuga (Istanbul Aydin University, Türkiye)

- 16:40–16:55 #98** **Ce-Doped Ru/RuO₂ Heterojunction for Efficient Alkaline Hydrogen Evolution**
Dunyuan Jin — University of Science and Technology of China, China
- 16:55–17:10 #270** **A Study on High Current Density SOECs for Sustainable Power-to-Hydrogen Conversion**
Syed Shaheryar Ali Shamsi — Korea Institute of Energy Research, South Korea
- 17:10–17:25 #111** **Enhanced Performance of proton-conducting solid oxide fuel cells Enabled by a Novel Ce-Doped YBaCo₄O₇ Cathode**
Xin Zhou — Southeast University, China
- 17:25–17:40 #115** **Advanced Electrode Design for Renewable Hydrogen Production Using Solid Oxide Electrolysis Cells**
Qiyue Wang — Shanghai University of Electric Power, China
- 17:40–17:55 #329** **Amino-Functionalized UiO-66/Cellulose Nanofiber Membranes for Sustainable Proton Exchange Membrane Fuel Cells**
Zhengyan Bao — Southeast University, China
- 17:55–18:10 #328** **Proximity-Enhanced Synergy between FeN₄ and Co₂C Nanoclusters in MOF-Derived Carbon for Spin-Dependent Oxygen Electrocatalysis**
Baolong Qin — Southeast University, China
- 18:10–18:25 Q&A** *Panel Q&A and discussion with all session speakers*

C2 Carbon Capture, Conversion and Catalytic Processes

Energy Storage & Conversion

ER2 (Level 8) • Chair: Dr Devrim Aydin (Eastern Mediterranean University, Cyprus)

- 16:40–16:55 #217** **Amine-Based Materials for Renewable-Energy-Driven Direct Air Capture and CO₂ Utilization: A Short Review**
Jiheng Luan — Shanghai Jiao Tong University, China
- 16:55–17:10 #164** **Effect of light stress on designed algae-bacteria model for amelioration of fuel worthy lipids**
Sana Parveen — Central University of Rajasthan, India
- 17:10–17:25 #171** **Preparation of High-Efficiency Zirconium-Based Solid Solution Catalysts for CO₂ Hydrogenation to Methanol and Their Performance Study**
Yu Zhou — Southeast University, China
- 17:25–17:40 #230** **Composite Interface Engineering of Tin-Based Electrocatalysts for Highly Selective CO₂ Reduction to Formate**
Yaling Jia — Taiyuan University of Technology, China
- 17:40–17:55 #186** **Tuning the Surface Electronic Structure of Pt/TiO₂ for Enhanced CO Oxidation and SO₂ Resistance: The Roles of Pt Surface States**
Chao Yu — Southeast University, China
- 17:55–18:10 #11** **Nature of Single Atom Catalysts for Electrocatalytic CO₂ Reduction**
Yuxiao Meng — Southeast University, China
- 18:10–18:25 Q&A** *Panel Q&A and discussion with all session speakers*

Day 1 • Sessions C continued

C3 Indoor Environment, Building Services and Low-Carbon Cooling

Low-Carbon Buildings

ER3 (Level 8) • Chair: Assoc. Professor Mardiana Idayu Ahmad (Universiti Sains Malaysia, Malaysia)

- 16:40–16:55 #104** **Inverse design of multi-source heterogeneous HVAC terminals using gradient-partitioned level set method**
Xin Chen — Southeast University, China
- 16:55–17:10 #271** **Sustainable Heating and Cooling of a Hotel Building in Kuala Lumpur Using a Solar-Powered Absorption Heat Pump System**
Bilsay Pastakkaya — Bursa Uludag University, Türkiye
- 17:10–17:25 #70** **Numerical study of an indirect evaporative cooler using porous fiber with intermittent water distribution**
Yi Chen — Jimei University, China
- 17:25–17:40 #205** **Dynamic parameter control of temperature–vacuum swing adsorption for energy-efficient direct air capture**
Kuihua Wang — Shanghai Jiao Tong University, China
- 17:40–17:55 #173** **A Photothermally Driven Moisture-Pumping Aerogel for Continuous and Directional Building Humidity Regulation**
Yingying Yang — University of Shanghai for Science and Technology, China
- 17:55–18:10 #208** **Rapid Temperature Swing Adsorption with Low-Grade Heat for Direct Air Capture**
Yanlin Chen — Shanghai Jiao Tong University, China
- 18:10–18:25 Q&A** *Panel Q&A and discussion with all session speakers*

C4 Digital Twins, Simulation and Optimisation for Energy Systems

AI & Renewable Systems

ER4 (Level 8) • Chair: Professor Amin Al-Habaibeh (Nottingham Trent University, United Kingdom)

- 16:40–16:55 #194** **Design and Simulation of a UHF Microstrip Patch Antenna for Partial Discharge Detection in Power Transformers**
Nur Azura Noor Azhuan — Universiti Teknikal Malaysia Melaka, Malaysia
- 16:55–17:10 #244** **A Physics-Augmented Machine Learning Digital Twin for Multi-Regime Performance Prediction and Dry-Out Detection in Geometrically Modified Thermosyphons**
Sanjay J K and Sakthivadivel D — Vellore Institute of Engineering, India
- 17:10–17:25 #268** **Investigation of a Pioneering LSMHS-ACO Algorithm for Control Optimization of Building Energy System**
Yunhai Li — Harbin Institute of Technology, Shenzhen, China
- 17:25–17:40 #59** **Study on Droplet Dynamics and Heat Transfer Characteristics of HFE-7100 Impacting Porous Copper Foam**
Shaolin Zhang — Southeast University, China
- 17:40–17:55 #124** **Artificial intelligence-aided transition from deterministic to robust wind farm co-design with wake steering**
Yu Tu — Shanghai Jiao Tong University, China
- 17:55–18:10 #74** **An Active Learning-Driven Optimization Framework for Flow Field Design in Electrochemical Energy Devices**
Changjiang Wang — Southeast University, China
- 18:10–18:25 Q&A** *Panel Q&A and discussion with all session speakers*

Day 2 • Sessions D

Friday 14 August • 10:20–12:30

SPARK — Five-Minute Student Innovation Showcase

Student showcase

Ballroom 2 (Level 6) • 10:20–11:55 • Chair: Dr Hasila Jarimi (Universiti Kebangsaan Malaysia, Malaysia)

- | | | |
|-------|-------------|---|
| 5 min | #366 | Near-Field Thermophotovoltaic Energy Conversion Using a TiN/HfO₂ Nanowire Hyperbolic Metamaterial Emitter
<i>Jining He — Zhejiang University, China</i> |
| 5 min | #12 | Dynamically Reconfigurable Series-Parallel Photovoltaic Module to Enhance Energy Generation During Shadow Effects in Solar Vehicles
<i>Pradyum Kaneria — Indian Institute of Technology Madras, India</i> |
| 5 min | #297 | Topology-Optimized Liquid-Cooled Cold Plates for Solar Thermoelectric Generators under Non-Uniform Heat Flux
<i>Jinghong Zhang — Harbin Institute of Technology, Shenzhen, China</i> |
| 5 min | #367 | Experimental Study on Solar-Driven Catalytic Steam Gasification of Biomass Char
<i>Shizhun Liu — Zhejiang University, China</i> |
| 5 min | #272 | CFD-Informed Acoustic Regime Classification in a Hydrogen Gas Turbine Combustor: A Comparative Machine Learning Study
<i>Oyinbonogha Agonga — Universiti Teknologi Malaysia, Malaysia</i> |
| 5 min | #155 | A novel salt hydrate thermochemical Rankine-Carnot battery: system design, heat exchanger network integration, and thermodynamic assessment
<i>Xianmin Zeng — Guangdong University of Technology, China</i> |
| 5 min | #363 | Climate-Based Predictive Energy Modelling of Residential Air Conditioning Electricity Consumption
<i>Norasikin Hussin — Universiti Teknologi MARA Pulau Pinang Branch, Malaysia</i> |

