



**PROCEEDINGS OF THE 5<sup>TH</sup>  
INTERNATIONAL CONFERENCE  
OF RECENT TRENDS IN ENVIRONMENTAL  
SCIENCE AND ENGINEERING (RTESE'21)**

**May 17, 2021 - May 19, 2021 | ~~Niagara Falls, Canada~~ | Virtual Conference**

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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 5<sup>th</sup> International Conference of Recent Trends in Environmental Science and Engineering (RTESE'21).**

RTESE'21 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'21 is a series of international conferences which are held yearly. These conferences focus on all aspects of environmental science and engineering. Due to COVID-19, we have made the decision to hold the 5<sup>th</sup> International Conference of Recent Trends in Environmental Science and Engineering (RTESE'21) virtually this year.

In the fifth meeting of this conference, four 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 8 papers will be presented from professors, students, and researchers across the world.

We thank you for your participation and contribution to the 5<sup>th</sup> International Conference of Recent Trends in Environmental Science and Engineering (RTESE'21). We wish you a very successful and enjoyable experience.

**Dr. Mehrab Mehrvar**

*Conference Chair and Proceedings Editor  
RTESE'21*

**Dr. Zhi Chen**

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

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# ABOUT RTESE'21

**The International Conference of Recent Trends in Environmental Science and Engineering (RTESE'21) aims to become the leading annual conference in fields related to environmental science and engineering.** The goal of RTESE'21 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 yearly. These conferences focus on all aspects of environmental science and engineering. Due to COVID-19, we have made the decision to hold the 5th International Conference of Recent Trends in Environmental Science and Engineering (RTESE'21) virtually this year.

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

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

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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'21 Congress:

## Scientific Committee Chairs



**Dr. Mehrab Mehrvar**

**Ryerson University, Canada**

Conference Chair



**Dr. Zhi Chen**

**Concordia University, Canada**

Conference Co-Chair

## Scientific Committee Members

- **Dr. Jianbing (Jason) Li**, University of Northern British Columbia, Canada
- **Dr. Younggy Kim**, McMaster University, Canada
- **Dr. Fumitake Nishimura**, Kyoto University, Japan
- **Dr. Gil Bohrer**, The Ohio State University, USA
- **Dr. Amin Elshorbagy**, University of Saskatchewan, Canada
- **Dr. Bryan Karney**, University of Toronto, Canada

# KEYNOTE SPEAKER

We are very happy to announce the following keynote speakers for the 5th International Conference of Recent Trends in Environmental Science and Engineering (RTESE'21):



**Dr. Gil Bohrer**

The Ohio State University, USA



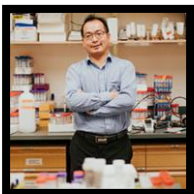
**Dr. Bryan Karney**

University of Toronto, Canada



**Dr. Amin Elshorbagy**

University of Saskatchewan, Canada



**Dr. Jianbing Li**

University of Northern British Columbia, Canada

## RTESE'21 KEYNOTE SPEAKERS



**Titles:** Going Beyond the “Whole Wetland”: Small-Scale Within-Wetland Heterogeneity, Translates To Big Difference in Methane Flux Dynamics and Regulation

[Dr. Gil Bohrer, The Ohio State University, USA](#)

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Gil Bohrer received a PhD from the Department of Civil and Environmental Engineering at Duke University, in 2007. He was a Harvard University Center for the Environment Fellow 2007-2008. He is a professor at the Department of Civil, Environmental and Geodetic Engineering at the Ohio State University since 2008. Bohrer’s research centers on understanding the role and dynamics of the ecosystem in atmospheric exchange, at the resolution of individual plants. He developed a canopy large eddy simulation to study the role of canopy structure in transport and surface uptake of seed, pollen and atmospheric pollutants. He developed a plant hydrodynamic model to study the effects of the hydraulic traits and behavior of trees on transpiration dynamics during water stress. He is one of the national Ameriflux core site PIs, and contributes long-term observations of ecosystem carbon and methane fluxes from forest and wetland sites. His research in wetlands is combining observations and modeling to identify the role of small-scale within-wetland ecological and hydrological heterogeneity in regulating the fluxes of methane and CO<sub>2</sub>.



