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3rd GLOBAL SUMMIT ON

ADVANCES IN EARTH SCIENCE AND CLIMATE CHANGE

SEPTEMBER 26-27, 2024 | BARCELONA, SPAIN

PEERS ALLEY MEDIA

PROGRAM-AT-A-GLANCE >>

YOUR FIRST CHOICE FOR RESEARCH INGENUITY

ADV. ESCC 2024

DAY 1
SEPTEMBER 26, 2024

Scientific Program

08:30-08:55	**Registrations**
08:55-09:10	**Opening Ceremony**
Session Moderator	**Jessica Argenta,** University of Missouri - Research Scientist Soybean Breeding and Genetics, USA
Session Chair	**Jude Currivan,** WholeWorld-View, UK

Topics: Earth Science | Climate Change | Soil Science | Climate Change and Human Health | Renewable Energy | Green Technology Innovation | Climate Resilient Infrastructure | Pollution Control | Biodiversity | Atmospheric Chemistry | Natural Hazards | Oceanography | History of Pandemics Effect on Climate Change | Sewage Treatment

Distinguished Speaker Talks

09:10-09:30	**Title: Developing climate-smart soybean varieties: Innovations for a resilient future** **Jessica Argenta,** *University of Missouri - Research Scientist Soybean Breeding and Genetics, USA*
09:30-09:50	**Title: How an emergent cosmology of a nonlocally unified, meaningfully informed and holographically manifested Universe can underpin and frame the biological embodiment of quantum entanglement** **Jude Currivan,** *WholeWorld-View, UK*
09:50-10:10	**Title: Climate adaptation and water protection** **Lorrilee McGregor,** *NOSM University, Canada*
10:10-10:30	**Title: Optimization of carbon sinks and biodiversity when converting Norway spruce to beech forests in Austria** **Eduard Hochbichler,** *University of Natural Resources and Life Sciences, Austria*
10:30-10:50	**Title: Traditional research methods are still powerful approaches, whereas machine learning methods face shortcomings: A case study on the development of a gas warning system** **Robert M.X. Wu,** *University of Technology Sydney, Australia*

Group Photo 10:50-10:55

Refreshment Break 10:55-11:10

11:10-11:30	**Title: Recovery of Zn and Cu from municipal solid waste incineration fly ash by integrating ammonium leaching and ammonia removal** **Pengfei LI,** *Kyushu University, Japan*
11:30-11:50	**Title: Potential for CO_2 mitigation through the use of wood in construction: The impact of different production chains** **Katia Regina Garcia Punhagui,** *UNILA - Federal University of Latin American Integration, Brazil*
11:50-12:10	**Title: Hydrogen production from renewable energy: Current status, prospects and challenges** **Qia Wang,** *Institute of Quantitative and Technological Economics (IQTE), Chinese Academy of Social Sciences, China*
12:10-12:30	**Title: The effects of heat waves on hospital admission and death rates in the Fethiye province of TURKEY** **Yunus OZTURK,** *Fethiye, Turkey*
12:30-12:50	**Title: Forging pathways: Innovative financing for nature-based climate adaptation** **Sylvie Van Damme,** *University of Antwerp, Belgium*
Group Photo 12:50-12:55	
Lunch Break 12:55-13:40	
Session Moderator	**Daniel DeArmond,** Instituto Nacional de Pesquisas da Amazônia, Brazil
Session Chair	**Jude Currivan,** WholeWorld-View, UK
13:40-14:00	**Title: The challenges of sustainable forest operations in Amazonia** **Daniel DeArmond,** *Instituto Nacional de Pesquisas da Amazônia, Brazil*
14:00-14:20	**Title: Risk management in humanitarian supply chain based on FMEA and Grey Relational Analysis** **Glenda B. Minguito,** *Ateneo de Davao University, Philippines*
14:20-14:40	**Title: Standing up for public benefit: An exploration of the attitudes of investment process participants. *"Who will guard the guards themselves?"*** **Agnieszka Kępkowicz,** *University of Life Sciences in Lublin, Poland*
14:40-15:00	**Title: Yanomami medicinal plants with potential application in dermatology: A review** **Juliano Borges,** *Universidade Federal do Rio de Janeiro, Brazil*

15:00-15:20	**Title: Women's health in perspective of climate change and the role of Midwife and Nurse** **Sema ÜSTGÖRÜL,** *Manisa Celal Bayar University, Turkey*
15:20-15:40	**Title: Effect of salinity, stocking density and their interactive effects on growth performance, digestive and metabolic enzyme activities of juvenile *Penaeus vannamei* reared in inland saline water** **Gopal Krishna,** *ICAR-Central Institute of Fisheries Education, Mumbai, India*
15:40-16:00	**Title: Thermal remote sensing for marine freshwater identification** **Hussein Harahsheh,** *AL Al Bayt University, Jordan*
Refreshment Break 16:00-16:15	
16:15-16:35	**Title: Large-scale economic production of sustainable aviation fuels in Europe** **Ralph-Uwe Dietrich,** *German Aerospace Center, Institute of Engineering Thermodynamics, Germany*
16:35-16:55	**Title: The role of fossil fuels in changes of atmosphere and hydrosphere; Focusing on the Middle East and Iran** **Mansour Ghorbani,** *Shahid Beheshti University, Iran*
16:55-17:15	**Title: Sulfide ores of deposits in the South of the Siberian Craton** **Bronislav Gongalsky,** *Institute of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry RAS, Russia*
17:15-17:35	**Title: Bisphenol-A exposure alters liver, kidney, and pancreatic Klotho expression by HSP60-activated mTOR/autophagy pathway in male albino rats** **Ezat Abdelmonem Mersal,** *Assiut University, Egypt*
17:35-17:55	**Title: Agile leadership: Empowering female managers in addressing climate change** **Maria Palazzo,** *Universitas Mercatorum, Italy*
Panel Discussion	
End of Day 1	