SPARK — Five-Minute Student Innovation Showcase (continued)

Student showcase

Ballroom 2 (Level 6) • 10:20–11:55 • Chair: Dr Hasila Jarimi (Universiti Kebangsaan Malaysia, Malaysia)

- | | | |
|-------|-------------|--|
| 5 min | #256 | Passive Radiative Cooling for Urban Heat and Building Resilience Under Future Climates
<i>Yiying Zhou — City University of Hong Kong, Hong Kong</i> |
| 5 min | #293 | The Carbon within Campus Buildings: Revealing Hidden Hotspots through Embodied Carbon Assessment
<i>Najah Md Alwi — Universiti Malaya, Malaysia</i> |
| 5 min | #364 | Multi-Stage PV-TPV Conversion: Decoupling Solar Concentration and Spectral Allocation
<i>Jialu Tian — Zhejiang University, China</i> |
| 5 min | #332 | Enhancing Outdoor Comfort in Delhi –Urban Heat Island Mitigation with Future Climate Projections
<i>Het Parikh — School of Planning and Architecture, New Delhi, India</i> |
| 5 min | #290 | Multi-field Coupled Optimization of an Air-Purifying BIPVT System with Thermal-UV Synergistic Disinfection: A CFD-Bayesian Optimization Approach
<i>Yu Qian — University of Science and Technology of China, China</i> |
| 5 min | #128 | An IPMVP-Based Framework for Establishing Energy Baselines in Higher Education Facilities
<i>Muhammad Adib Affandi Ahmad Nazren — Universiti Teknologi MARA, Malaysia</i> |
| 5 min | #298 | A Solar-Driven Fibrous Humidity Pump for Continuous Indoor Dehumidification
<i>Yu Zhang — Harbin Institute of Technology, Shenzhen, China</i> |
| 5 min | #172 | Urban Requalification and Sustainability, using the energy efficient and Ambiental parameters.
<i>Karla Cavallari — University of Ferrara, Italy</i> |

Day 2 • Sessions D continued

SPARK

SET2026 Research Spark — Five-Minute Student Innovation Showcase (continued)

Student showcase

Ballroom 2 (Level 6) • 10:20–11:55 • Chair: Dr Hasila Jarimi (Universiti Kebangsaan Malaysia, Malaysia)

- 5 min **#365** **Energy Conversion Analysis of a Metamaterial Absorber for Efficient Solar Energy Harvesting**
Ziying Cheng — Zhejiang University, China
- Q&A *Shared panel discussion · judged for the Best 5-Minute Presentation Award*

D2 Photocatalysis, Solar Fuels and Renewable Hydrogen

Energy Storage & Conversion

Hall (Level 8) • Chair: Dr Jingyu Cao (Hunan University, China)

- 10:20–10:35 **#95** **Preparation of Ferromagnetic Heterogeneous Photocatalysts and Magnetic-Field Coupling Method For Enhanced Photocatalytic Hydrogen Generation**
Linyi Wu — University of Science and Technology of China, China
- 10:35–10:50 **#326** **Facet-Engineered BaTiO₃ Single Crystals for Enhanced Photocatalytic Hydrogen Evolution from Water**
Bashir Ahmmad — Yamagata University, Japan
- 10:50–11:05 **#61** **Construction of Cu₂O Facet Junction Coupled with Schottky Junction and Its Performance in Selective PEC CO₂ Reduction to Methanol**
Kai Zhang — Southeast University, China
- 11:05–11:20 **#197** **Multiscale Science of Hydrocyclone-Enhanced Photocatalytic Hydrogen Production**
Fanghe Zhou — East China University of Science and Technology, China
- 11:20–11:30 **Q&A** *Q&A with Part I speakers*
- 11:30–11:40 *Refreshment break*

D2 Photocatalysis, Solar Fuels and Renewable Hydrogen (continued)

Energy Storage & Conversion

Hall (Level 8) • Chair: Dr Jingyu Cao (Hunan University, China)

- 11:40–11:55 **#189** **Synergistic Promotion of Photocatalytic Hydrogen Peroxide Production in 2D Covalent Organic Frameworks via Topological Effect and Linkage Engineering**
Xing Su — Southeast University, China
- 11:55–12:10 **#210** **Highly Active Ni-Based Catalysts for Low-Temperature CO₂ Methanation via Stepwise Fe and Mg Regulation**
Ruwei Yao — Taiyuan University of Technology, China
- 12:10–12:25 **#321** **Easily synthesized self-nitrogen doped carbon-supported nickel bio-based sustainable catalyst for hydrogenation of benzylamine from benzonitrile**
Weidong Liu — Southeast University, China
- 12:25–12:30 **Q&A** *Q&A with Part II speakers*

D3 Thermal Energy Storage, Heat Pumps, Refrigeration and System Integration

Energy Storage & Conversion

ER2 (Level 8) • Chair: Professor Shuli Liu (Beijing Institute of Technology, China)

- 10:20–10:35 **#181** **Passive thermal management of multi-elevation energy storage systems using gravity-driven two-phase loops**
Lu Wang — Tsinghua University, China
- 10:35–10:50 **#67** **Multiphysics modeling and performance evaluation of thermocells**
Yingyin Sha — University of Science and Technology of China, China

Day 2 • Sessions D continued

D3 Thermal Energy Storage, Heat Pumps, Refrigeration and System Integration (continued)

Energy Storage & Conversion

ER2 (Level 8) • Chair: Professor Shuli Liu (Beijing Institute of Technology, China)

- 10:50–11:05 **#137** **Numerical Investigation of PCM Capsule Relocation in a TES-Integrated Solar Dryer for Enhanced Melting Performance and Continuous Drying**
Shine Win Naung — University of the West of England, United Kingdom
- 11:05–11:20 **#198** **A reliability-oriented energy storage sizing assessment method for PV systems based on energy decomposition**
Xingzhi Yuan — The Hong Kong Polytechnic University, Hong Kong
- 11:20–11:25 **Q&A** *Q&A with Part I speakers*
- 11:25–11:30 *Refreshment break*
- 11:30–11:50 **#24 & 25** **Energy Analysis of a Two-Stage Cascade Refrigeration System Using R-1234yf and R-404A Refrigerant Couple & Investigation of Exergy Efficiencies of the Components of a Two-Stage Vapor Compression Refrigeration System for Different Refrigerants**
Ali Kilicarslan — Hitit University, Türkiye
- 11:50–12:05 **#39** **Numerical Investigation of a Small-Scale Centrifugal Refrigeration Compressor Using Natural Refrigerants**
Xiang Qiu — Shanghai Jiao Tong University, China
- 12:05–12:20 **#222** **PVT Cascade High-Temperature Heat Pump System for High-Temperature Industrial Heating: Thermodynamic Analysis and Performance Evaluation**
Teng Jia — Nanjing University, China
- 12:20–12:30 **Q&A** *Q&A with Part II speakers*

D4 Building Envelopes, Passive Design and Natural Ventilation

Low-Carbon Buildings

ER3 (Level 8) • Chair: Dr John Kaiser Calautit (University College London, United Kingdom)