**Titles:** The Profound but Often Forgotten Significance of Energy as a Measure of Change of State

[Dr. Bryan Karney, University of Toronto, Canada](#)

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Bryan Karney graduated from the University of British Columbia with a B.A.Sc. degree in 1980 and a Ph.D. in Civil Engineering in 1984. His first academic appointment was at the University of Calgary in 1985 but he has been at the University of Toronto since 1987. Bryan is currently a professor of Civil Engineering and has been the Associate Dean of the Cross-Disciplinary Programs office in the Faculty of Applied Science and Engineering since 2006. Bryan is also a principal of HydraTek with more than 30-years experience in providing comprehensive hydraulic and hydraulic transient consulting services on a wide range of fluid systems, including water, wastewater, storm, oil, gas, and jet fuel. Bryan has spoken and written widely on subjects related to water resource systems, energy issues, hydrology, climate change, optimization, engineering education, and engineering ethics. He was Associate Editor for the ASCE’s Journal of Hydraulic Engineering from 1993 to 2005 and has been an Associate Editor for IAHR’s Journal of Hydraulic Research since 2016. He has written numerous papers and has been awarded a number of teaching and research awards.

## RTESE'21 KEYNOTE SPEAKERS



**Titles:** Water-Energy-Food Nexus: Rethinking the Integrated Resources Management and Modeling  
[Dr. Amin Elshorbagy, University of Saskatchewan, Canada](#)

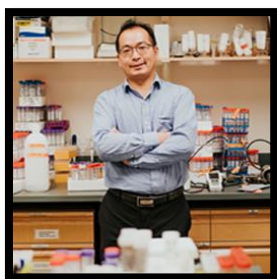
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Dr. Amin Elshorbagy, a professor of hydrology and water resources engineering at the University of Saskatchewan, is a licensed professional engineer with the Association of Professional Engineers and Geoscientists (APEGS) of Saskatchewan. The research and expertise of Dr. Elshorbagy are focused on, and link, the areas of hydrologic and water resources systems modeling and decision analysis through synthesizing the results of various modeling tools and techniques to support the decision making process. Dr. Elshorbagy also works extensively on integrated water resources management of trans-boundary rivers, attempting to address the challenges of sustainable utilization of water resources in light of the past hydroclimatic conditions as well as possible future changes.

**For more information please visit:**

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



**Titles:** Value Added Utilization of Petroleum Sludge Waste  
[Dr. Jianbing Li, University of Northern British Columbia, Canada](#)

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Dr. Jianbing Li is a professor in the environmental engineering program at the University of Northern British Columbia (UNBC). He obtained his PhD degree in environmental systems engineering from the University of Regina in 2003. He has research interests in environmental pollution control, petroleum waste management, contaminated soil and groundwater remediation, environmental modeling and decision analysis, and environmental risk assessment. He has produced more than 230 publications in international journals and conferences, with a h-index of 39 (Google Scholar). His research has been supported by a number of federal, provincial and municipal funding organizations.

**For more information please visit:**

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



# LIST OF PAPERS

## Water and Air Pollutions and Treatments

**Titles:** Source Identification of Continuous Discharge Pollution in River Accidents Based On A DREAM Inverse Method

**Authors:** Yinying Zhu, Zhi Chen

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**Titles:** Challenges and Critical Water Quality Issues in Micro Water Systems in British Columbia, Canada

**Authors:** Zawad Abedin, Jianbing Li, Guangji Hu

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**Titles:** Particle Pollution and Urban Forests: An Estimation of Particle Density on Leaves of Urban Plants Using Scanning Electron Microscopy

**Authors:** Samira Muhammad, Karen Wuyts, Karolien De Wael, Roeland Samson

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**Titles:** Quantifying Water Use, Conservation and Footprint in the Winery Industry

**Authors:** Melody Blythe Johnson, Mehrab Mehrvar

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**Titles:** Adverse Effect of Direct Discharge of Hot Spring Tributaries into Rivers on Life Aquatic Ecosystems

**Authors:** Yuly Sánchez<sup>1</sup>, Mehrab Mehrvar , Lynda McCarthy, Edgar Quiñones-Bolaños , Luis Cheu , Jairo Chacón

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**Titles:** ARX-PID/NARX-PID Modelling and Control of UV/H<sub>2</sub>O<sub>2</sub> Tubular Photoreactor for PVA Degradation in Water

**Authors:** Yi Ping Lin, Ramdhane Dhib, Mehrab Mehrvar

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# LIST OF PAPERS

## Water and Air Pollutions and Treatments

**Titles:** People's Recycling Behavior in Cape Town-South Africa

**Authors:** RO Anyasi; HI Atagana

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**Titles:** An Analysis of Domestic Solid Waste Management Practices within the Ethekewini Metropolitan Area

**Authors:** RO Anyasi; HI Atagana

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# SPONSORS

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



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# JOURNAL PUBLICATION

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

**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 IJEPR 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.

# RTESE'22

The 6th International Conference of Control, Dynamic Systems, and Robotics (RTESE'22) will be held on June 5, 2022 - June 7, 2022 in Niagara Falls, Canada.



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

## 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***

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### ***Copyright and Access***

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### ***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.

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