



EHST
2021

**PROCEEDINGS OF THE 5TH
INTERNATIONAL CONFERENCE
ON ENERGY HARVESTING, STORAGE,
AND TRANSFER (EHST'21)**

May 21 - May 23, 2021 | ~~Niagara Falls, Canada~~ | Virtual Conference

**© COPYRIGHT 2021, INTERNATIONAL ASET INC. – ALL
RIGHTS RESERVED.**

ISBN: 978-1-927877-82-1 | ISSN: 2561-1097

TABLE OF CONTENTS

Welcome Message from the Conference Chair.....	3
About EHST’21.....	4
Scientific Committee.....	5
Keynote Speakers.....	6
List of Papers	9
Sponsors	11
Journal Special Issue.....	12
EHST’22.....	13
Ethics & Malpractice	14
Contact Us	19

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 5th International Conference of Energy Harvesting, Storage, and Transfer (EHST'21).

EHST'21 is aimed to become one of the leading international annual conferences in the fields related to energy harvesting, storage, and transfer. This conference will provide excellent opportunities to the scientists, researchers, industrial engineers, and university students to present their research achievements and to develop new collaborations and partnerships with experts in the field.

EHST is a series of international conferences held yearly. These conferences focus on all aspects of Energy Harvesting, Storage, and Transfer. Due to COVID-19, we have made the decision to hold the 5th International Conference of Energy Harvesting, Storage, and Transfer (EHST'21) virtually this year.

In the fifth meeting of this conference, two keynote speakers 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 10 papers will be presented from professors, students, and researchers across the world.

We thank you for your participation and contribution to the 5th International Conference of Energy Harvesting, Storage, and Transfer (EHST'21). We wish you a very successful and enjoyable experience.

Dr. Boguslaw Kruczek

*Conference Chair and Proceedings Editor
EHST'21*

Dr. Xianshe Feng

*Conference Co-Chair and Proceedings Editor
EHST'21*

Dr. Wael H. Ahmed

*Technical Program Chair
EHST'21*

ABOUT EHST'21

The 5th International Conference of Energy Harvesting, Storage, and Transfer (EHST'21) aims to become the leading annual conference in fields related to energy harvesting, storage, and transfer. The goal of EHST'21 is to gather scholars from all over the world to present advances in the fields related to energy harvesting, storage, and transfer 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.

EHST is a series of international conferences held yearly. These conferences focus on all aspects of Energy Harvesting, Storage, and Transfer. Due to COVID-19, we have made the decision to hold the 5th International Conference of Energy Harvesting, Storage, and Transfer (EHST'21) virtually this year.

EHST is an acronym for **E**nergy, **H**arvesting, **S**torage, and **T**ransfer.

The proceedings is 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

 Crossref

 PORTICO

[Return to Top](#)

SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the EHST'21 Conference:

Scientific Committee Chairs



[Dr. Boguslaw Kruczek](#)
University of Ottawa, Canada
Conference Chair



[Dr. Xianshe Feng](#)
University of Waterloo, Canada
Conference Co-Chair



[Dr. Wael H. Ahmed](#)
University of Guelph, Canada
Technical Program Chair

Scientific Committee Members

- Dr. Igor Zhitomirsky**, McMaster University, Canada
- Dr. Sylvie Lorente**, INSA Toulouse, France
- Dr. Jean Duquette**, Carleton University, Canada
- Dr. Hadis Zarrin**, Ryerson University, Canada
- Dr. Ali Tarokh**, Lakehead University, Canada
- Dr. Hany Farag**, York University, Canada
- Dr. Yanhai Du**, Kent State University, Canada
- Dr. Stefano Leonardi**, University of Texas, Dallas, USA
- Dr. ZhongYang Cheng**, Auburn University, USA
- Dr. Mohtada Sadrzadeh**, University of Alberta, Canada
- Dr. Leonardo Chamorro**, University of Illinois at Urbana-Champaign, USA
- Dr. Liang Yu**, Beijing Institute of Technology, China

KEYNOTE SPEAKERS

The keynote information for the 5th International Conference of Energy Harvesting, Storage, and Transfer (EHST'21) is as follows:



[Dr. Mohtada Sadrzadeh](#)
University of Alberta, Canada



[Dr. Stefano Leonardi](#)
The University of Texas at Dallas,
USA

EHST'21 KEYNOTE LECTURE



Titles: High-Performance Thin Film Composite Membranes for Energy Harvesting using Pressure Retarded Osmosis (PRO)

[Dr. Mohtada Sadrzadeh, The University of Texas at Dallas, USA](#)

[View Abstract](#)

[Return to Top](#)

Dr. Sadrzadeh researches the fundamental and applied aspects of membrane materials and process development, focusing on their applications in industrial/residential wastewater treatment and energy harvesting from wastewater. The contributions made by Dr. Sadrzadeh during his academic career thus far have led to the development and application of novel composite and nanocomposite membranes for water and gas treatment. He has an h-index of 32 (according to Scopus) with his 120+ refereed publications cited more than 2400 times. He is currently directing Advanced Water Research Lab (AWRL) at the University of Alberta that is equipped with membrane and nanoparticle synthesis and characterization equipment as well as membrane filtration systems. In this unique membrane-specialized facility in western Canada, ten graduate students and four postdoctoral fellows are working under his supervision on cutting-edge membrane technologies. He already graduated 7 PhD and 11 MSc students.

For more information please visit:

<https://ehstconference.com/keynote-speakers/>



Titles: Analysis and Optimization of Wind Farm Performances

[Dr. Stefano Leonardi, The University of Texas at Dallas, USA](#)

[View Abstract](#)

[Return to Top](#)

Stefano Leonardi is a professor at the Department of Mechanical Engineering University of Texas at Dallas. He got a Master degree in Aeronautical Engineering (1999) and a PhD in Theoretical and Applied Mechanics (2002) at the University of Rome "La Sapienza", Italy. He was Assistant Professor from 2006 to 2010 and Associate professor from 2010 to 2013 at the University of Puerto Rico at Mayaguez. He joined UTD in 2013. His research interests are in turbulent flows over rough walls, heat transfer, turbo-machinery, super-hydrophobic surfaces, wind turbines, cardiovascular flow, wildfire propagation and oceanography. Leonardi's research has been funded by National Science Foundation, Office of Naval Research, National Institute of Health, American Heart Association, National Renewable Energy Laboratory, Pratt & Whitney and Argonne National Lab.

LIST OF PAPERS

The following papers were presented at the 5th International Conference of Energy Harvesting, Storage, and Transfer (EHST'21).

Energy Conversion and Storage

Titles: Epoxy Resin for Sealing the Underground Hydrogen Storage Reservoirs

Authors: Dawid Gajda

[View Paper](#)

Titles: Analysis of a Trombe Wall Prototype with Thermal Energy Storage and Air Vent Management

Authors: Abdallah Alshantaf, Harmeet Singh, Paul O'Brien

[View Paper](#)

Titles: The Energy Storage Business Model Within Electricity Companies

Authors: Juliana D'Angela Mariano, Patrícia Monteiro Barbosa de Freitas, Lúcio de edeiros, Pedro Augusto Biasuz Block, Victor Baiochi Riboldi, Jair Urbanetz Junior

[View Paper](#)

Titles: Battery Energy Storage System Integration in Photovoltaic Buildings: A Pilot Project in a Brazilian University

Authors: Juliana D'Angela Mariano, Adriana Schilive de Souza, Jair Urbanetz Junior

[View Paper](#)

Titles: New Material and New Concepts Improve Hygroelectric Generator Output

Authors: Diana Lermen, Leandra P. dos Santos, Fernando Galembeck

[View Paper](#)

Titles: Shaping the Future with Flexible, Wire-Shaped Supercapacitors

Authors: Joe Sleppy, Dr. Isaiah Oladeji

[View Paper](#)

LIST OF PAPERS

The following papers were presented at the 5th International Conference of Energy Harvesting, Storage, and Transfer (EHST'21).

Energy Conversion and Storage

Titles: Multiple Electrodes-based Bubble Motion Active Transducer for Effective Electrical Energy Harvesting

Authors: K. Rohana Wijewardhana, Thilini K. Ekanayaka, E. N. Jayaweera

[View Paper](#)

Titles: Compressed Air Energy Storage for a Small-Scale Wind Turbine

Authors: Abdullah Bin Walid, Juliana D'Angela Mariano

[View Paper](#)

SPONSORS

International ASET Inc. would like to thank the following sponsors for their support of EHST'21:



uOttawa

[Return to Top](#)

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.