- 10:20–10:45 **#370** **Invited Speaker: Zephyr City: An Energy-Efficient Solution for Urban Microclimate Enhancement**
Professor Cruz Li — Chongqing University, China
- 10:45–11:00 **#130** **Experimental and Numerical Analysis of a Bifacial Photovoltaic Wall-Thermochromic Composite System for Low-Carbon Buildings**
Sai Xu — Hefei University of Technology, China
- 11:00–11:15 **#223** **Cleaner Energy Envelope systems for High rise Residential Buildings – An energy analysis and design with BIPV and Micro wind turbines**
Abhilash Suryan R — College of Engineering Trivandrum, India
- 11:15–11:20 **Q&A** *Q&A with Part I speakers*
- 11:20–11:25 *Refreshment break*
- 11:25–11:40 **#281** **Application of solar photovoltaic vacuum glazing in skylight**
Wenhao Zhu — The Hong Kong Polytechnic University, Hong Kong
- 11:40–11:55 **#131** **Performance analysis and design optimization of a novel Trombe wall system using CFD and response surface method**
Kaijie Li — Hefei University of Technology, China
- 11:55–12:10 **#314** **A Bilayer TiO₂/ZrO₂ Radiative Cooling Powder Coating via Electrostatic Spraying for High-Performance Zero-Carbon Cooling**
Cheng Jin — University of Science and Technology of China, China
- 12:10–12:25 **#350** **Pore-Scale Simulation of Gradient-Distributed Thermochromic Hydrogels for Adaptive Building Envelopes and Smart Window Applications**
Wenyan Chen — Southeast University, China
- 12:25–12:30 **Q&A** *Q&A with Part II speakers*

Day 2 • Sessions D continued

D5 Digital Planning and Forecasting for Renewable Energy Systems

AI & Renewable Systems

ER4 (Level 8) • Chair: Associate Professor Ir. Ts. Dr. Nik Normunira binti Mat Hassan

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|-------------|------|--|
| 10:20–10:50 | #100 | Invited Speaker: Optimising a Solar-Powered Intercontinental Energy Network for the One Sun One World One Grid Initiative: A Linear Programming Approach
<i>Professor K. Srinivas Reddy — Indian Institute of Technology Madras, India</i> |
| 10:50–11:05 | #41 | Blockchain-Enabled Traceability: Bridging the Hydrogen Trade Gap between Europe and China
<i>Sofya Morozova — Haliç University, Türkiye</i> |
| 11:05–11:20 | #226 | Comprehensive Assessment of Wind and Solar Energy Potential Toward a Sustainable Future: A Case Study of the GMMR, Libya
<i>Djamal Hissein Didane — Universiti Tun Hussein Onn Malaysia</i> |
| 11:20–11:30 | Q&A | <i>Q&A with Part I speakers</i> |
| 11:30–11:40 | | <i>Refreshment break</i> |
| 11:40–11:55 | #265 | Machine-Learning-Assisted Design and Analysis of an Integrated Allam Cycle-CO₂ Energy Storage System
<i>Yingzong Liang — Guangdong University of Technology, China</i> |
| 11:55–12:10 | #246 | Techno-Economic Assessment of Hybrid Renewable-Powered Hydrogen Refuelling Station: A Case Study in Sumba Island, Indonesia
<i>Taurista Perdana Syawitri — National Research and Innovation Agency Republic of Indonesia</i> |
| 12:10–12:25 | #133 | Explainable GA-Optimized Random Forest for Station-Based Solar Irradiance Prediction
<i>Abubakar D. Maiwada — University Sains Malaysia, Malaysia</i> |
| 12:25–12:30 | Q&A | <i>Q&A with Part II speakers</i> |

Day 2 • Sessions E

Friday 14 August • 15:20–18:15

E1 Phase Change, Thermochemical and Adaptive Thermal Storage Materials

Energy Storage & Conversion

Hall (Level 8) • Chair: Professor Guiqiang Li (University of Science and Technology of China, China)

- 15:20–15:50 **#94** **Invited Speaker: Research of Photothermal-Driven Composite Phase Change Materials**
Professor Shuli Liu — Beijing Institute of Technology, China
- 15:50–16:05 **#75** **Development of Novel Salt Sorbent Material for Thermochemical Energy Storage**
Zhiwei Ma — Durham University, United Kingdom
- 16:05–16:20 **#221** **Novel closed loop thermochemical reactor for Thermal Energy Storage**
Eleonora Baccaga — University of Ferrara, Italy
- 16:20–16:35 **#201** **Effect of Cement Incorporation on the Stability and Thermochemical Performance of Vermiculite–CaCl₂ Composites**
Ismail Kaan Keskin — University of Nottingham, United Kingdom
- 16:35–16:45 **Q&A** *Q&A with Part I speakers*
- 16:45–17:05 *Refreshment break*
- 17:05–17:20 **#144** **Machine Learning–Guided Optimization of Mean Carbonation in Solar-Driven Calcium Looping for Thermochemical Energy Storage**
Ming Lin — Southeast University, China
- 17:20–17:35 **#241** **Design and System-Level Analysis of a Thermochemical Energy Storage Unit for Peak-Load Reduction in Residential Heating**
Arvin Sohrabi — Beijing Institute of Technology, China
- 17:35–17:50 **#16** **Climatic Adaptability of Customized Phase Change Energy Piles Based on the Random Aggregate Method**
Zhengheng Gan — Southeast University, China

E1 Phase Change, Thermochemical and Adaptive Thermal Storage Materials (continued)

Energy Storage & Conversion

Hall (Level 8) • Chair: Professor Guiqiang Li (University of Science and Technology of China, China)

- 17:50–18:05 **#184** **Enhancing Medium-Deep Geothermal Energy Extraction Using Phase Change Material Working Fluids**
Aizheng Li — Southeast University, China
- 18:05–18:15 **Q&A** *Q&A with Part II speakers*

E2 Bioenergy, Renewable Fuels and Sustainable Solar Materials

Energy Storage & Conversion

ER2 (Level 8) • Chair: Ir. Dr. Fauziah Jerai@Junaidi (Universiti Teknologi MARA, Malaysia)

- 15:20–15:35 **#261** **Effect of Using Supercooled Sugar Alcohol–Based PCMs on Operating Duration and Heat Source Temperature Fluctuation in a Solar Organic Rankine Cycle**
Ze Liu — University of Nottingham, United Kingdom
- 15:35–15:50 **#71** **Mechanistic Study of On-Line Electrochemical Upgrading of Biomass Pyrolysis Vapors in a Solid Oxide Electrolysis Cell**
Xian Pan — Southeast University, China
- 15:50–16:05 **#160** **Innovative tunable and modular UV aging light source and accelerated aging results of downshifting layers for photovoltaic applications**
Leonardo Sollazzo — University of Ferrara, Italy
- 16:05–16:20 **#213** **Pilot trial, performance study and economic assessment of enriched-oxy and steam biomass gasification: towards sustainable, clean and efficient energy conversion and hydrogen production**
Hao Shi — Southeast University, China

Day 2 · Sessions E continued

E2 Bioenergy, Renewable Fuels and Sustainable Solar Materials (*continued*)

Energy Storage & Conversion

ER2 (Level 8) • Chair: Ir. Dr. Fauziah Jerai@Junaidi (Universiti Teknologi MARA, Malaysia)

- 16:20–16:35 **#318** **Thermodynamic simulation, energy, and emission assessment of rice husk co-combustion system**
Muhamad Taufiq Irsyad — Kyoto University, Japan
- 16:35–16:45 **Q&A** *Q&A with Part I speakers*
- 16:45–17:05 *Refreshment break*
- 17:05–17:20 **#21** **Comparison of food cooking tests in a solar box cooker with and without heat transfer enhancement using positive temperature coefficient (PTC) heating fans**
Ashmore Mawire — North-West University, South Africa
- 17:20–17:35 **#308** **Selective C–O Bond Cleavage in Biomass Furans to Biofuels via Tailored Catalyst Acidity and Metal–Support Interactions**
Qunfeng Chen — Southeast University, China
- 17:35–17:50 **#156** **Performance Analysis of PV/T Collectors with Spectrally Selective Cover**
Ken Chen — University of Science and Technology of China, China
- 17:50–18:05 **#306** **Single-Atom Ni–NAC Catalysts with Ultra-Low Nickel Loading for Selective Reductive Catalytic Fractionation of Lignocellulosic Feedstocks**
Yongtong Zhang — Southeast University, China
- 18:05–18:15 **Q&A** *Q&A with Part II speakers*