DAY 2
SEPTEMBER 27, 2024

Scientific Program

08:35-08:40 Introduction

Topics: Earth Science | Climate Change | Soil Science | Climate Change and Human Health | Renewable Energy | Green Technology Innovation | Climate Resilient Infrastructure | Pollution Control | Biodiversity | Atmospheric Chemistry | Natural Hazards | Oceanography | History of Pandemics Effect on Climate Change | Sewage Treatment

Distinguished Speaker Talks

08:40-09:00 Video Presentation

Title: Seismic wave simulation with the lattice Boltzmann and lattice spring model coupled schemes

Muming Xia, *China University of Geosciences, Beijing, China*

09:00-09:20

Title: Leveraging energy-efficient high-performance computing with Flamingo Search Algorithm for sustainable precision agriculture in the context of climate change adaptation

Paul Rodrigues, *King Khalid University, Saudi Arabia*

09:20-09:40

Title: Compositional insight into sustainable firefighting foam for strategic applications

Durgesh Nandini, *Defence R & D Organization, India*

09:40-10:00

Title: Plant extract preparation and green synthesis of silver nanoparticles using *Swertia chirata*: Characterization and antimicrobial activity against selected human pathogens

Muhammad Adnan Shereen, *Kohsar University Murree, Pakistan*

10:00-10:20

Title: Assessment of the links between climate, air pollution, and human health: Effects, adaptation measures, and mitigation approaches

Oumaima EL GHAMMAD, *Mohammed V University, Morocco*

Panel Discussion

End of Day 2

DAY 2
SEPTEMBER 27, 2024

Scientific Program

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4th Global Summit on

Advances in Earth Science and Climate Change

September 2025

Berlin, Germany

PEERS ALLEY MEDIA

DISTINGUISHED SPEAKER TALKS

DAY 1

3rd Global Summit on

ADVANCES IN EARTH SCIENCE AND CLIMATE CHANGE

September 26-27, 2024
Barcelona, Spain

ADV. ESCC 2024

Developing climate-smart soybean varieties: Innovations for a resilient future

Jessica Argenta[1], Francia Ravelombola[1], Cheryl Adeva[1], Grover Shannon[1], Chen Pengyin[1], Henry Nguyen[2] and Feng Ling[1]

[1]University of Missouri - Research Scientist Soybean Breeding and Genetics, USA
[2]Division of Plant Sciences, University of Missouri, USA

Abiotic stresses constantly challenge crop yield in face of climate change. Flooding and drought can limit soybean (Glycine max L.) productivity. Natural genetic variations in waterlogging and drought tolerance are controlled by multiple genes mapped as quantitative trait loci (QTLs), including soybeans. We used flooding-tolerant PI 408105A and flooding-intolerant S99-2281 for the mapping study. Genomic regions on four chromosomes were associated with decreased plant injury and higher yield under flooded conditions. We found that genes for flooding tolerance were necessary to reduce injury and yield loss and increase soybean productivity on waterlogged soils. Furthermore, two new QTLs associated with tolerance to waterlogging have been identified and mapped in PI 561271. Focusing on the major QTL, qWT_Gm03, it was isolated into near-isogenic backgrounds, fine-mapped, and its effects on waterlogging tolerance were validated across environments. The tolerant allele enhances root growth and plasticity under non-stress and waterlogging conditions, resulting in improved tolerance to waterlogging, yield, and drought-related traits, possibly promoting efficient water and nutrient uptake. These findings provided genetic resources to address the urgent demand for improving soybean waterlogging tolerance. A genetic trait known as Slow Canopy Wilting (SW) controls the conservation of water and helps the plant tolerate drought. Two PI (PI 567690 and PI 567731) were identified as new SW lines in early maturity groups. These PIs share the same water conservation strategy of limited maximum transpiration rates. Yield tests of selected RILs from two crosses provide direct evidence to support the benefit of SW in drought tolerance. Four SW QTLs previously mapped were found, and two new SW QTLs were mapped on chromosomes 6 and 10 from a Magellan × PI 567731 cross. These two QTLs explain the observed relatively large contributions and demonstrate the importance of SW in yield protection under drought conditions.

Biography

Dr. Jessica Argenta is a distinguished figure in the sphere of plant science. With a Bachelor's, Master's, and Ph.D. in Plant Science, Dr. Argenta has spent a decade immersed in the dynamic field of genetics and plant breeding, specializing in crops like corn, wheat, oats, and soybean. Currently, Dr. Argenta is working on developing and releasing elite soybean lines at the University of Missouri, demonstrating a remarkable commitment to enhancing crop resilience and quality. Their work focuses on imbuing soybean varieties with broad biotic and abiotic stress tolerance and elevating seed quality traits. Through innovative research and strategic breeding methodologies, Dr. Argenta is at the forefront of efforts to address pressing agricultural challenges and secure sustainable food production for future generations. Her dedication to shaping a brighter future for global agriculture is exemplified by her contributions to advancing plant breeding and agricultural science.

How an emergent cosmology of a nonlocally unified, meaningfully in-formed and holographically manifested Universe can underpin and frame the biological embodiment of quantum entanglement

Jude Currivan

Co-Founder, WholeWorld-View, UK

With a Nobel Prize for Physics widely viewed as only given for 'settled' science, the award then essentially accepts the validity of universal nonlocality. Other key discoveries and insights in recent years are also progressively pointing to the appearance of our Universe, its energy-matter and space-time, as not being foundational but emerging from deeper, discarnate realms of causation. as digitized and meaningful, in-formation, its manifestation pixelated at the so-named Planck scale of existence. Extending from studies of black holes to the entire Universe, a growing number of cosmologists have also developed the so-named holographic principle, to model the four-dimensional appearance of our Universe (three dimensions of space and one of time) as a holographic projection of its two- dimensional boundary. In framing the emergent cosmology of a nonlocally unified, meaningfully in-formed and holographically manifested Universe, an expansion of the three universal Laws of Thermodynamics to three Laws of Information, or Infodynamics also points the way to reconciling Quantum Theory that describes energy-matter and Relativity Theory that describes space-time and offers too an understanding of how the lifecycle of our Universe flows from its first moment until its last. Treating gravity as an emergent consequence of the in-formational and holographic structure of space- time and describing it as the consequence of the intropy associated with the positions in space-time of massive bodies, also points to the findings of the loss of phenotype identity in zero gravity and the role between gravity and cellular identity and the emergence of symbiogenesis.

