ICESA 2021

2ND INTERNATIONAL CONFERENCE ON ENVIRONMENTAL SCIENCE AND APPLICATIONS (ICESA’21)

November 21 - 23, 2021 | Seoul, South Korea Virtual Conference
# TABLE OF CONTENTS

Welcome Message from the Conference Chair ........................................ 3  
About ICESA’21 ............................................................................. 4  
Scientific Committee .................................................................... 5  
Keynote Speakers ......................................................................... 6  
List of Papers ................................................................................ 11  
Sponsors ....................................................................................... 16  
ICESA’22 ..................................................................................... 17  
Ethics & Malpractice ..................................................................... 18  
Contact Us ................................................................................... 23
INTRODUCTION

On behalf of the International Academy of Science, Engineering and Technology (International ASET Inc.), the organizing committee would like to welcome you to The 2nd International Conference on Environmental Science and Applications (ICESA'21).

The goal of ICESA'21 is to provide an online space for scholars from all over the world to present advances in the relevant fields and to foster a virtual 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 second meeting of this conference, two plenary speakers and 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 15 papers will be presented from professors, students, and researchers across the world.

We thank you for your participation and contribution to The 2nd International Conference on Environmental Science and Applications (ICESA'21). We wish you a very successful and enjoyable experience.

Dr. Zhi Chen
Concordia University, Canada
Conference Chair
ICESA'21

Dr. Charles Lee
The University of Newcastle, Singapore
Conference Chair
ICESA'21
The 2nd International Conference on Environmental Science and Applications (ICESA'21) aims to become the leading virtual conference in fields related to Environmental Science and Applications. The goal of ICESA'21 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.

ICESA is an international conference will be held yearly. This conference focus on all aspects Environmental Science and Applications. ICESA Will be held this year in Vrirtual conference

ICESA is an acronym for International Conference, on Environmental Science and Applications.

The proceedings are published in Ottawa, Canada.

All papers were peer-reviewed

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

<table>
<thead>
<tr>
<th>Dr. Zhi Chen</th>
<th>Dr. Charles Lee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concordia University, Canada</td>
<td></td>
</tr>
<tr>
<td>Conference Chair</td>
<td>The University of Newcastle, Singapore</td>
</tr>
</tbody>
</table>

**Scientific Committee Members**

- **Dr. James Ball**, University of Technology Sydney, Australia
- **Dr. Luiza Campos**, University College London, UK
- **Dr. Bing Chen**, Memorial University of Newfoundland, Canada
- **Dr. Mohamed Gamal El-Din**, University of Alberta, Canada
- **Dr. Gordon Huang**, University of Regina, Canada
- **Dr. Rajan Jose**, University Malaysia Pahang, Malaysia
- **Dr. Charles Lee**, The University of Newcastle, Singapore
- **Dr. Woo Hyoung Lee**, University of Central Florida, USA
- **Dr. Kavitha Palaniappan**, University of Newcastle, Australia
- **Dr. Yu (Frank) Yang**, University of Nevada, USA
The plenary and keynote information for The 2nd International Conference on Environmental Science and Applications (ICESA'21) is as follows:

**Plenary Speakers**

- **Dr. John Gulliver**  
  University of Minnesota, USA

- **Dr. Peter Jaffé**  
  Princeton University, USA

**Keynote Speakers**

- **Dr. Rajan Jose**  
  University Malaysia Pahang, Malaysia

- **Dr. Mohamed Gamal El-Din**  
  University of Alberta, Canada
John Gulliver is a Professor of Civil, Environmental and Geo-Engineering at the University of Minnesota, performing his research at the St. Anthony Falls Laboratory. His major research interests are mass transport in environmental systems and stormwater pollution prevention. Current research involves the development of technology to treat stormwater runoff, an assessment of stormwater infiltration practices, the prediction of runoff from small, urban watersheds and remediation of internal phosphorus loading in stormwater ponds.

Much of Dr. Gulliver’s research, in conjunction with other faculty, involves the development of new technology for the treatment of road runoff and assessment of field performance of stormwater treatment practices, including the SAFL Baffle, the Iron-Enhanced Sand Filter, and the MPD Infiltrometer. He is a co-author of the book, Optimizing Stormwater Treatment Practices: A Handbook of Assessment and Maintenance, published by Springer.
Prof. Peter Jaffé joined the Department of Civil and Environmental Engineering at Princeton University in 1985, and has three concurrent appointments with the Princeton Environmental Institute, the Andlinger Center for Energy and the Environment and the Princeton Institute for the Science and Technology of Materials. He served as chair of the Department of Civil and Environmental Engineering from 1999 to 2005 and was director of graduate studies in the same department from 2009 to 2012.