E3 Combustion, Thermal Power and Low-Carbon Fuel Conversion

Energy Storage & Conversion

ER3 (Level 8) • Chair: Professor Ali Kilicarslan (Hitit University, Türkiye)

- 15:20–15:50 **#89** **Invited Speaker: Experimental Performance Study of Diesel Generator Using 40% Renewable Fuel Blends: FAME and Hydrotreated Vegetable Oil (HVO)**
Professor Berkah Fajar Tamtomo Kiono — Diponegoro University, Indonesia
- 15:50–16:05 **#188** **Experimental Study on Combustion Characteristics in the Dense Phase Zone of Circulating Fluidized Bed Ultra-Low NO_x Coal-Fired Boilers**
Liye Wang — Southeast University, China
- 16:05–16:20 **#267** **An Economically Viable Catalytic Co-Pyrolysis System for High-Yield Drop-in Gas Turbine Fuel from Polypropylene and Yellow Grease Oil**
Muhammad Syahiran Abdul Malik — Universiti Teknologi Malaysia, Malaysia
- 16:20–16:35 **#120** **Sustainable High-Temperature Bond-Coat Materials for Efficient Heavy-Duty Gas Turbines: Microstructure and Oxidation Behavior of LPBF-Fabricated ODS NiCoCrAlTaY Alloys**
Yuwen Qiu — Southeast University, China
- 16:35–16:50 **#225** **Ligand-Stabilized Synthesis of Zeolite-Encapsulated-Metal Composite Materials for Alkane Dehydrogenation**
Shaojia Song — Taiyuan University of Technology, China
- 16:50–17:00 **Q&A** *Q&A with Part I speakers*
- 17:00–17:10 *Refreshment break*
- 17:10–17:25 **#178** **Structure–Activity Relationship of NH₃–Treated Spherical KNbO₃ in Catalytic Carbonyl Sulfide Hydrolysis: Oxygen Vacancy Engineering vs. Nitrogen Doping**
Jian Gao — Southeast University, China

Day 2 · Sessions E continued

Combustion, Thermal Power and Low-

E3 Carbon Fuel Conversion (continued)

Energy Storage & Conversion

ER3 (Level 8) • Chair: Professor Ali Kilicarslan (Hitit University, Türkiye)

- 17:25–17:40 **#235** **Asymmetric Carnot Battery Configurations for Solar PV–CSP Hybrid Systems: Integration, Performance, and Techno-Economic Analysis**
Jin Yu — Shanghai Jiao Tong University, China
- 17:40–17:55 **#294** **Non-Adiabatic CFD Simulation of Ammonia–Coal Co-Firing in a Generic Burner: Control of Fuel–Nitrogen Conversion Pathways for Low-Carbon Power Generation**
Nik Siti Hasniati Nik Leh — Universiti Teknologi Malaysia, Malaysia
- 17:55–18:10 **#179** **Performance study of a solid oxide fuel cell (SOFC) –CO₂ combined cycle energy storage and power generation system**
Jingkui Zhang — Shanghai University of Electric Power, China
- 18:10–18:15 **Q&A** *Panel Q&A and discussion with all session speakers*

Thermal Management, Heat Recovery and Cooling Technologies

Energy Storage & Conversion

ER4 (Level 8) • Chair: Professor Qiliang Wang (University of Science and Technology of China, China)

- 15:20–15:50 **#259** **Invited Speaker: Advanced Thermal Management and Energy Recovery Strategies for Sustainable High-Performance Computing Infrastructures**
Professor Beatrice Bonfanti Pulvirenti — University of Bologna, Italy
- 15:50–16:05 **#207** **Gradient composite structures for suppressing the propagation of thermal runaway in high-capacity LiFePO₄ batteries**
Chengcheng Zhang — Wuhan University of Technology, China

Thermal Management, Heat Recovery and Cooling Technologies

E4 Recovery and Cooling Technologies (continued)

Energy Storage & Conversion

ER4 (Level 8) • Chair: Professor Qiliang Wang (University of Science and Technology of China, China)

- 16:05–16:20 **#113** **Rational design of hydrogels with improved evaporative cooling performance for high heat flux thermal management**
Mingyang Ma — Southeast University, China
- 16:20–16:35 **#251** **Investigation on zonal topology optimization enabled direct cooling thermal management in full scale lithium-ion battery packs**
Junlong Kong — Shanghai Jiao Tong University, China
- 16:35–16:50 **#276** **Development and Validation of a One-Dimensional Transient Model for High-Temperature Alkali Metal Heat Pipes in Decay Heat Removal**
Peng Ju — Harbin Institute of Technology, Shenzhen, China
- 16:50–16:55 **Q&A** *Q&A with Part I speakers*
- 16:55–17:05 *Refreshment break*
- 17:05–17:20 **#190** **Power Enhancement of Thin Film Thermoelectric Generator through Cationic Doping**
Ubaidah Syafiq — Universiti Kebangsaan Malaysia, Malaysia
- 17:20–17:35 **#320** **Directional capillary-driven liquid transport on magnetically responsive micropillar array surfaces**
Bokai Yang — Shanghai Jiao Tong University, China
- 17:35–17:50 **#182** **Electrolyte Engineering of Liquid Thermocells for Low-Grade Heat Harvest at Sub-Zero Temperatures**
Xin Lu — Southeast University, China
- 17:50–18:05 **#176** **Asymmetric configuration and electrolyte engineering for high-performance ultrathin ionic thermoelectric cells**
Haofei Meng — Southeast University, China
- 18:05–18:15 **Q&A** *Q&A with Part II speakers*

Day 2 • Sessions E continued

E5 Energy Policy, Techno-Economics and Sustainable Communities

Policy & Management

MR4 (Level 7) • Chair: Dr Tajul Rosli Razak (Universiti Teknologi MARA, Malaysia)

- 15:20–15:35 #20** **Economic and environmental impact of different scenarios for the green hydrogen market in Chile – An intersectoral approach**
Cristian Mardones — University of Concepción, Chile
- 15:35–15:50 #44** **Thermodynamic analysis of geothermal energy systems with different design configurations for sustainable hydrogen production**
Arif Karabuga — Istanbul Aydin University, Türkiye
- 15:50–16:05 #82** **Designing a Three-Track Internal Carbon Pricing Governance Mechanism in the Real Estate Service Industry**
Wan-Yu Weng — National Chengchi University, Taiwan
- 16:05–16:20 #148** **E-Ratiba, the Energy Timetable: a planning tool for Energy Use and Revenue in Solar-Powered Schools in Nairobi**
Vincenzo Rossi — University of Nottingham, United Kingdom
- 16:20–16:35 #336** **Repurposing Wave-Energy Absorption Technologies for Coastal Erosion Adaptation**
Brathikan VM — Kumaraguru College of Technology, India
- 16:35–16:45 Q&A** *Q&A with Part I speakers*
- 16:45–16:55** *Refreshment break*
- 16:55–17:10 #349** **Advancing Applied Renewable Energy Education through Makerspace-Based Learning: A Longitudinal Case Study**
Rafat Al Afif — University of Natural Resources and Life Sciences, Austria
- 17:10–17:25 #199** **Validation of an Adaptive Outdoor Thermal Comfort Questionnaire for Therapeutic Parks in Hospital Environments**
Noraishah Mohammad Sham — Institute for Medical Research, Malaysia