Biography

Dr. Jude Currivan is a cosmologist, planetary healer, futurist, author, Evolutionary Leaders Circle member (www.evolutionaryleaders.net) and previously a senior UK-based international business woman. She has a Master's degree in physics from Oxford University specializing in cosmology and quantum physics and a Ph.D. from the University of Reading, UK in archaeology, researching ancient cosmologies. She is a life-long researcher into the nature of reality and author of 7 nonfiction books, latterly and both award-winning and best-selling The Cosmic Hologram (2017) and The Story of Gaia (2022). In 2017 she co-founded WholeWorld-View (www.wholeworld-view.org) to share the scientifically evidence-based understanding of an emergent unitive cosmology to serve conscious evolution and transformational change and underpinned and framed by a unitive narrative. She is a faculty member of Ubiquity University, Humanity's Team and the California Institute of Integral Studies and in 2022 she was awarded Meshworker of the Year by Integral Cities.

Climate adaptation and water protection

Lorrilee McGregor

NOSM University, Canada

First Nations people in Canada have an intimate connection to their territory based on thousands of years of accumulated knowledge and belief systems that consider the land and waters sacred. Water is believed to be a source of life and to have a spirit. Because the waters have been contaminated, Indigenous people believe it is important to have ceremonies to heal the waters.

Despite colonization and industrialization, the relationship to the land and waters remains integral to the lives of First Nation peoples. The latest threat to Indigenous peoples is climate change. Global warming is causing rapid environmental changes impacting water/ice, fish and wildlife habitat, and plants, all of which Indigenous people rely on to maintain a way of life. The built environment, including housing, roads and infrastructure, is also being impacted.

After being excluded from a provincial planning process, Whitefish River First Nation developed a source water protection plan based on traditional knowledge using guidelines developed by the Chiefs of Ontario. The cultural and spiritual aspects of water could have strengthened the provincial planning process.

This presentation will provide an Indigenous perspective on our relationship to the environment, how climate change is impacting First Nations in Canada, and how one community determined how they would protect their waters.

Biography

Dr. Lorrilee McGregor is an Anishinaabe from Whitefish River First Nation in northern Ontario, Canada. She is an Associate Professor at NOSM University where she teaches about Indigenous peoples' health to undergraduate medical students. She works with First Nation communities in northern Ontario on environmental, health, and education projects. For the past 20 years, Dr. McGregor has served as the Chair of the Manitoulin Anishinaabek Research Review Committee, a community-based Indigenous Research Ethics Board that has reviewed over 100 research ethics applications.

Optimization of carbon sinks and biodiversity when converting Norway spruce to beech forests in Austria

Eduard Hochbichler[2], Johannes Kobler[1], Gisela Pröll[1] and **Thomas Dirnböck[1]**

[1]Environment Agency Austria, Ecosystem Research and Environmental Information Management, Austria
[2]University of Natural Resources and Life Sciences, Institute of Silviculture, Austria

With its Green Deal the European Commission provided a strategy to address the problems of climate change and biodiversity. European forests are considered part of the solution by sequestering greenhouse gases emissions and preserving/restoring diverse forest habitat properties. The objective of the presentation is to provide a portfolio of integrated silvicultural management measure as a decision support and recommendations for forest and conservation policy makers as well as managers. We take concrete biodiversity conservation measures applicable in central European beech forests and assess their potential as well as trad offs to sequester carbon at stands level and in their wood products or substitute carbon emissions from non-wood products. Based on literature, we extended the range of common silvicultural and conservation measures. We combined these findings with carbon sequestration simulations for a typical mountainous beech forest region in Austria as an example. We propose three priority actions to enhance the synergies between climate change mitigation and biodiversity. First, actively increasing the proportion of European beech in secondary Norway spruce forests, even though beech will not be unaffected by expected water supply limitations. Secondly, optimizing the benefits of shelterwood systems and promoting uneven-aged forestry, and thirdly enhancing of mixed tree species. Targeted conservation measures (deadwood, habitat trees and old forest patches) increase the total C storage, but decrease the annual C sequestration in the forest and, particularly, in wood products. The establishment of a beech wood market with an extended product portfolio to reduce the use of fuelwood is essential for sustainable climate change mitigation. As there are limitations to the production of saw timber quality beech wood on low fertility sites, C accumulation and biodiversity can be emphasised in these areas.

Biography

Eduard Hochbichler is Associate Professor at the University of Natural Resources and Life Sciences, Institute of Silviculture, Vienna. For a period of three decades, he has been engaged in the development and implementation of multifunctional forest management concepts (f. e. drinking water preservation and integrating biodiversity). Further research focuses are on silvicultural systems/techniques [management of mixed deciduous forest stands; coppice and coppice with standards system, continuous cover forestry]. Additionally, biomass management (production, productivity, dynamic) and adaptive forest management (conversion of secondary coniferous stands; upgrading coppice stands) are areas of his interest.

Traditional research methods are still powerful approaches, whereas machine learning methods face shortcomings: A case study on the development of a gas warning system

Robert M.X. Wu[1], Niusha ShafiAbady[2], Hai Yan (Helen) Lu[1] and **Ergun Gide[3]**

[1]Faculty of Engineering and Information Technology, University of Technology Sydney, Australia
[2]Faculty of Science and Technology (Sydney Campus), Charles Darwin University, Australia
[3]Faculty of Engineer and IT, Central Queensland University-Sydney Campus, Australia

Machine learning (ML) approaches have been hotly discussed by researchers and practitioners daily, used widely to analyze and harness the power of an enormous amount of information, and used to explore types of predictor variables regarding prediction ability. ML methods have at least three drawbacks in predicting warning systems. These include poor dataset inputs resulting in inadequate outputs, inaccurate interpretation of ML-based prediction results, and dramatically increased cost of computing hardware for improving the efficiency and effectiveness of the ML model. In the coal mining industry, up-to-date research explores the methods and framework for avoiding reaching or exceeding the threshold limit value (TLV) of the gas concentration from viewpoints of impacts on geological conditions and coal mining working-face elements. However, ML approaches cannot cover the correlation between gas concentration and other data and cannot be applied to predict gas concentration.