His research interests relate to the physical, chemical, and biological processes that govern the transport and transformation of pollutants in the environment and their application toward the remediation of contaminated systems. Areas of current emphasis include: laboratory and field experiments, as well as mathematical simulations of biogeochemical processes in porous media, such as: (1) understanding the mechanism as well as environmental distribution of the Feammox process (ammonium oxidation under iron reducing conditions); (2) Applications of the Feammox process for ammonium removal in engineered systems and for the cometabolical degradation of recalcitrant organics such as PFAS; (2) biogeochemically mediated dynamics of trace metals, metalloids, and radioisotopes in sediments, wetland soils, and groundwater; (4) nitrogen processing in urban settings coupled to urban hydrology; and (5) design of novel biological waste treatment processes.
Professor Rajan Jose supervises the Nanostructured Renewable Energy Materials Laboratory in the Universiti Malaysia Pahang (UMP) and is the Associate Editor-in-Chief of the Springer Nature journal “Materials Circular Economy” (https://www.springer.com/journal/42824?IFA). He has served as the Dean of Research of UMP during Feb 2016 – Aug 2019 and a member of various committees of UMP and Ministry of Higher Education, Malaysia.

He has investigated nanostructured perovskite ceramics for microwave and superconducting electronics during doctoral research at the Council of Scientific and Industrial Research (CSIR), Trivandrum, India and has received PhD degree in the year 2002. He has contributed to the science and engineering of diverse range of materials including metals and alloys, luminescent quantum dots for biological and energy applications, glass and glass ceramics for quantum electronics, and electrochemical materials for energy conversion and storage. He was employed as a scientist at the Indira Gandhi Centre for Atomic Research (India), AIST (Japan), Toyota Technological Institute (Japan), and the National University of Singapore (Singapore) before joining UMP. He has published over 220 papers in Web of Science (Thomson Reuters) indexed journals which are cited nearly 11600 times with an h-index of 56 according to Google Scholar database (https://scholar.google.com.my/citations?user=LgSpTSAAAAAJ&hl=en). He holds 25 patents. He has supervised 6 Postdoctoral, 23 Doctoral, and 10 Master’s researchers.

His current research interests include sustainable materials, circular economy, data science, renewable energy devices; most of his research is on the structure – property relationship in materials for a desired device functionality.
KEYNOTE SPEAKER

**Title:** Degradation of Micropollutants Using Advanced Oxidation Processes - From Process Fundamentals to Municipal and Industrial Wastewater Applications

**Dr. Mohamed Gamal El-Din, University of Alberta, Canada**

Dr. Mohamed Gamal El-Din is a Professor in the Department of Civil and Environmental Engineering at the University of Alberta. His research focuses on the fundamentals of advanced and innovative treatment approaches for water and wastewater (municipal and industrial such as oil and gas). Since 2011, he holds an NSERC Senior Industrial Research Chair (IRC) in Oil Sands Tailings Water Treatment. He is also one of the Theme Leads of the Future Energy Systems (FES) theme on Resilient Reclaimed Land and Water Systems, a 75-million multidisciplinary research from the Canada First Research Excellence Fund. Because of his contributions in the area of oil sands process water treatment/reclamation, in 2017, Dr. Gamal El-Din received the Alberta Science and Technology Leadership (ASTech) Foundation Award for Innovation in Oil Sands Research. In 2019, he was appointed Jinshan Distinguished Professor at Jiangsu University and in 2020 he was awarded Research Chair in Environmental Engineering, College of Environmental Science and Engineering at Tongji University (China). His research work has resulted in important advancements in the area of advanced oxidation and ozone treatment, membrane separation and biological processes. Another part of his research program has centered on the development of new materials and their applications in water and wastewater treatment. Dr. Gamal El-Din’s research program also focuses on the development of cost-effective and simple, yet highly efficient treatment systems for rural communities in both industrialized and developing countries. Dr. Gamal El-Din’s research has resulted in 255 refereed journal papers, 94 refereed conference papers, 369 conference and workshop presentations, 52 technical reports, and 7 book chapters and a number of other articles. Currently, Dr. Gamal El-Din’s h-index is 55 (10044 citations) as per Google Scholar.
# LIST OF PAPERS

The following papers were presented at the 2nd International Conference on Environmental Science and Applications (ICESA'21):

## Environmental Sustainability and Development

**Title:** Carbon Policy as a Strategy to Jointly Address Climate Change, Prevent Wildfires and Biodiversity Loss: A Portugal Case Study  
**Authors:** Renata Pacheco, João Claro  
[View Paper](#)