E5 Energy Policy, Techno-Economics and Sustainable Communities (continued)

Policy & Management

MR4 (Level 7) • Chair: Dr Tajul Rosli Razak (Universiti Teknologi MARA, Malaysia)

- 17:25–17:40 #317** **Developing Facility Management Guidelines for Safe and Inclusive Public Transport for All in a World Heritage Tourism City: The Case of Ayutthaya, Thailand**
Wiruj Somsopon — Thammasat University, Thailand
- 17:40–17:55 #233** **ENVI-met Microclimate Simulation in Tropical Hospital Therapeutic Gardens: A Multi-Site Validation Study**
Farah Nurhanis — Universiti Teknologi MARA, Malaysia
- 17:55–18:10 #287** **Assessing the Impact of Transportation Infrastructure Development on Land Use/Land Cover Change and Urban Heat Island Dynamics in Benin City, Nigeria**
Geraldine Nkechinyere Okeudo — Abia State University Uturu, Nigeria
- 18:10–18:15 Q&A** *Q&A with Part II speakers*

Day 3 • Sessions F

Saturday 15 August • 09:15–11:45

F1 Machine Learning for Thermal Systems and Energy Technologies

AI & Renewable Systems

Ballroom 2 (Level 6) • Chair: Ts. Dr. Nur Atiqah binti Ramlan (Universiti Teknologi MARA, Malaysia)

09:15–09:40 **#37** **Invited Speaker: Enabling Electrification of Heating Through SuperThermalBattery**

Dr Hasila Jarimi — Universiti Kebangsaan Malaysia, Malaysia

09:40–09:55 **#109** **Topology Optimization of a High-Performance Cold Plate Operating in the Turbulent Regime for BTMS Applications**

Zexu Wang — Southeast University, China

09:55–10:10 **#69** **Numerical investigation of the aeroelastic performance of a wind turbine operating under yaw misalignment**

Shine Win Naung — The University of the West of England, United Kingdom

10:10–10:25 **#295** **A Residual-Corrected Dual-State Surrogate Modelling Framework for Thermoeconomic Optimization of Concentrated Thermoelectric Generators under Nonuniform Irradiation**

Haowen Liu — Harbin Institute of Technology, China

10:25–10:30 **Q&A** *Q&A with Part I speakers*

10:30–10:40 *Refreshment break*

10:40–10:55 **#125** **Performance Analysis of Photovoltaic-Thermal Systems with In-Situ Lunar Water Ice Thermal Storage**

Kongfu Hu — University of Science and Technology of China, China

10:55–11:10 **#219** **Robust Predictive Control for Energy-Aware Data Center Cooling with Online Disturbance Compensation**

Tiexiao Xu — Tsinghua University, China

11:10–11:25 **#234** **Experimental and Numerical Evaluation of Surface Integrity and Mechanical Performance of Finished STS 316L Rod Bars: Integrated AI Image Processing**

Chanmanan Sieb — Jeonbuk National University, South Korea

F1 Machine Learning for Thermal Systems and Energy Technologies (continued)

AI & Renewable Systems

Ballroom 2 (Level 6) • Chair: Ts. Dr. Nur Atiqah binti Ramlan (Universiti Teknologi MARA, Malaysia)

11:25–11:40 **#110** **Experimental Investigation on the Thermal-Hydraulic Performance of TPMS-Based Air-Cooling Heat Exchangers for High-Altitude Applications**

Xinyue Zhang — Southeast University, China

11:40–11:45 **Q&A** *Q&A with Part II speakers*

F2 Building Performance, Heritage and Community Energy

Low-Carbon Buildings

ER2 (Level 8) • Chair: Professor Cruz Li (Chongqing University, China)

09:15–09:45 **#101** **Invited Speaker: SENSE-AI: A Sensor-Enabled, Mixed-Methods AI Framework for Heritage Housing Performance Evaluation**

Professor Amin Al-Habaibeh — Nottingham Trent University, United Kingdom

09:45–10:00 **#250** **Reframing Universal Design as a Spatial-Governance Framework for Sustainable Heritage Tourism Management: Evidence from Sukhothai Historical Park, Thailand**

Satitaporn Lubkosa and Choomket Sawangjaroen — Thammasat University, Thailand

10:00–10:15 **#351** **Year-Round Field Assessment and Economic Feasibility of a Polymer-Core Indirect Evaporative Cooler in Hot and Humid Climates**

Xiaochen Ma — China University of Petroleum (East China), China

10:15–10:30 **#68** **City-to-Facade Multi-Scale Assessment of a Flap-Fin Dual-Channel Windcatcher for Stable Natural Ventilation under Low-Wind, Directional Urban Flows in Chongqing**

Jiaxiang Li — Chongqing University, China

Day 3 • Sessions F continued

F2 Building Performance, Heritage and Community Energy (continued)

Low-Carbon Buildings

ER2 (Level 8) • Chair: Professor Cruz Li (Chongqing University, China)

- 10:30–10:35 Q&A** *Q&A with Part I speakers*
- 10:35–10:40** *Refreshment break*
- 10:40–10:55 #310** **From Quantity Take-Off to Carbon Take-Off: Benchmarking Material Intensity and Embodied Carbon in Malaysian Mosque Projects**
Farah Shahrin — Nottingham Trent University, United Kingdom
- 10:55–11:10 #132** **A Short-Term Building Energy Consumption Forecasting Framework Based on Decomposition and Adaptive Grouping**
Kejun Tao — Hefei University of Technology, China
- 11:10–11:25 #292** **Overheating Risk and Future Climate Adaptation in Loft Conversions of Older UK Housing: Optimisation of Roof Fenestration Design Using a Victorian / Early 20th-Century Terraced House**
Ke Qu — CarbonFutureX Group Ltd, United Kingdom
- 11:25–11:40 #315** **Ultra-white, Lightweight and Thermally Insulating Hollow Glass Microsphere Ceramics for Zero-carbon Passive Radiative Cooling**
Jiahao Ni — University of Science and Technology of China, China
- 11:40–11:45 Q&A** *Q&A*

Advanced Heat Transfer, Thermal Systems and Sustainable Building Materials

Energy Storage & Conversion

ER3 (Level 8) • Chair: Professor Berkah Fajar Tamtomo Kiono (Diponegoro University, Indonesia)

- 09:15–09:30 #334** **Pressure-dependent pool boiling characteristics of liquid oxygen Implications for cryogenic thermal management in sustainable energy systems**
Jiashi Wang — Shanghai Jiao Tong University, China
- 09:30–09:45 #145** **Lignin-Based Reinforcement of HDPE-EPDM Blends for Low-Carbon and Energy-Efficient Applications**
Muhammad Khatami — Universiti Sains Malaysia, Malaysia
- 09:45–10:00 #118** **Enhancement of mass transfer in ammonia-water distillation utilizing a novel packed column with integrated ultrasonic atomization**
Subtitle: Effects of atomization rate and initial droplet diameter
Shenghao Huang — Southeast University, China
- 10:00–10:15 #150** **Coupling Interfacial Molecular Engineering and Rayleigh-Bénard Convection in BNNS@PDA Nanofluids for High-Performance Direct Absorption Solar Collectors**
Hao Wang — Southeast University, China
- 10:15–10:20 Q&A** *Q&A with Part I speakers*
- 10:20–10:25** *Refreshment break*
- 10:25–10:40 #114** **A novel LPBF MoCu40 alloy for Energy-Efficient Thermal Management in High-Power Electronic Systems**
Jie Liu — Southeast University, China
- 10:40–10:55 #324** **Green Inhibitors for Steel Corrosion in Concrete: Poly(acrylic acid) and Tannic Acid through Electrochemical, Surface, and Molecular-Level Characterization**
Ismail Mudhaffar — King Fahd University of Petroleum and Minerals, Saudi Arabia