This research uses a case study to prove that correlational research—a traditional research approach—is still a powerful approach for developing gas warning systems in the coal mining industry. In contrast, ML approaches cannot effectively solve. The research outcomes indicate strong correlations among gas, temperature, and wind. Including correlation analysis of temperature and wind data in gas would enhance the warning system's sensitivity and decrease the likelihood of explosions and other adverse events. An Innovative Integrated Gas Warning System has been successfully deployed in a Case Study mine in China.

This research implies that traditional research methods are still powerful approaches, whereas current ML methods face challenges due to their shortcomings. Applying this method to develop warning solutions in different industries, such as government emerging systems, climate warning systems, and other hazard warning systems, is feasible.

Biography

Dr. Robert M.X. Wu is a pioneering researcher on digital transformation for driving traditional business to digital business/e-business transition and is also an internationally renowned consulting expert in leading interdisciplinary and industry-engaged research projects. His track record underscores his dedication to fostering meaningful connections in the global academic and business communities.

A/Prof. Niusha Shafiabady is an internationally recognised expert in the field of Computational Intelligence. She is the inventor of a computational optimisation algorithm and has developed Ai-Labz (https://www.cognobit.com/ai-labz) which is a simple Computational Intelligence predictive analysis tool.

A/Prof. Haiyan (Helen) Lu works in the School of Computer Science at University of Technology Sydney (UTS). She is a core member of the Decision Systems and e-Service Intelligence Lab in the Centre for Artificial Intelligence at UTS.

A/Prof. Ergun Gide has carried out various academic and managerial positions since then, such as the Campus Leader for the School in CQU Sydney campus, Deputy Dean for the School of Engineering and Technology.

Recovery of Zn and Cu from municipal solid waste incineration fly ash by integrating ammonium leaching and ammonia removal

Pengfei LI[1] and **Takayuki Shimaoka**[2,3]

[1]Department of Civil Engineering, Graduate School of Engineering, Kyushu University, Japan
[2]Department of Civil Engineering, Faculty of Engineering, Kyushu University, Japan
[3]Kyushu Environmental Evaluation Association, Japan

This study presents an environmentally friendly process for recovering zinc (Zn) and copper (Cu) from municipal solid waste incineration (MSWI) fly ash, utilizing ammonium leaching and ammonia removal, as shown in Fig. 1. The proposed process targets the efficient recovery of Zn and Cu from MSWI fly ash, which is particularly suitable for handling fly ash with high alkaline content generated from dry and semi-dry flue gas treatment methods. Ammonium chloride (NH_4Cl) functions as the leaching agent in this process, facilitating the extraction of Zn and Cu from the fly ash by forming ammonia complexes. The recyclability of NH_4Cl within the system is ensured through its reaction with calcium ions in the leachate and carbon dioxide in the incinerator's flue gas. The leaching process achieved impressive rates, with Zn and Cu leaching at 54.4% and 86.2%, respectively, resulting in total recovery rates of 52.2% and 85.3%, respectively. The recovered precipitate exhibited significant Zn content of 33.6% and Cu content of 14.2%, rendering it highly suitable for metal smelting applications. Moreover, the ammonium leaching process demonstrated effective mass reduction and dechlorination effects on the fly ash. Treated fly ash exhibited a reduced mass, comprising only 30.6% of the original, while the chlorine content decreased significantly from 26.2% to 0.84%. These findings underscore the potential of the proposed process to support the sustainable utilization of MSWI fly ash. By enabling valuable resource recovery and promoting its conversion into construction materials, this approach aligns with the principles of circular economy and waste valorization, contributing to environmental preservation and resource conservation efforts.

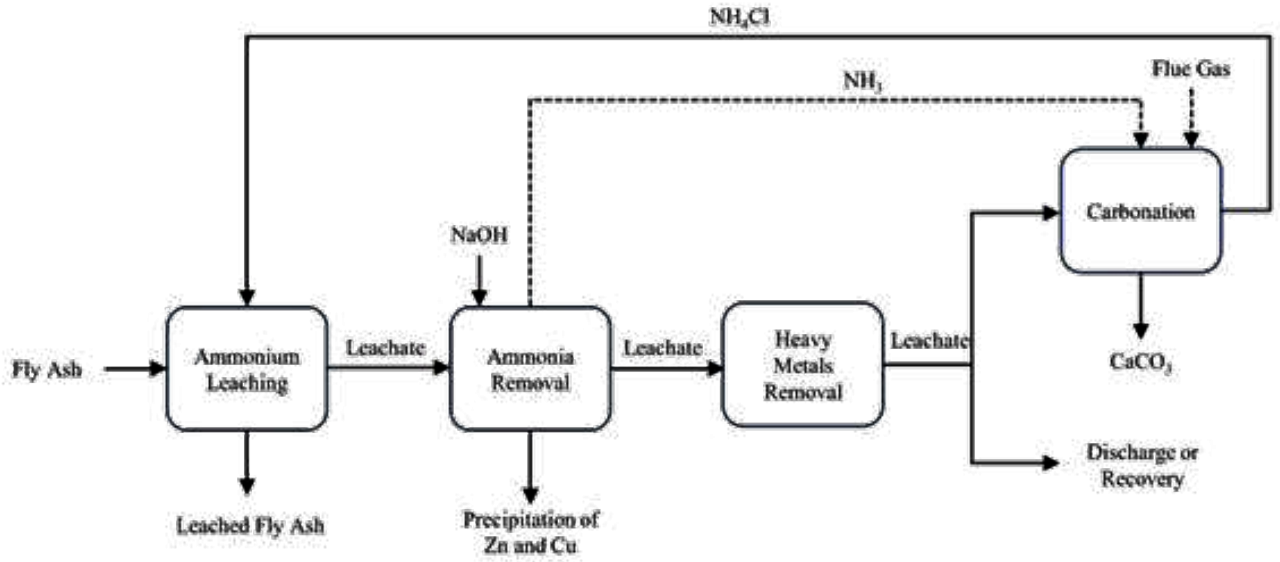

Fig. 1 The simplified process flow diagram of the proposed process.