The publication fee will be waived for papers that win the best paper award. Other attendees will receive a 25% discount towards the publication fee of the journal.

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

Users are allowed to read, download, copy, distribute, print, search, or link to the full texts of the articles in this journal without asking prior permission from the publisher or the author. This is in accordance with the BOAI definition of open access.

All published papers of JFFHMT will be submitted to Google Scholar, Microsoft Academic Search, Open J-Gate, Mendeley, Index Copernicus International, Academic Index, Mendeley, Primo Central, and Genomics JournalSeek for possible indexing. 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.

EHST'22

The 6th International Conference on Energy Harvesting, Storage, and Transfer (EHST'22) will be held on June 8, 2022 - June 10, 2022 in Niagara Falls, Canada.



For inquiries and to obtain further information on the congress, please visit the [website](http://www.2022.ehstconference.com)

You can also email info@ehstconference.com or

call us at: +1-613-834-9999

[Return to Top](#)

ETHICS & MALPRACTICE

Publication Ethics and Publication Malpractice Statement

The following statement is mainly based on the [Code of Conduct and Best-Practice Guidelines for Journal Editors](#) (Committee on Publication Ethics, 2011).

Scientific Committee

Scientific Committee

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 below.

[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.

ETHICS & MALPRACTICE

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.

Confidentiality

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.

Fairness

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

Thoroughness

Reviewers should thoroughly read, understand, and provide constructive feedback with the aim of improving the manuscript. Reviewers should aim to identify and report technical issues, irregularities, mistakes, missing citations, and similarity to other published work.

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.

ETHICS & MALPRACTICE

Authors

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.

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.

Data and Material

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.

Dual Submissions

Submitting a manuscript to more than one venue (conference, journal, etc) simultaneously is not allowed. Presenting previously published work to be considered as a new submission, without a significant new interpretation or analysis, is prohibited.

ETHICS & MALPRACTICE

Conflicts of Interest

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.

Animal and Human Subjects

Works involving human and/or animal subjects must ensure that the work has abided by institutional guidelines, and pre-approved by required bodies. Moreover, consent must be acquired from participants, and privacy of subjects must be ensured. All of the above must be specified with clear statements in the manuscript.

Hazardous Material

It should clearly be identified in the manuscripts if the works have involved hazardous chemicals and material, or devices that can be harmful.

Reporting of Mistakes, Errata, and Retractions

If an author identifies a major error in a published paper, he/she must immediately identify the publisher. Regardless of whether a significant error is reported by the authors of the work or other readers, authors are obligated to take the necessary steps to correct the issue. It is decided on a case-by-case basis whether an erratum will be submitted to notify future readers of the error and correction, or whether the paper will be retracted.

Unethical/plagiarism issues mostly result in a retraction, while unintended mistakes will mostly result in the publication of an erratum.

ETHICS & MALPRACTICE

Publisher

Errata and Retractions

The publisher takes the necessary steps to prevent mistakes, academic and scientific misconduct, and unethical behavior, both intended and unintended. When mistakes are reported, the publisher works with chair(s) and authors to publish an erratum clarifying the issue. In cases where the mistakes are severe and significant, the paper might be retracted. If unethical behavior, plagiarism, academic and scientific misconduct, or other such activities are proven to have taken place by an author or authors, the publisher will retract the paper.

Content and Archiving

The publisher preserves and stores all content digitally on their own servers, as well as through partnering with Portico (Digital Preservation and Electronic Archiving Service).

Copyright and Access

The proceedings and related papers are all based on the open-access model, which means interested individuals and institutions can access the material for free.

Users are allowed to read, download, copy, distribute, print, search, or link to the full texts of the articles in this proceedings without asking prior permission from the publisher or the author. This is in accordance with the BOAI definition of open access.

Ownership and Management

This conference-proceedings is managed and operated by the International ASET (International Academy of Science, Engineering, and Technology) and Avestia Publishing (the publishing arm of ASET).

Schedule

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

CONTACT US

For inquiries and to obtain further information on the conferences, please visit our [website](#)
You can also email info@ehstconference.com or call us
at: +1-613-834-9999

[Return to Top](#)