Day 3 • Sessions F continued

F3 Advanced Heat Transfer, Thermal Systems and Sustainable Building Materials (continued)

Energy Storage & Conversion

ER3 (Level 8) • Chair: Professor Berkah Fajar Tamtomo Kiono (Diponegoro University, Indonesia)

- 10:55–11:10 #285** **Influence of Sodium Metasilicate Dosage on the Fresh Properties of Saudi Calcined Clay-Based One-Part Geopolymer Binder**
Amin Al-Fakih — King Fahd University of Petroleum & Minerals, Saudi Arabia
- 11:10–11:25 #204** **Effect of Synergistic NaOH and Ammonium Polyphosphate Treatment on Fire Retardancy of Kenaf–Cotton Non-Woven Insulation**
Muhammad Ibrahim Salahuddin Tengku — JKR Centre of Excellence for Engineering and Technology (CREaTE), Malaysia
- 11:25–11:40 #88** **Regulating Heat and Mass Transfer in Porous Materials Enabling Sustainable Electricity–Water Cogeneration**
Zhengyi Mao — Harbin Institute of Technology, Shenzhen, China
- 11:40–11:45 Q&A** *Q&A with Part II speakers*

F4 Urban Sustainability, Water and Inclusive City Planning

Urban & Environment

ER4 (Level 8) • Chair: Dr Norhayati Mat Wajid (Universiti Teknologi MARA, Malaysia)

- 09:15–09:30 #157** **Office Greywater Influent: Variability and Impact on Decentralised Treatment in Sustainable Building Systems**
George Milev — Nottingham Trent University, United Kingdom
- 09:30–09:45 #243** **Flow Reduction Technique in a Novel Gravity Driven Rainwater Harvesting System Collection Tank with Natural Filtration for Clean Water Supply**
Zainal Abidin Kamarul Baharin — MEC Engineering Resources, Malaysia

F4 Urban Sustainability, Water and Inclusive City Planning (continued)

Urban & Environment

ER4 (Level 8) • Chair: Dr Norhayati Mat Wajid (Universiti Teknologi MARA, Malaysia)

- 09:45–10:00 #183** **Pressurized Injection-Enhanced Bioaugmentation for Sustainable Groundwater Remediation: Field Evidence from Chlorinated Methane-Contaminated Urban Aquifers**
Qinjun Liang — Southeast University, China
- 10:00–10:15 #247** **An evaluation framework to assess of pedestrian comfort in relation to street design along Indira Gandhi Road corridor, Kozhikode**
Deepa Rani R — College of Engineering Trivandrum, India
- 10:15–10:20 Q&A** *Q&A with Part I speakers*
- 10:20–10:25** *Refreshment break*
- 10:25–10:40 #316** **From Participatory Planning to Implementation Readiness: Evaluating the Smart Ayutthaya Heritage Public Transport for All Master Plan Against International Principles**
Alita Chaladdee — Thammasat University, Thailand
- 10:40–10:55 #331** **Comparison of the electrical and thermal performances for different urban solar photovoltaic installation types**
Yijie Zhang — Tongji University, China
- 10:55–11:10 #264** **Exploring Adaption Strategies and Perceptions of Thermal Comfort Among Students and Staff in Tropical Urban**
Muhammad Zhafriz Andzar Zaharudin — UNIVERSITI TEKNOLOGI MARA (UITM), Malaysia
- 11:10–11:25 #252** **Accessible Learning Districts as Urban Social Infrastructure for Inclusive Cities: From Fragmented Welfare Facilities to a Connected Learning District in Pakkred, Thailand**
Choomket Sawangjaroen — Thammasat University, Thailand

Day 3 • Sessions F continued

F4 Urban Sustainability, Water and Inclusive City Planning *(continued)*

Urban & Environment

ER4 (Level 8) • Chair: Dr Norhayati Mat Wajid (Universiti Teknologi MARA, Malaysia)

11:25–11:40 **#286**

Mapping Urban Heat Island Dynamics in Osijek, Croatia: Integrating Landsat Thermal Data with GIS-Based Land Cover Analysis

*Francis Ezinwanne Onuegbu— Abia
State University Uturu, Nigeria*

11:40–11:45 **Q&A**

Q&A with Part II speakers

Poster Exhibition

48 posters · on display throughout the conference

All posters are displayed for the full conference; one dedicated poster session is held each day, when the assigned presenters (shown in **bold**) stand by their boards.

POSTER SESSION 1

Energy Storage & Thermal Systems
Day 1, 16:10–16:40

- #38** **Standalone PV-powered air-conditioning system with PCM ice-gel cold storage: a case study in a Malaysian healthcare facility**
Amiruddin Abdullah — Universiti Kebangsaan Malaysia; Hasila Jarimi — University of Nottingham, Malaysia; Muhamad Fadhli Ramlee — Universiti Kebangsaan Malaysia; Noor Muhammad Abd. Rahman — Engineering Services Division, Ministry of Health Malaysia; Mohd Haikal Jamaludin — Engineering Services Division, Ministry of Health Malaysia; Emy Zairah Ahmad — Universiti Teknikal Malaysia; Tajul Rosli Razak — Universiti Teknologi MARA, Malaysia; Saffa Riffat — University of Nottingham, United Kingdom
- #56** **Design and experimental investigation of a direct contact phase change packed bed heat exchanger**
Xiaoqiang Zhai — Shanghai Jiao Tong University, China; Zhaokai Yu — Shanghai Jiao Tong University, China; Hanze Wei — Shanghai Jiao Tong University, China; Kunlong Xin — Shanghai Jiao Tong University, China
- #138** **Cobalt-doped MnO₂ Nanowires Fabricated By Electrodeposition for Enhanced Aquo-ions Batteries**
Bayan Baatiyah — King Fahad University, Saudi Arabia
- #146** **Laser-Patterned Cu-Supported NiCoRh Bifunctional Electrocatalyst for Efficient Hydrogen and Oxygen Evolution**
Samavia Rafiq — King Fahd University of Petroleum and Minerals, Saudi Arabia; Muhammad Ashraf Gondal — King Fahd University of Petroleum and Minerals, Saudi Arabia; Farhan Arshad — King Fahd University of Petroleum and Minerals, Saudi Arabia
- #195** **Operation Optimization Framework for Hydrogen Cogeneration Systems Under Supply and Demand Uncertainties**
Chengyun Li — Southeast University, China; Qingsong Hua — Beijing Normal University, China; Li Sun — Southeast University, China
- #220** **A Novel Combined Power and Steam System Based on Deep Recovery of Waste Energy: Modelling, Optimization, and Evaluation**
Jiawen Yang — Southeast University, China; Yefan Wang — Southeast University, China; Qihao Feng — Southeast University, China; Liu Yang — Southeast University, China
- #229** **A Novel CaCl₂/Graphite Felt-Based Thermochemical System for Solar-Driven Thermal Energy Storage and Heat Release**
Jian Zhang — Beijing Institute of Technology, China; Shuli Liu — Beijing Institute of Technology, China

POSTER SESSION 1 (continued)

