



# Proceedings Of The 8th International Conference Of Recent Trends In Environmental Science And Engineering (RTESE 2024)

**June 13, 2024 - June 15, 2024 | Chestnut Conference Centre  
University of Toronto, Toronto Canada**

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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 8<sup>th</sup> International Conference of Recent Trends in Environmental Science and Engineering (RTESE 2024).**

RTESE 2024 is aimed to become one of the leading international annual conferences in the fields related to environmental science and engineering. 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.

RTESE is a series of international conferences held yearly. These conferences focus on all aspects of environmental science and engineering. The 8<sup>th</sup> International Conference of Recent Trends in Environmental Science and Engineering (RTESE 2024) is going to be held in a hybrid format, i.e. in person as well as online.

In the seventh meeting of this conference, three Plenary speakers and one Keynote speaker will share their expertises 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 8<sup>th</sup> International Conference of Recent Trends in Environmental Science and Engineering (RTESE 2024). We wish you a very successful and enjoyable experience.

**Dr. Mehrab Mehrvar**

*Conference Chair and Proceedings Editor  
RTESE 2024*

**Dr. Zhi Chen**

*Conference Co-Chair and Proceedings Editor  
RTESE 2024*

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# ABOUT RTESE 2024

**The International Conference of Recent Trends in Environmental Science and Engineering (RTESE 2024) aims to become the leading annual conference in fields related to environmental science and engineering.** The goal of RTESE 2024 is to gather scholars from all over the world to present advances in the fields related to environmental science and engineering 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.

RTESE is a series of international conferences held annually. These conferences focus on all aspects of environmental science and engineering. After successfully holding RTESE'17 to RTESE'23 in Canada, **RTESE 2024** is hosted in Chestnut Conference Centre - University of Toronto, Toronto, Canada as well this year. RTESE 2024 is going to be held in a hybrid format, i.e. in person as well as online.

**RTESE** is an acronym for **Recent Trends in Environmental Science and Engineering**.

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

 Google Scholar

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 PORTICO

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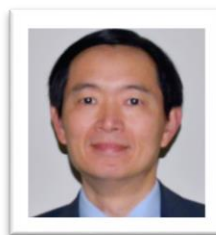
# SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the RTESE 2024 Congress:

## Scientific Committee Chairs



**Dr. Mehrab Mehrvar**  
Department of Chemical Engineering,  
Toronto Metropolitan University,  
Canada, Canada  
Conference Chair



**Dr. Zhi Chen**  
Concordia University, Canada  
Conference Co-Chair

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**Dr. Christopher Y H Chao**, The Hong Kong Polytechnic University, Hong Kong

**Dr. Paul Christodoulides**, Cyprus University of Technology, Cyprus

**Dr. Nenad Gucunski**, Rutgers University, Canada

**Dr. Rajiv Gupta**, Birla Institute of Technology & Science, India

**Dr. Abid Hussain**, Carleton University, Canada

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**Dr. Danuta Leszczynska**, Jackson State University, USA

**Dr. Jianbing (Jason) Li**, University of Northern British Columbia, Canada

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**Dr. Chavalit Ratanatamskul**, Chulalongkorn University, Thailand

**Dr. Vicente Rodríguez-González**, Institute for Scientific and Technological Research of San Luis Potosi, Mexico

**Dr. Jun Xia**, Wuhan University, China

**Dr. Qiuyan Yuan**, University of Manitoba, Canada

# KEYNOTE SPEAKERS

The Plenary and keynote information for the 8th International Conference on Recent Trends in Environmental Science and Engineering (RTESE 2024) is as follows:

## Plenary Speakers



[Dr. Chris Bauch](#)  
University of Waterloo,  
Canada



[Dr. Amarjeet Bassi](#)  
Western University, Canada



[Dr. Stan Kubow](#)  
McGill University, Canada

## Keynote Speaker



[Dr. Abdolhamid Akbarzadeh](#)  
McGill University, Canada

## RTESE 2024 PLENARY SPEAKER



**Titles:** Frontiers of Mathematical Modelling In Environmental Sciences: Social Dynamics, Tipping Points, And More

**Dr. Chris Bauch, University of Waterloo, Canada**

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Chris Bauch is a Professor of Applied Mathematics at the University of Waterloo, Canada. He studies coupled human-environment systems in ecology, environmental sciences, epidemiology and climate science. Study systems include coupled social-climate systems, forest-grassland ecosystem mosaics, and vaccine scares, among others. He also conducts research on data-driven dynamical systems with a specific focus on hybridizing dynamical systems and deep learning to predict and characterize tipping points. His work has reached a wide public audience through the media, having been covered in The New York Times, Scientific American, USA Today, BBC News and other sources. His research has been published in journals such as Science and Proceedings of the National Academy of the USA, and has been funded by organizations such as the World Health Organization, the United States Food and Drug Administration, DARPA, and the Bill and Melinda Gates Foundation.

# RTESE 2024 PLENARY SPEAKER



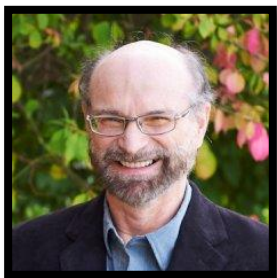
**Titles:** Nature Inspired Approaches for Carbon Sequestration and Eco-plastic Production  
[Dr. Amarjeet Bassi, Western University, Canada](#)

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Dr. Amarjeet Bassi is an Academician of Chinese Academy of Sciences (CAS), and Chair Professor & Director, The Research Institute for Water Security (RIWS), Wuhan University. He has ample experiences on hydrology, water resources management in China and international since 1987, served as the President of International Water Resources Association (IWRA, 2009-2012), Co-Chair, InterAcademy Council for Water Programme (2004-2010), Bureau Member of International Union of Geodesy and Geophysics (IUGG, 2019-2024) etc. He was awarded “International Hydrological Prize -Volker Medal”, given jointly by IAHS, UNESCO and WMO in 2014, the 2017’s State Natural Science Award in China, 2019’s IUGG Elected Fellow and 2022’s ICWRER Lifetime Achievement Award.



## RTESE 2024 PLENARY SPEAKER



**Titles:** The Protective Role of Nutrition Against Environmental Pollutant Toxicities

[Dr. Stan Kubow, McGill University, Canada](#)

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Stan Kubow is an Associate Professor at the School of Human Nutrition at McGill University and an honorary Associate Professor at University of Hong Kong and The University of Queensland. He has published more than 170 peer-reviewed research articles focused primarily on the impact of food components, diet, and nutrition in a variety of human diseases and environmental pollutant exposures. His research involves cell and tissue culture, animal models and clinical intervention trials to evaluate the health modulating properties of prebiotics and probiotics, peptides and a wide variety of phytochemicals against metabolic and neurological disorders and environmental pollutant toxicities. This research involves assessment of biomarkers of redox status, inflammation, metabolomics and the gut microbiome to explore mechanisms of action. He is ranked among the list that represents the top 2 percent of the most-cited scientists in the world according to the composite citation index released by Stanford University. He serves on the editorial boards of *Microorganisms*, *Nutrients*, and *Foods* and participates as a grant panel member of Tri-council funding agencies including Canadian Institutes of Health Research (CIHR) and the Natural Sciences and Engineering Research Council of Canada (NSERC). He is recruited regularly by industry to support nutritional, toxicological, biochemical research investigations via grant and research contract support.