Biography

Pengfei Li, a Chinese national, is pursuing studies at Kyushu University. His research focuses on the resource utilization of municipal solid waste incineration (MSWI) fly ash. With a keen interest in environmental sustainability, Pengfei Li has dedicated his research to developing innovative methods for recovering heavy metals and salts from fly ash.

His contributions to the field include the development of two distinct processing techniques tailored for the extraction of valuable resources from fly ash. These techniques demonstrate promising results in effectively recovering heavy metals and salts, thereby mitigating environmental impacts associated with waste disposal.

Pengfei's research interests extend beyond MSWI fly ash resource utilization to encompass a broader spectrum of waste valorization initiatives. He is particularly intrigued by the recycling of incineration residues, lithium batteries, plastics, and photovoltaic panels, reflecting his commitment to advancing sustainable practices in waste management and resource conservation.

Potential for CO_2 mitigation through the use of wood in construction: The impact of different production chains

Katia Regina Garcia Punhagui

UNILA - Federal University of Latin American Integration, Brazil

The use of biomaterials has been considered a strategy to face climate change, as they sequester carbon from the atmosphere through photosynthesis. Civil construction plays an important role in climate issues due to its high demand for primary inputs, waste generation, and greenhouse gas emissions. Increasing the permanent use of wood is a strategy to reduce CO_2 emissions and to store carbon. Thus, the objective of the study was to estimate the potential for CO_2 mitigation through the permanent use of wood in Brazilian construction, considering the different production chains. Therefore, emissions from wood products intended for Brazilian construction were estimated through Life Cycle Assessment, and the impacts of the gradual implementation of this material into housing construction until the year 2050 were modeled through predictive scenarios. The results indicate that by increasing the permanent use of wood for housing construction, it is possible to reduce emissions when planted or native wood from low-intensity harvesting management is used. When native wood from informal conventional selective logging is used, emissions can increase considerably; about 3 orders of magnitude. Therefore, the use of wood, even for long life cycle purposes, may not be a GHG reduction strategy depending on the origin of the material.

Biography

PhD in Architecture, Energy and Environment from the Barcelona Technical School of Architecture at UPC-Polytechnic University of Catalonia (Spain) and in Civil Construction Engineering from the Polytechnic School of USP-University of São Paulo (double degree obtained in 2014). Master in "Architecture, Energy and Environment" from UPC (2008). Graduated in Architecture and Urbanism from UEL (2004). She was technical coordinator of the Brazilian Council for Sustainable Construction (CBCS). She is currently a professor at the Federal University of Latin American Integration (UNILA). Coordinator of the Postgraduate program in Civil Engineering (PPGECI) at UNILA, leader of the Sustainability and Innovation research group (SINOVA), researcher at the Performance, Structure and Materials Laboratory (LADEMA) and the Center for Innovation in Sustainable Construction (CICS -USP), coordinator of the Technical Design Group of the Concrete Sustainability CT of the Brazilian Concrete Institute (IBRACON), member of the Municipal Council of Science, Technology and Innovation of Foz do Iguaçu-PR. Research on topics: life cycle assessment; CO2 emissions and capture; sustainability; housing; wood in construction; performance; eco-efficiency of materials. (ORCID: https://orcid.org/0000-0002-4956-3440 | CV: http://lattes.cnpq.br/8741382692773551)

Hydrogen production from renewable energy: Current status, prospects and challenges

Qia Wang

Institute of Quantitative and Technological Economics (IQTE), Chinese Academy of Social Sciences (CASS), Beijing, China

Renewable energy is the main source of green hydrogen, and actively developing hydrogen production from renewable energy is of great significance for enhancing the diversity, flexibility, and stability of the energy system. Currently, many countries and regions, including China, have incorporated the development of hydrogen energy into their national energy transition strategies. This article introduces the hydrogen energy strategies of major countries in the world, the current development status, technological trends, and economic viability of renewable energy hydrogen production. It analyzes the main challenges facing the development of China's renewable energy hydrogen production industry at the current stage (pilot demonstration stage). Finally, we suggest that China should promote pilot demonstrations of renewable energy hydrogen production projects according to local conditions, scientifically layout hydrogen transmission pipelines, actively expand diversified applications of hydrogen energy, comprehensively use price, subsidy, green finance and other means, adopt multiple strategies to support the development of green hydrogen production industry, and help achieve the national goal of "carbon peak and carbon neutrality".

Biography

Qia Wang is an Associate Professor in the Department of Energy Security and New Energy at the Institute of Quantitative and Technological Economics (IQTE), Chinese Academy of Social Sciences (CASS). She received her Ph.D. degree from the Academy of Mathematics and Systems Science, Chinese Academy of Sciences (CAS) in 2013. She was a cost analyst for new energy projects in China Longyuan Power Group which is world's largest wind power operator. Her research areas include renewable energy, energy policy, energy economics, and energy system modelling.