Energy Storage & Thermal Systems
Day 1, 16:10–16:40

- #238** **Numerical analysis of support columns in vapor chambers**
Haojiang Ran — Key Laboratory for Thermal Science and Power Engineering of Ministry of Education, Tsinghua University, China; Zhen Li — Key Laboratory for Thermal Science and Power Engineering of Ministry of Education, Tsinghua University, China
- #260** **Cross-Linking Strategies for Enhancing Reproducibility and Morphological Stability in Organic Solar Cells**
Shafidah Shafian — Solar Energy Research Institute (SERI), Universiti Kebangsaan Malaysia, Malaysia; Kyungkon Kim — Ewha Womans University, South Korea
- #262** **Numerical Analysis of Structural Configuration Effects on the Cooling Performance of a Compound Parabolic Concentrator-Based Radiative Cooling Device**
Ya Dan — Southwest Jiaotong University, China; Kexi Mi — Southwest Petroleum University, China; Yixin Guo — Southwest Jiaotong University, China; Yuehong Su — University of Nottingham, United Kingdom; Mingke Hu — Southwest Jiaotong University, China
- #263** **Exploring a novel reactor with pea-stem-inspired flow channels for thermochemical energy storage**
Yong Zhang — School of Mechanical Engineering, Southwest Jiaotong University, China; Hua Li — School of Mechanical Engineering, Southwest Jiaotong University, China; Jianbin Chen — University of Nottingham, United Kingdom; Ziwei Chen — University of Nottingham, United Kingdom; Yuehong Su — University of Nottingham, United Kingdom; Yanping Yuan — Southwest Jiaotong University, China; Mingke Hu — Southwest Jiaotong University, China
- #269** **Evaluation of Choline Chloride/Lactic Acid-Based Deep Eutectic Nanofluids for Broadband Solar Thermal Management**
Chongjie Xiong — Beijing Institute of Technology, China; Shuli Liu — Beijing Institute of Technology, China; Zhiqi Xu — Beijing Institute of Technology, China
- #288** **Efficient Thermal Management for Sustainable Energy Storage via Simplified Converging Channels**
Jun-Hong Wang — National Chin-Yi University of Technology, Taiwan; Chien-Lin Tsai — National Chin-Yi University of Technology, Taiwan; **Jyun-Hong Chen** — National Chin-Yi University of Technology, Taiwan

Poster Exhibition continued

POSTER SESSION 1 (continued)

Energy Storage & Thermal Systems
Day 1, 16:10–16:40

#196 Research on Air Flow Organization and Thermal Environment Simulation of Data Center Dry Cooler

Ke Cui — Alibaba Group Holding Limited, China; Mingyang Wang — Alibaba Group Holding Limited, China; Lu Wang — Tsinghua University, China; Kang Yuan — Tsinghua University, China; **Zhen Li** — Tsinghua University, China

#344 Investigation of a Liquid Piston Air Compressor for Near-Isothermal Compression and Enhanced Energy Efficiency

Krisnan K — Kumaraguru College of Technology, India; Brathikan Vijayamohan Mankayakarasi — Kumaraguru College of Technology, India; Rukaiya Beevi M — Kumaraguru College of Technology, India

POSTER SESSION 2

Buildings, AI & Smart Energy Systems
Day 2, 10:00–10:20

#83 Managing Scope 3 Category 1 Emissions through Supplier Engagement in the Real Estate Service Industry

Han Sen Teng — National Chengchi University, Taiwan; Yun-Sheng Hsu — Sinyi Group, Taiwan

#73 The Energy Paradox of Edge AI: Evaluating the Net Efficiency of Occupancy-Based HVAC Control on Heterogeneous Edge Platforms

Zhe Wang — Zhengzhou University of Light Industry, China; Hao Sun — University of Surrey, United Kingdom; John Kaiser Calautit — University of Nottingham, United Kingdom

#126 Engineering Single-Phase Spinel High-Entropy Oxides for Sustainable Green Hydrogen Production

Shaheryar Malik — King Fahd University of Petroleum and Minerals, Saudi Arabia

#177 Development of a Sustainable One-Part Alkali-Activated Binder

Mehtab Ahmad — Civil and Environmental Engineering KFUPM, Saudi Arabia; Amin Al Fakih — Assistant Professor, Department of Civil and Environmental Engineering, Saudi Arabia

#192 Influence of Ceramic Polishing Sludge on the Compressive and Flexural Strength of Ultra-High-Performance Concrete

Moneef Qaid — King Fahd University of Petroleum & Minerals, Saudi Arabia; Amin Al-Fakih — King Fahd University of Petroleum & Minerals, Saudi Arabia; Rida Assaggaf — King Fahd University of Petroleum & Minerals, Saudi Arabia

#200 Parametric Characterization and Operating Boundaries of Air and Liquid Cooling Architectures in High-Density Data Centers

Xinyi Wang — Tsinghua, China; Lu Wang — Tsinghua University, China; Haojiang Ran — Tsinghua University, China; Tiexiao Xu — Tsinghua University, China; Bo Zhang — Tsinghua University, China; Zhen Li — Tsinghua University, China

POSTER SESSION 2 (continued)

Buildings, AI & Smart Energy Systems
Day 2, 10:00–10:20

#227 Thermal-moisture transfer characteristics and configuration optimization of PCM-integrated wall

Ziyu Leng — Southwest Jiaotong University, China; Xiaoling Cao — Southwest Jiaotong University, China; Yanping Yuan — Southwest Jiaotong University, China; Yong Zhang — Southwest Jiaotong University, China

#242 Data-Driven Optimization Control of HVAC Chilled Water Systems in Sustainable Buildings

Anyu Zhao — Tianjin University, China

#255 Smart Indoor Environmental Monitoring and Control Using a Residential Digital Twin with Vision-Language Derived Scene States

Mohammad Hafiz bin Ismail — Universiti Teknologi MARA, Malaysia; Tajul Rosli Razak — Faculty of Computer and Mathematical Science, Universiti Teknologi MARA (UiTM), Shah Alam, 40450, Malaysia; Hasila Jarimi — Solar Energy Research Institute. The National University of Malaysia, Bangi, 43600, Malaysia

#283 Reinforcement Learning Based Load Frequency Control in Renewable-Integrated Hybrid Power Systems

Amil Daraz — Center for Sustainable Energy Systems, King Fahd University of Petroleum and Minerals, Saudi Arabia

#304 Spectrally selective Cs₂WO₄-enabled semi-transparent photovoltaic facade for solar-driven thermal disinfection

Yifei Gao — Department of Thermal Science and Energy Engineering, University of Science and Technology of China, Hefei, China.; Jie Ji — Department of Thermal Science and Energy Engineering, University of Science and Technology of China, Hefei, China.; Yuzhe Zhang — Department of Thermal Science and Energy Engineering, University of Science and Technology of China, Hefei, China.

#305 Comprehensive performance prediction of a semi-transparent PV-PCM ventilated curtain wall system coupled with an air handling unit

Xinran Wang — School of Engineering Science, University of Science and Technology of China; Jie Ji — School of Engineering Science, University of Science and Technology of China; Yayun Tang — Institute for Carbon Neutrality, Tsinghua University, China; Wei Ke — School of Engineering Science, University of Science and Technology of China

#307 Development and validation of an MS2-based thermal inactivation model for viral aerosols in an air-purifying Trombe wall

Suyue Xu — Department of Thermal Science and Energy Engineering, University of Science and Technology of China, Hefei, China.; Jie Ji — Department of Thermal Science and Energy Engineering, University of Science and Technology of China, Hefei, China.

