



ICAERA
2025

6th International Conference On Advances In Energy Research And Applications (ICAERA 2025)

October 29 - 31, 2025 | Barcelona, Spain

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WELCOME MESSAGE FROM THE CONFERENCE CHAIR

On behalf of the International Academy of Science, Engineering and Technology (International ASET Inc.), the organizing committee would like to welcome you to the 6th International Conference on Advances in Energy Research and Applications (ICAERA 2025).

The goal of ICAERA 2025 is to provide a space for scholars from all over the world to present advances in the relevant fields and to foster an environment conducive to exchanging ideas and information. This conference will also provide an ideal environment to develop new collaborations and meet experts on the fundamentals, applications, and products of the mentioned fields.

In the sixth meeting of this conference, two Plenary speakers and one keynote speaker will share their expertise with the aim of exposing participants to a wide spectrum of applications, and to foster crosspollination of ideas and develop new research interests. In addition, approximately 6 papers will be presented from professors, students, and researchers across the world.

We thank you for your participation and contribution to the 6th International Conference on Advances in Energy Research and Applications (ICAERA 2025). We wish you a very successful and enjoyable experience.

Dr. Sohel Murshed
University of Lisbon, Portugal
Conference Chair
ICAERA 2025

Dr. Boguslaw Kruczek
University of Ottawa, Canada
Conference Chair
ICAERA 2025

ABOUT ICAERA 2025

The 6th International Conference on Advances in Energy Research and Applications (ICAERA 2025) aims to become the leading conference in fields related to Energy Research and Applications. The goal of ICAERA 2025 is to gather scholars from all over the world to present advances in the relevant fields and to foster an environment conducive to exchanging ideas and information. This conference will also provide an ideal environment to develop new collaborations and meet experts on the fundamentals, applications, and products of the mentioned fields.

ICAERA 2025 is an international conference will be held yearly. This conference focus on all aspects Energy Research and Applications. ICAERA 2025 Will be held this year as a hybrid conference in Barcelona , Spain

ICAERA 2025 is an acronym for **I**nternational **C**onference, on **E**nergy **R**esearch and **A**pplications.

- The proceedings are published in Ottawa, Canada.
- All papers were peer-reviewed
- The congress proceedings is published under an ISSN and ISBN number
- Each paper is assigned a unique DOI number by [Crossref](#)
- The conference proceedings is indexed by [Google Scholar](#)
- The proceedings is permanently archived in [Portico](#) (one of the largest community-supported digital archives in the world)

■

Google Scholar

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SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the ICAER 2025 Conference:



Dr. Sohel Murshed
University of Lisbon, Portugal
Conference Chair



Dr. Boguslaw Kruczek
University of Ottawa, Canada
Conference Chair

Scientific Committee Members

- **Dr. Müslüm Arıcı**, Kocaeli University, Turkey
- **Dr. Hitesh Bindra**, Purdue University, USA
- **Dr. Surendra Kachhwaha**, Pandit Deendayal Energy University, India
- **Dr. Shafiqur Rehman**, King Fahd University of Petroleum and Minerals, Saudi Arabia
- **Dr. Fabio Subba**, Politecnico di Torino, Italy
- **Dr. Turgut Türsoy**, Near East University, Nicosia, Turkey
- **Dr. Somchai Wongwises**, King Mongkut's University of Technology Thonburi, Thailand
- **Dr. Stavros Yanniotis**, Agricultural University of Athens, Greece

PLENARY/KEYNOTE SPEAKERS

The Plenary & keynote information for the 6th International Conference on Advances in Energy Research and Applications (ICAER 2025) is as follow:

Plenary Speakers



Dr. Leon L. Shaw
Illinois Institute of Technology, USA



Dr. Shanwen Tao
University of Warwick, UK

Keynote Speaker



Dr. Antonis Sergis
Imperial College London, UK

PLENARY SPEAKER



Title: Long Cycle Life Sodium-Ion Batteries for Grid-Scale Energy Storage

Dr. Leon L. Shaw, Illinois Institute of Technology, USA

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Dr. Leon L. Shaw is Rowe Family Endowed Chair Professor in Sustainable Energy and Professor of Materials Science and Engineering at Illinois Institute of Technology, Chicago, Illinois, United States. He is the founding director of NSF Center of All-Solid-State Batteries. Dr. Shaw has extensive experience in nanomaterials synthesis and processing for applications in structural materials, hydrogen storage, Li-ion batteries, Na-ion batteries, and solid-state batteries. He has authored and co-authored more than 320 archival refereed publications in these areas. Among these 300+ publications 238 are journal articles and invited chapters for books and encyclopedias. His publications have been cited more than 15,800 times with h-index of 67 and i10-index of 216 (according to Google Scholar). His publications are ranked top 1.4% citations for career-long impact among all scientific fields and top 0.2% citations for career-long impact in the subfield of “materials” (based on the composite score c compiled by Elsevier). His accomplishments are recognized worldwide with many honors and awards, including “Scientist Medal” in 2024 and “Energy Award” in 2018 presented by International Association of Advanced Materials, and “Researchers to Know in 2020” recognized by Illinois Science & Technology Coalition. Dr. Shaw is a Member of EU Academy of Sciences, a Fellow of International Association of Advanced Materials, a Fellow of ASM International, a Fellow of the World Academy of Materials and Manufacturing Engineering, and a Member of the Connecticut Academy of Science and Engineering.

PLENARY SPEAKER



Title: N/A

Dr. Shanwen Tao, University of Warwick, UK

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Shanwen Tao, Professor of Chemical Engineering & Sustainable Processes. One of the Warwick-Monash Research Alliance Professors jointly appointed by University of Warwick and Monash University. Before moved to University of Warwick, Tao studied and worked at University of Science & Technology of China (USTC), Materials Department, Risø National Laboratory of Denmark, School of Chemistry, University of St Andrews, Heriot-Watt University and University of Strathclyde. Prof. Tao is Fellow of Royal Society of Chemistry (FRSC). Tao is on the list of 'Stanford Universities global list recognising the top 2% of the world's leading scientists'. Tao is No. 500 in the globally recognised 186,014 scientists in this area (within 0.27%) in area of Energy. Tao has co-authored over 160 journal papers with H-index of 50, more than 11,000 citations (Google scholar data). Some of the papers has been published in highly ranked journals such as Nature Materials, Materials Today, Advanced Materials, Advanced Energy Materials, Advanced Science, Energy Storage Materials, Energy & Environmental Science, Science Advance etc.

PLENARY SPEAKER



Title: N/A

Dr. Antonis Sergis, Imperial College London, UK

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Dr. Antonis Sergis is a Lecturer in Mechanical Engineering at Imperial College London, where he leads pioneering research in advanced heat transfer and latent heat storage. His work integrates experimental diagnostics, molecular dynamics simulations, and system-level innovation to enhance the performance of novel coolants, such as Nanofluids, and phase change materials (PCMs) in high heat flux and energy storage applications. Dr. Sergis has developed novel tools and models that have informed design guidelines for fusion energy systems (e.g., CCFE, EUROfusion), and he holds a patent in fluid dynamics. His research on PCM-based inter-seasonal thermal storage has received institutional recognition and earned him a Net-Zero Pollution Pioneer runner-up award. He has also contributed to sustainable energy solutions for electric vehicles and cultural heritage preservation. With a strong publication record in top-tier journals, Dr. Sergis has established international collaborations with institutions such as KAIST and the University of Lisbon. He is an active member of professional bodies in the UK including IMechE, RAeS, and IoP, and contributes to EU COST actions and UK energy policy committees. His work has been showcased at major outreach events and continues to influence both academic research and industrial innovation in the energy sector.