The effects of heat waves on hospital admission and death rates in the Fethiye province of TURKEY

Yunus OZTURK

Fethiye, Turkey

One of the atmospheric natural hazards that negatively affect the human health is known as Heat Waves (HWs). According to the recent studies, increases in the frequency and duration of heat waves adversely affect human health. This study scrutinized the effects of HW on human health in the city of Fethiye, located in the southwest of Turkey. Daily maximum temperatures and elevated temperatures at the 90% threshold and persisting for at least 3 consecutive days were defined as HWs. With reference to this definition of HWs, a total of four HWs and a total of 19 HWs days were observed during 2018 year. A total of 31 HW days were utilized in the analysis by adding 3 lag days to these HWs days. The impacts on HWs days to the human health were analyzed by using hospital data for the years 2014-2017, which were determined as reference years. The Fisher's Exact test was used to determine the relationship between high temperatures and deaths. Risk ratios were calculated by comparing the mortality speeds during heat wave periods with reference periods. Regarding the analyses, the relative risks (RRs) showing the relationship between HWs in 2018 and deaths respectively were 1.23 (95% CI: 0.66-2.30, $p<0.05$), 1.31 (95% CI: 0.64-2.68, $p<0.05$), 1.67 (95) %CI: 0.82-3.39, $p<0.05$) and 1.36 (95% CI: 0.74-2.41, $p<0.05$). In a conclusion, a total of 15 extra deaths were shown during the four HWs in 2018. 60% of extra deaths were elderly and 40% of them were adult. From the results, 84% of the deceased were women and 26% were men.

Biography

He completed his doctorate in occupational safety at Marmara University, Institute of Science. He prepared a doctoral thesis on the effects of heat waves on human health. He completed his doctorate in September 2023. He is currently teaching at a vocational high school.

Forging pathways: Innovative financing for nature-based climate adaptation

S.Van Damme, T. Op de Beeck, J. Vandendriessche, C. Van Esbroeck, L. Van Limpt, A. Crabbé and **T. Coppens**

University of Antwerp, Belgium

Nature-based solutions (NBS) stand as pivotal catalysts in bolstering efforts toward climate adaptation. Yet, a notable gap persists between the escalating demands for climate resilience and the requisite investments for effective implementation. This gap is exacerbated by the inherent challenges facing NBS projects: they often demand substantial initial investments and yield diffuse, long-term benefits that defy easy monetization. With public resources constrained and climate change presenting ever more daunting challenges, the imperative emerges for novel approaches to financing NBS, with private investment taking center stage in the international discourse.

In response to this imperative, the InnoFiNS-project develops business cases as integrative tools to facilitate the engagement of public, private, and community stakeholders in setting out a consensual roadmap for the long-term sustainable financing of NBS. It unfolds within the dynamic arena of urban living labs in Flanders (Belgium). Here, it pioneers a transdisciplinary framework, drawing upon expertise from a spectrum of disciplines including finance, governance, law, urban planning, and sociology, alongside insights from non-academic practitioners. These urban living labs serve as places for experimentation, incubating innovative solutions to real-world socio-ecological challenges, including climate adaptation.

The research findings stress the need for new financing instruments that align with sustainable principles, aiming to mobilize private investment, alleviate the strain on municipal budgets, and shift to co-creation and co-financing approaches in the realm of climate adaptation. Furthermore, they spotlight the emergence of new coalitions of actors in the planning, development, and implementation of NBS, and the importance of adjusting legal frameworks accordingly. Ultimately, this research underscores that the journey toward sustainable financing for NBS necessitates a profound transformation in our planning, development, and exploitation practices, particularly in the context of climate adaptation.

Biography

Sylvie Van Damme is a geographer, spatial planner and urban planner and PhD in Spatial Planning and Urbanism. She is experienced as lecturer and researcher at the School of Arts of Hogeschool Gent and the University of Antwerp. Her interests include ecosystems and their services, landscape, ecology and design. She loves to bridge the gap between theoretical concepts and their implementation in policy, management, planning and design. Sylvie regularly advises city councils, the provincial or Flemish governments and design firms. Among other things, she is president of the committee of spatial planning of Eastern Flanders, member of the Board of Directors of the Flemish Land Agency and member of the Association for Space and Planning (VRP). Today, she is research leader of the InnoFiNS-project on alternative financing for nature-based solutions.

The challenges of sustainable forest operations in Amazonia

Daniel DeArmond[1], Andre Rovai[2,3], Rempei Suwa[4] and **Niro Higuchi[1]**

[1]Instituto Nacional de Pesquisas da Amazônia, Brazil
[2]U.S. Army Engineer Research and Development Center, USA
[3]Department of Oceanography and Coastal Sciences, USA
[4]Japan International Research Center, Japan

Purpose of Review: The goal of this review was to determine what constitutes current challenges in effectively implementing sustainable forest operations in Amazonia. Next, succinctly characterize these challenges into comprehensive well-defined areas. Then ascertain the solutions provided in the literature. Lastly, after a thorough assessment, present potential directions to assist foresters, land managers, researchers and loggers to build a consensus on what is necessary to achieve sustainable forest operations in Amazonia.

Recent Findings: Illegal logging is a pervasive threat to the credibility of the forest sector with 38% of all logged area in the Brazilian Amazon illegal, which undermines legitimate logging operations through an unfair competitive advantage. One solution is the application of near infrared spectroscopy which has shown promise in determining species and potentially the region of origin. This same technology is also being refined for utilization in species differentiation between logging residues used in green energy, as some industries are species averse, whereas the same species may still be viable for energy generation. Recent models reveal that in the Brazilian Amazon the logging cycle is too short and the cutting intensity too high. Moreover, tree age estimation, which is difficult in many Amazonian species, can now be determined through radiocarbon analysis to determine sustainable cutting cycles.

Summary: Without increased onsite forest inspections and determination of timber origin, illegal logging will continue unabated. Stand damage from logging can easily be reduced through new models and programs that reduce logging infrastructure coverage. To avoid the depletion of timber stocking, the logging cycle must be increased to coincide with the slow growth realities of many species in the Amazon.

DeArmond, D., Rovai, A., Suwa, R. et al. The Challenges of Sustainable Forest Operations in Amazonia. Curr. For. Rep. 10, 77–88 (2024). https://doi.org/10.1007/s40725-023-00210-4

Biography

Currently completing a postdoctoral fellowship at the National Institute for Research in the Amazon (INPA) on heavy machinery impacts to soil carbon over time after logging operations. Received a BSc in Forestry in 2004 from Humboldt State University, Arcata, USA. Afterwards, received an MSc in Tropical Forest Science and a PhD in Tropical Forest Science both from the National Institute for Research in the Amazon, Manaus, Brazil. His career began in the coastal redwoods of Northern California, USA setting chokers and timber falling. In 2007, he became a Registered Professional Forester in the state of California working in the private sector developing timber harvesting plans for logging operations in coastal redwood forest, as well as the Sierra Nevada lower montane forest. Since 2016, he has been studying impacts and recovery of soil in skid trails and log landings of the Central Amazon.