#121 Data-driven Model Predictive Control for Intelligent Natural Ventilation in Office Buildings

Lingqian Wu — Tongji University, China; Hangyue Zhang — Tongji University, China; Tianxin Chang — Tongji University, China; **Zhi Zhuang** — Tongji University, China

Poster Exhibition continued

POSTER SESSION 2 (continued)

Buildings, AI & Smart Energy Systems
Day 2, 10:00–10:20

- #266 A Digital Twin Framework for Intelligent Air Quality Monitoring and Sustainable Urban Environmental Management in Malaysia**
Hasila Jarimi — Universiti Kebangsaan Malaysia; Xiao Li — University of Aberdeen, United Kingdom; Yanan Zhang — Calling Bridge Limited, United Kingdom; Tajul Rosli Razak — Universiti Teknologi MARA, Malaysia; Nurfarhana Alyssa Ahmad Affandi — Universiti Kebangsaan Malaysia; Muhammad Amir Aziat Ishak — Universiti Kebangsaan Malaysia; Adnan Ibrahim — Universiti Kebangsaan Malaysia; Ahmad Fazlizan — Universiti Kebangsaan Malaysia; Norasikin Ahmad Ludin — Universiti Kebangsaan Malaysia; **Ubaidah Syafiq** — Universiti Kebangsaan Malaysia; Mohammad Hafiz bin Ismail — Universiti Teknologi MARA, Malaysia
- #248 Characterisation of Bedroom thermal microclimates influencing Sleep quality in diverse Residential settings in Kerala.**
Anagha Ashok — Department of Architecture and Planning, College of Engineering Trivandrum, Kerala, India; **Deepa Rani R** — Department of Architecture and Planning, College of Engineering Trivandrum, Kerala, India
- #319 Development of a GFM/GFL-based Microgrid Platform and Assessment of Microgrid Resilience Under Different GFL Penetration Rates**
Po-Yuan Wu — National Sun Yat-sen University, Taiwan; Yi-Quan Liao — National Sun Yat-sen University, Taiwan; Ting-Yue Chen — National Sun Yat-sen University, Taiwan; **Sei Zhen Khong** — National Sun Yat-sen University, Taiwan; Kuo-Sheng Hsieh — Taiwan Power Research Institute, Taiwan; Wen-Zhuang Jiang — Taiwan Power Research Institute, Taiwan; Hung-Wei Chen — Taiwan Power Research Institute, Taiwan; Ching-Jung Liao — Taiwan Power Research Institute, Taiwan

POSTER SESSION 3

Materials, Environment & Applications
Day 3, 11:45–12:05

- #119 Sustainable Waste-Derived Carbon Material for Supercapacitor Applications**
Muhammad Aftab — King Fahd University of Petroleum and Minerals, Saudi Arabia; Zahid Manzoor Bhat — King Fahd University of Petroleum and Minerals, Saudi Arabia; Mohammad Furquan — King Fahd University of Petroleum and Minerals, Saudi Arabia; Dr. Mohammad Qamar — King Fahd University of Petroleum and Minerals, Saudi Arabia
- #152 Numerical Analysis and the Impact of Phase Change Material on Semi-Transparent CdTe Photovoltaic Thermal (PVT) for Building Application**
Farhana Razali — Solar Energy Research Institute, Universiti Kebangsaan Malaysia; Hasila Jarimi — Department of Architecture and Built Environment, The University of Nottingham, University Park, Nottingham, United Kingdom; Emy Zairah Ahmad — Faculty of Electrical Technology and Engineering, Universiti Teknikal Malaysia Melaka; Shafidah Shafian — Solar Energy Research Institute (SERI), Universiti Kebangsaan Malaysia; Wardah Fatimah Mohammad Yusoff — Architecture Department, Faculty of Engineering, Universiti Kebangsaan Malaysia; Muaz Mohd Zaini Makhtar — School of Industrial Technology, Bioprocess Technology Division, Universiti Sains Malaysia; Ubaidah Syafiq — Solar Energy Research Institute (SERI), Universiti Kebangsaan Malaysia; Muslizainun Mustapha — Department of Applied Physics, Faculty of Science and Technology, Universiti Kebangsaan Malaysia
- #162 Sustainable Composite Polyelectrolyte Complex Membranes for Environmentally Friendly Water Desalination**
Abdullah Sani — Material Science and Engineering KFUPM, Saudi Arabia; Dr M. Irshad Baig — Material Science and Engineering KFUPM, Saudi Arabia
- #163 Phase-Field Benchmark Study of Quartic and Sixth-Order Free Energies with Applications to Sustainable Energy Materials**
Abdul Wahab — King Fahd University of Petroleum and Minerals, Saudi Arabia; Abdullah Shah — King Fahd University of Petroleum and Minerals, Saudi Arabia
- #169 Ash Particle Interactions with High-Temperature Walls: Effects of Ammonium Bisulfate and Collision Parameters**
Jiakai Zhang — School of Energy and Mechanical Engineering, Shanghai University of Electric Power, China; Haorui Yu — School of Energy and Mechanical Engineering, Shanghai University of Electric Power, China; Weiguo Pan — School of Energy and Mechanical Engineering, Shanghai University of Electric Power, China
- #206 Synergistic Effects of Nano-Natural Pozzolan and ZIF-67 on the Mechanical Performance and Microstructure of Cement Composites**
Saeed Babghoom — King Fahd University of Petroleum and Minerals, Saudi Arabia; Ashraf Bahraq — King Fahd University of Petroleum and Minerals, Saudi Arabia; Mohammed Alosta — King Fahd University of Petroleum and Minerals, Saudi Arabia

Poster Exhibition continued

POSTER SESSION 3 (continued)

Materials, Environment & Applications
Day 3, 11:45–12:05

- #231** **Molecular-Descriptor-Based Machine Learning Analysis of Functional Group Structure-Property Relationships in Composite Phase Change Materials**
Yuhang Chen — Beijing Institute of Technology, China; Shuli Liu — Beijing Institute of Technology, China
- #301** **Integrated Catalytic Upgrading of Biomass-Derived Furfural into High-Density Sustainable Aviation Fuel Components**
Wuyu Wang — Southeast University, China; Xinghua Zhang — Southeast University, China; Longlong Ma — Southeast University, China
- #309** **Efficient Production of Biofuels from Lignocellulosic Biomass: Transforming Furfural Derivatives into Sustainable Fuels**
Peng Zheng — Southeast University, China; Qi Zhang — Southeast University, China
- #323** **Efficient Hydrodeoxygenation of biomass-derived oxygenates to sustainable aviation fuel over highly dispersed Ni-supported hierarchical HZSM-5 catalyst**
Luying Lu — Southeast University, China; Xinghua Zhang — Southeast University, China; Longlong Ma — Southeast University, China
- #361** **Fabrication of Continuous Catalyst Coating at Low Iridium Loading for PEM Water Electrolysis**
Yifan Wang — University of Science and Technology of China
- #362** **Bioinspired self-adaptive thermoelectric device with hydrogen bonding-enhanced robustness**
Fengqi Xu — university of science and technology of china
- #312** **Transparent wood for next-generation windows: An evaluation of thermal transmittance, solar heat gain coefficient, and energy performance**
Ahmad Fadel Alkahlout — Universiti Sains Malaysia (USM)
- #54** **Rethinking Green Appeals for Generation Z Electric Vehicle Adoption in Taiwan**
Cheng-Feng Wu — Department of Business Administration, National Taipei University, Taiwan; Meng-Chen Lin — School of Business, Wuchang University of Technology, China; **Chei-Chang Chiou** — National Changhua University of Education, Taiwan; Keng Sheng Ting — Bachelor Degree Program of Artificial Intelligence Applications Engineering, Minth University of Science and Technology, Taiwan; Jian-Ji Huang — Department of Multimedia Game Development and Application, Hungkuang University, Taiwan.

POSTER SESSION 3 (continued)

Materials, Environment & Applications
Day 3, 11:45–12:05

- #284** **Potential Application of Passivhaus Standards in Hot Climates of Saudi Arabian Residential Buildings**
Siddig Omer — University of Nottingham, United Kingdom
- #273** **Hyperchaotic Map-Based Cryptographic Cybersecurity Framework for Artificial Intelligence-Enhanced Renewable Energy Systems**
Naveed Hussain — King Fahd University of Petroleum and Minerals, Saudi Arabia

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SET2026 Organising Committee

Kuala Lumpur, August 2026



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