**Title:** Creation of Geographical Information System for Highways of Kvemo Kartli (Georgia)  
**Authors:** Mariam Elizbarashvili, Bela Kvirkvelia, Shalva Elizbarashvili, Tamar Khuntselia, Marina Tatanashvili, Maia Kimeridze  
[View Paper](#)

**Title:** Paringin Pit Lake: Key Success Factors of Creating a Pit Lake of Ex-Coal Mined Pit  
**Authors:** D. Triwibowo, T. Roberts, C.C. Lee  
[View Paper](#)

**Title:** Review of Toxico-Kinetics of Nanogold through in Vivo and in Vitro Studies  
**Authors:** Kavitha Palaniappan  
[View Paper](#)

[Return to Top](#)
# LIST OF PAPERS

The following papers were presented at the 2nd International Conference on Environmental Science and Applications (ICESA'21):

## Environmental Sustainability and Development

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Mark Super Low Energy Building: A Singapore Campus Case Study</td>
<td>M.A. Sarwar, C.C. Lee</td>
</tr>
<tr>
<td>Using a Novel Swampy Forest System as a Strategy to Meet Coal Mine</td>
<td>I. Noor, Y.F. Arifin, B.J. Permadi, A. R.</td>
</tr>
<tr>
<td>Wastewater Discharge Compliance in Indonesia</td>
<td>Saidy, T. Roberts, C.C. Lee</td>
</tr>
<tr>
<td>A Study On The Collision Avoidance Supporting Model In Coastal Area</td>
<td>Chang-Je Kim</td>
</tr>
</tbody>
</table>

## Return to Top
## LIST OF PAPERS

The following papers were presented at the 2nd International Conference on Environmental Science and Applications (ICESA'21):

### Greenhouse Effect, Global Warming, and Climate Change

**Title:** Dangerous and Adverse Weather Events in Kvemo Kartli (Georgia)  
**Authors:** Mariam Elizbarashvili, Bela Kvirkvelia, Elizbar Elizbarashvili, Shalva Elizbarashvili, Tamar Khuntselia  
[View Paper](#)

**Title:** Simulation of Temperature and Precipitation Climatology for Georgia using RegCM4  
**Authors:** Mariam Elizbarashvili, Magda Tsintsadze, Tsezari Mshvenieradze  
[View Paper](#)

**Title:** Development of Tier 2 Estimation Method for Carbon Absorption of Biomass in Grassland to Respond Climate Change Adaptation  
**Authors:** Sle-gee Lee, Jeong Gwan Lee, Du Hee Lee, Hyun-Jun Kim  
[View Paper](#)
# LIST OF PAPERS

The following papers were presented at the 2nd International Conference on Environmental Science and Applications (ICESA'21):

## Environmental Pollution and Treatment

**Title:** Assessment of a Soil Washing Process for Copper (Cu), Zinc (Zn), and Lead (Pb) Contaminated Soil Using High Pressure Water  
**Authors:** Sang Hyeop Park, Deok Hyun Moon  
[View Paper](#)

**Title:** Stabilization of Firing Range Soil Using Cuttlefish Bone  
**Authors:** Deok Hyun Moon  
[View Paper](#)

**Title:** Adsorptive Removal of Disinfection Byproduct (DBP) Precursors by Carbon Nanotubes  
**Authors:** Betul Aykut-Senel, Cihan Ozgur, S. Sule Kaplan-Bekaroglu, Nuray Ates  
[View Paper](#)

**Title:** Removal of Natural Organic Matter by Using Original and Chemically Modified Adsorbents  
**Authors:** Betul Aykut-Senel, Cihan Ozgur, Sehnaz Sule Kaplan-Bekaroglu, Nuray Ates  
[View Paper](#)
LIST OF PAPERS

The following papers were presented at the 2nd International Conference on Environmental Science and Applications (ICESA'21):

Environmental Pollution and Treatment

**Title:** Heavy Metals Concentrations (Al, As, Cr, Cu, Fe, Mn, Ni, Pb, And Zn) In An Urban Artificial Lake In Chennai, India (Sembakkam Lake) Under Drought Conditions

**Authors:** Daniel Rosado, Franco Castillo, Indumathi Nambi, Nicola Fohrer

[View Paper](#)

**Title:** Understanding Green Purchase Behavior. Is Gender Important?

**Authors:** Elisabete Correia, Sara Sousa, Manuela Larguinho and Clara Viseu

[View Paper](#)

[Return to Top](#)
International ASET Inc. would like to thank the following sponsors for their support of ICESA’21:
The 3rd International Conference on Environmental Science and Applications (ICESA'22) will be held on October 24, 2022 - October 26, 2022 in Seoul, South Korea.

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

You can also email info@esaconference.com or call us at: +1-613-834-9999
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.
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.
**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.
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.
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, please visit the website

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

+1-613-834-9999