Risk management in humanitarian supply chain based on FMEA and Grey Relational Analysis

G. Minguito and **J. Banluta**

Ateneo de Davao University, Philippines

The COVID-19 pandemic has disrupted the humanitarian supply chain management (HSCM) necessary for delivering emergency items during the disaster. The combined effects of climate change and the pandemic uncover the vulnerabilities of humanitarian supply chain operations and highlight the importance of risk management. This study aimed to identify priority risk factors and proposed mitigating risk strategies of a local government that is at the forefront of relief operations. This risk assessment reveals that the top issues at the local level are limited supply, insufficient funds, high sourcing cost of supplies, limited working and storage space, and an inaccurate list of beneficiaries. Most of the recommendations are geared towards maximization of local products, having multiple suppliers, automation, and information technology. It used Grey Relational Analysis (GRA) method to validate the Failure Mode and Effect Analysis (FMEA) approach in identifying priority issues relating to the supply chain risks. This paper reveals that the results of FMEA and GRA are almost similar.

Biography

Glenda B. Minguiot is a professor at the Ateneo de Davao University in the Philippines. She received a bachelor and master's degree from Ateneo de Davao University. She is currently working on her dissertation to complete her doctorate. Aside from her academic work, she has been partnering with private and public institutions in systems improvement. Some of these engagements involve plantation operations, traffic systems, waste management, manufacturing operations, and purchasing management. Through the Arrupe Office of Social Formation, she was involved in the Service Learning Program to help chosen communities. She is interested in supply chain management, risk assessment, information systems, and energy systems.

Standing up for public benefit: An exploration of the attitudes of investment process participants. *"Who will guard the guards themselves?"*

Agnieszka. Kępkowicz[1], **Halina. Lipińska**[1] and **Dorota. Mantey**[2]

[1]University of Life Sciences in Lublin, Poland
[2]University of Warsaw, Poland

The chain of actions to combat climate change culminates in the investment stage. An object is created - the result of the investment process. Thus, its stakeholders can help counteract adverse changes as custodians of the common good. And here the question arises: *quis custodiet ipsos custodes?*

The research explores the nature of the professional attitudes of six types of public investment process participants: theoreticians, investors, designers, contractors, controllers, and users. In-depth expert interviews were conducted with twelve carefully selected representatives of each of these types.

It came as a surprise to discover that the leaders of positive technological changes are general contractors. Meanwhile, designers (mostly architects) essentially, in a rush of work, lost their interest in new technologies and public benefit. Theorists are practically unnoticed in the investment process, although they participate in creating standards, norms, and technologies. They were also said to inadequately connect theory with practice (although their enthusiasm can be infectious). On the other hand, despite the greatest decision-making power, investors did not need to have knowledge and competence beyond the appropriate law and effective financial control. Meanwhile, everyone dreamed of an educated, pragmatic, committed, socially responsible, positively controversial investor, in short, a "creative producer." Research also showed that the controller community was perceived as highly skilled professionals or self-interested, incompetent, busy, liberal, limited, and hard-headed individuals, and possibly power abusers. Meanwhile, users were seen as an untapped resource, possessing common sense perspectives, creative ideas, awareness of needs, and the potential to introduce pro-environmental ideas or contribute to effective management during the operation of facilities.

The results of the study will become a starting point for international discussion in terms of the effective investment process for public benefit, and to stand up for climate change.

Biography

Agnieszka Kępkowicz, Ph.D., is a landscape architect, primarily involved in scientific research and lecturing. She was involved in the design and realization of urban green spaces and gardens (companies: EKO-VISION and LANDSCAPES). She worked with the Department of Landscape Art at Warsaw University of Life Sciences and with the Faculty of Horticulture and Landscape Architecture at the University of Life Sciences in Lublin. Now she is associated with the Unit of Landscape Studies and Land Use Management at the University of Life Sciences in Lublin.

In her research, she focuses on landscape valorization, public open space design and issues related to sustainable suburban development. She is the author of many scientific publications on landscape architecture and land use management, in which she combines blue-green-red development issues with the friendly social space planning. She collaborates with social movements for the creation of great public spaces.

Yanomami medicinal plants with potential application in dermatology: A review

Juliano Borges and **Adriana Passos Oliveira**

Universidade Federal do Rio de Janeiro, Brazil

Background: With about 49,992 described species, Brazil has the greatest diversity of plants of any country. The potential uses of medicinal plants are far from determined. Investigation of traditional knowledge, combining indigenous, African and European heritages, is an important approach for the study of medicinal plants. Brazilian ethnobotany is a promising field of study mostly neglected by medical researchers. The Yanomami are one of the most populous indigenous groups in the Amazon, whose lives are threatened by mining activities and diseases such as tuberculosis, alcoholism, and HIV infection. In 2015, the Brazilian non-profit organization Instituto Socioambiental published the Manual of Yanomami Traditional Medicine. This publication was the result of the work of young Yanomami researchers.

Objective: The objectives of this study were to select plants from the Yanomami Manual with potential use in dermatology and to search the Pubmed/Medline database for articles published about each plant.

Methods: A six-stage integrative literature review methodology was used in this study.

Results: The results revealed the scarcity of articles evaluating the effectiveness of dermatologic use of medicinal plants traditionally used by the Yanomami.

Limitations: Lack of similar comparative literature.

Conclusion: Biodiversity and ethnobotany represent a vast and neglected field for research.

Biography

Juliano Borges is a prominent dermatologist, hailing from Brazil. He obtained his medical degree from the Federal University of Rio de Janeiro (UFRJ) and went on to achieve both his master's and doctoral degrees from the same institution. Dr. Borges further specialized in dermatological surgery through a postgraduate program at the Federal Hospital of Bonsucesso and pursued additional studies in phytotherapy at UFRJ.