# RTESE 2024 KEYNOTE SPEAKER



**Titles:** Multifunctional Metamaterials: A New Paradigm for Sustainable Energy Production  
[Dr. Abdolhamid Akbarzadeh, McGill University, Canada](#)

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Professor Hamid Akbarzadeh (PhD, PEng, CRC) is a Canada Research Chair in Multifunctional Metamaterials, an Associate Professor in Bio-inspired advanced materials and structures in the Bioresource Engineering Department, an Associate Member in Solid Mechanics in the Mechanical Engineering Department, and the Director of Advanced Multifunctional and Multiphysics Metamaterials Lab (AM3L) at McGill University, Montreal, Canada. He is also the recipient of CSME's I.W. Smith Award in 2023 from the Canadian Society for Mechanical Engineering. Professor Akbarzadeh joined McGill as an Assistant Professor in 2015 after two and half years of research on architected cellular solids as an NSERC Postdoctoral Fellow in the Mechanical Engineering Departments at McGill University and the University of New Brunswick. He completed his PhD studies in the Mechanical Engineering Department at the University of New Brunswick in 2013 working on the multiphysics simulation of smart advanced materials. Prior to his PhD, he received his MSc in the Mechanical Engineering Department (Solid Mechanics) at Amirkabir University of Technology in 2009 and his BSc degree in the Mechanical Engineering Department (Solid Mechanics) at Isfahan University of Technology in 2007.

# LIST OF PAPERS

## Environmental Science and Engineering

### Simultaneous CO<sub>2</sub> fixation, C-phycoerythrin production, and heavy metals removal via *Thermosynechococcus* sp. CL-1 (TCL-1) cultivation

Authors: Birgitta Narindri Rara Winayu, Kuan-Ya Chiu, Hsin-Ta Hsueh, Hsin Chu

### The Effects of Exposure to Air Pollution on obesity and obesity related anthropometric measures: A Systematic review and Meta-analysis

Authors: Mehnaz Munir, Sana Mushtaq, Amal Khan, Sandi M Azab, Shrikant I Bangdiwala, Om P Kurmi, Dany Doiron, Jeffrey R Brook, Laura Banfield , Russell J de Souza

### Study on Electrospinning MMImNTf<sub>2</sub>/polyacrylonitrile membrane for filtration of volatile organic compounds

Authors: : Chang-Chang Wang, Feng-Jen Chu, Chang Tian, Terng-Jou Wan

### Decoupled PID Controller Design for Multi-Input Multi-Output PVA Degradation Process in a UV/H<sub>2</sub>O<sub>2</sub> Photoreactor

Authors: Zahra Parsa, Ramdhane Dhib, Mehrab Mehrvar

# LIST OF PAPERS

## Environmental Protection & Stainability

### An Evaluation on the Curtailment of Run-of-River Hydropower Systems and Implications for Sustainable Hydrogen Production

Authors: Selisa R. Andrus, Terry L. Alford

### Effect of Humidity and Oxygen Vacancies in Photocatalytic Air Treatment

Authors: Alireza Ranjbari, Kristof Demeestere, Christophe Walgraeve, Ki-Hyun Kim, Philippe M. Heynderickx

## Poster Session

### Lignin Valorization to Polyhydroxyalkanoates Assisted by Volatile Fatty Acids Addition

Authors: Jiachen Sun, Kai-Chee Loh

# SPONSORS

International ASET Inc. would like to thank the following sponsors for their support of RTESE 2024:



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# JOURNAL PUBLICATION

**Selected articles from the conference will be published in the International Journal of Environmental Pollution and Remediation (IJEPR)**

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.

All published papers of IJEPR will be submitted to Google Scholar. 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 website for the respected journal:  
IJEPR: <https://ijepr.avestia.com/>

# RTESE 2025

The 9<sup>th</sup> International Conference of Recent Trends in Environmental Science and Engineering (RTESE 2024) will be held in July 17, 2025 - July 19, 2025 | Imperial College London Conference Center, London, United Kingdom.



For inquiries and to obtain further information on the congress, please visit the [website](http://www.2025.rtese.com)

You can also email [info@rtese.com](mailto:info@rtese.com) or call us at: +1-613-834-9999

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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.



# 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.

### ***Acknowledgment of Source***

The reviewer should notify the chair(s) if they find any similarities in the paper being reviewed and any other work that has been published previously.

### ***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.

### ***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

### ***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.

### ***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.

# ETHICS & MALPRACTICE

## ***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.

## ***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 inform 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 congress,  
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You can also email [info@rtese.com](mailto:info@rtese.com) or call us at: +1-613-834-9999

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