LIST OF PAPERS

The following papers were presented at the 6th International Conference on Advances in Energy Research and Applications (ICAER 2025)

Plenary & Keynote Speaker

Long Cycle Life Sodium-Ion Batteries for Grid-Scale Energy Storage

Authors: Leon L. Shaw

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Plenary & Keynote Speaker

Long Cycle Life Sodium-Ion Batteries for Grid-Scale Energy Storage

Authors: Leon L. Shaw

Energy Conversion and Storage

Multi-Criteria Optimization of Battery Operation in Grid-Connected Hybrid Renewable Energy Systems Using an Enhanced Tabu Search Framework

Authors: Darius Prancėvičius, Mantas Marčiukaitis, Gediminas Kairaitis

Development of Composite Fuel Based On Digestate from Biogas Plants

Authors: Miloš Matúš, Miroslava Švecová, Peter Križan, Lucia Ploskuňáková

Impact of PV Panel Cleaning on Solar-Assisted Dates Drying Performance in Arid Climates

Authors: Ibrahim A. Alnaser, Hussain Alghamdi, Mohammad Rezaul Karim

Nio Nano- And Micro-Particles Prepared By Solvothermal Method – Good Catalysts for CO₂ Methanation

Authors: Arkadii Bikbashev, Libor Kvitek, Tomáš Stryšovský

Role of Graphene Oxide in Composite Phase Change Materials for Thermal Storage Systems

Authors: Tan L. Wong, Sumudu Adikaram, Cristina Valles, Adel Nasser, Chamil Abeykoon

Analytical study of the hydrodynamics of the interaction between waves and submerged elastic plates: obtaining the flux energy for piezoelectric energy generation

Authors: Amadelis Quesada Torres, Federico Mendez, Eric Gustavo Bautista Godinez

LIST OF PAPERS

Fluid Flow and Heat Transfer

Experimental Evaluation of Phase Change Material Buffering in Radiant Floor Heating

Authors: Mohammadmehdi Hosseini, Syeda Humaira Tasnim, Shohel Mahmud

SPONSORS

International ASET Inc. would like to thank the following sponsors for their support of ICAER 2025:



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ICAERA 2025

The 7th International Conference on Advances in Energy Research and Applications (ICAERA 2026) will be held on October 28 - 30, 2026 in London, United Kingdom



ICAERA 2026 7th International Conference on Advances in Energy Research and Applications

October 28 - 30, 2026 - London, United Kingdom
<https://2026.icaera.com>

For inquiries and to obtain further information on the congress, please
visit the [website](https://2026.icaera.com)

You can also email info@icaera.com or call us at:

+1-613-834-9999

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JOURNAL PUBLICATION

Selected articles from the conference will be published in the Journal of Fluid Flow, Heat and Mass Transfer (JFFHMT) after a secondary review process.

These journals has adopted to the open-access model, meaning all free access to the journals' articles and content with no need for subscription. This ensures larger audience and therefore higher citations.

All published papers of JFFHMT will be submitted to Google Scholar and be indexed in Scopus. Additionally, they will be permanently archived in Portico (one of the largest community-supported digital archives in the world) and will be assigned unique DOIs.

Please visit the following websites for the respected journals: **JFFHMT:** <https://jffhmt.avestia.com>

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ETHICS & MALPRACTICE

At International ASET Inc., we take matters that relate to ethics in publishing very seriously. We believe that the peer-review publication process is a vital building block of academia, and its integrity must be maintained at all costs, which is why every article will be peer-reviewed by several experts in the field. Under peer-review, experts in the related fields are required to provide opinions and comments on the improvements of the submissions.

We are proud of our efforts towards abiding by the guidelines of ethics, integrity, and high standards in publishing.

Following are the ethics guidelines set by the organizers for the authors and the reviewers of the conference:

Scientific Committees

Scientific committees consisting of experts in the fields are established. The committees oversee the peer-review and publication process. To see the scientific committee members, please follow the link: [Scientific Committee](#)

Equality and Decisions

One or more reviewer, scientific committee member, or chair, (internal or external), are responsible for evaluating the relevance of the submitted manuscripts to the proceedings, technical and scientific merit, originally, and impact. These evaluations are to be carried out regardless of ethnicity, religion, gender, sexual orientation, political beliefs, and institutions. Successive to peer-review, the Chair has full authority and is solely responsible for the published content and the process thereof.

Confidentiality

Scientific committee member(s) and publishing staff may not disclose manuscripts or their content, directly or indirectly, to anyone other than individuals invited to review the manuscript (whether they accept or not), other reviewers of the same publications, and publishing staff.

Conflicts of Interest

Scientific committee member(s) and publishing staff may not utilize the contents of submitted manuscripts whether accepted or rejected, directly or indirectly for their own research purposes without prior written consent by the authors.

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Reviewers

Contribution to Decisions

In order for final decisions to be made regarding acceptance or rejection of papers, we rely on peer-review. Peer-review is the process of experts in the field reading, understanding, and objectively commenting on submitted papers. Through peer-review, scholars give back to the academic and scientific community by helping the chair(s) make decisions regarding manuscripts.

Promptness

Reviewers should promptly notify the chair(s) if they are unable or unqualified to carry out their reviewing duties. Reviewers should do their best to provide the reviews to the chair(s) as promptly as possible, and within the designated time-frame.

Acknowledgment of Source

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Reviewers must not share the contents of the manuscripts they receive for review, regardless of their decision to review or contents of the review, directly or indirectly, with anyone other than the person who has assigned the review.

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Reviewers should review manuscripts fairly and objectively, with supporting evidence or arguments, regardless of personal feelings or biases.

Conflicts of Interest:

Invited reviewers should immediately inform the chair(s) in case of a conflict of interest based on competitive, collaborative, personal, family, and other relationships with the authors or people involved in the work.

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Authors

Reporting Standards

The paper being submitted for the proceedings should be based on clear objective, discussion, and references. The findings, data, and the arguments being used in the paper should be accurate. It is author's responsibility to guarantee the authenticity of the data in the paper.

Authorship

Only persons who have significantly contributed to the work and the manuscript can be named authors on a paper. These contributions include the idea/concept, design, experiments, evaluation, analysis, drafting or revision of the manuscript, and others. Authors must all have agreed to be named as such and for the manuscript to be submitted. Anyone who has contributed based on the above, but the level of contribution is not significant, may appear in the acknowledgement section of the manuscript.

Acknowledgement of Source

Acknowledgement to other's work being used in the paper must be given at all times. Authors of the paper should give comprehensive credit where it is necessary, by citing the work, they use for supporting their own research.

Accuracy, Originality, and Plagiarism

Authors should describe their work and the results of their work accurately and in full. The level of provided accuracy and detail should be such that a reader can replicate the work independently. Inaccurate, incomplete, fraudulent, and misleading statements are considered unacceptable and unethical. Direct or indirect use of other people's work is not allowed, unless properly cited. Previous works that have influenced the current work should also be cited. Presenting someone else's work as one's own is strictly prohibited and is considered plagiarism.

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Authors are encouraged to share their data, software, or other sharable material online, provided copyright and ownership laws surrounding that particular project permit. Authors may also be asked to share such material with the chair(s), and/or reviewers, and must be willing to do so if asked.

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Authors must notify the chair(s) at the time of submission, if any factor outside the scope of the research has influenced any step of the work and manuscript writing. Examples of such factors include but are not limited to funding, grants, advisory and consultancy, stock ownership, current or past employment, and memberships, among others. All funding sources should be disclosed in the manuscript.

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ETHICS & MALPRACTICE

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Schedule:

This conference proceeding accompanies the conference, meaning a new proceedings will be published every year for the corresponding annual conference of this series.

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