With a passion for advancing dermatology, Dr. Borges divides his time among his private practice, where he offers cutting-edge treatments and personalized care to his patients, teaching responsibilities, where he imparts his knowledge and expertise to the next generation of dermatologists, and engaging in research activities aimed at advancing the field of dermatology. Through his multifaceted contributions, Dr. Borges continues to make significant strides in improving skin health and quality of life for his patients and beyond.

Women's health in perspective of climate change and the role of Midwife and Nurse

Sema ÜSTGÖRÜL and **Bülent AKKAYA**
Manisa Celal Bayar University, Turkey

One of the primary potential risks to the world's population's health is climate change. Climate change, which concerns all countries of the world, is also among the sustainable development goals set to eliminate poverty, maintain human health and protect the world. It is caused by global warming, which is mostly caused by an increase in greenhouse gases produced by human actions. These gases include carbon dioxide, emissions from industry, nitrogen oxides, and automobile exhaust, all of which imprison additional heat in the earth's atmosphere. The weather extremes that follow lead to changes in the environment and air pollution. Population relocation, disruption of families, and damage to the public health and economic systems are the outcomes of this. Human health and well-being are directly impacted by climate change as well. Certain groups are particularly vulnerable, such as women, pregnant mothers, and kids. Women are vulnerable to climate change-induced food insufficiency/insecurity due to their increased nutritional needs during menstruation, pregnancy and postnatal period. The health of kids and women's sexual and reproductive systems is in danger due to the climate issue.

Gynecologists have a special opportunity to educate patients and their families about climate change mitigation options and to increase awareness of the issue. The focus of this research is on women's reproductive health and climate change, with the idea that both issues require immediate action for the health and welfare of present and future generations. To address and mitigate climate change contributors, including the extraction of fossil fuels, people require global collaboration, government regulations, and solutions that are applicable to the entire population. The research concluded that women's health are one of the most important key word among those dynamics.

Biography

Sema ÜSTGÖRÜL was born in 1984 in Izmir, Turkey. In 2007, she graduated from the faculty of nursing. She worked 5 years as a nurse. In 2021, she completed her Phd in Obstetrics and Gynaecology Nursing. She has been working as a lecturer for 12 years at Manisa Celal Bayar University. She has received sexual therapy training and she provide sexual health counselling. Her research is on sexual health, postpartum period and pregnancy, women leaders.

Effect of salinity, stocking density and their interactive effects on growth performance, digestive and metabolic enzyme activities of juvenile *Penaeus vannamei* reared in inland saline water

Gopal Krishna[1], Manmohan Kumar[1,4], Narinder Kumar Chadha[1], Satya Prakash[2], Annam Pavan Kumar[1] and **P. Gireesh Babu[3]**

[1]ICAR-Central Institute of Fisheries Education, Mumbai, India
[2]ICAR-Central Institute of Fisheries Education, Rohtak Centre, India
[3]ICAR- National Research Centre on Meat, Hyderabad, India
[4]College of Fisheries Science, India

70-days trial was done to investigate the effect of salinity, stocking density and their interactive effects on growth performance, digestive and metabolic enzymes activities of juvenile *Penaeus vannamei* (1.55 ± 0.01) reared in inland saline water (ISW) in thirty-six circular FRP tanks {diameter- 1.35 m and height (excluding 0.1 m freeboard)- 0.7 m; 1,000 L capacity}. Each circular FRP tank was considered as an experimental unit by following factorial design (3x4) *viz*. three different salinities (5 g L^{-1}, 10 g L^{-1} and 15 g L^{-1}) and four different stocking densities (40 m^{-3}, 60 m^{-3}, 80 m^{-3} and 100 m^{-3}) in triplicates. The feeding was done thrice per day in the morning between 7.00-8.00 am, afternoon between 1.00-2.00 pm and evening between 6.00-7.00 pm. Shrimp were fed commercially (NutrivaTM Growel Brand) with 36% crude protein, 5% crude fat, 2% crude fibre, and 11% moisture. In general, the physicochemical parameters of water were observed within the normal range and varied randomly without any significant difference ($P>0.05$). Significantly ($P<0.01$) better growth performance, survival and feed utilization parameters (mean final weight, weight gain percentage, specific growth rate, survival, apparent feed conversion ratio and apparent protein efficiency ratio) were recorded in shrimp reared at the combination of the highest salinity (15 g L^{-1}) and lowest stocking density (40 nos. m^{-3}). At the same time, inverse recorded for the combination of the lowest salinity (5 g L^{-1}) and highest stocking density (100 nos. m^{-3}) in the present study. Salinity and stocking density affected significantly ($P<0.01$) on all digestive and metabolic enzyme activities like protease, amylase, alanine aminotransferase (ALT), aspartate aminotransferase (AST), lactate dehydrogenase (LDH) and malate dehydrogenase (MDH). At the same time, their interaction between two factors was noted only in protease, ALT, AST and MDH. The results showed that the combination of the highest salinity 15 g L^{-1} and the lowest stocking density 40 nos. m^{-3} was optimum for better growth performance of *P. vannamei*. The finding of the present study has supported the higher production of *P. vannamei* in inland saline water which may be helpful to increase the income of farmers.

Biography

Dr. Gopal Krishna, Former Director and Vice Chancellor of ICAR - Central Institute of Fisheries Education, Mumbai, is a progressive and forward-looking Research Manager and Academician; Geneticist by training and specialized in Population / Conservation and Molecular Genetics. Guided and mentored the Research and Human Resource Development in the areas of Fish Genetics, Molecular Biology, Biotechnology, Inland Saline Aquaculture, Environmental Management, and Social Awareness; His major contribution is on genetic improvement programs in *P. monodon*, *P. vennamei*, *C. magur* and *M. rosenbergii* and development of National Facilities. Handled A World Bank Funded - National Agricultural Higher Education Project on Inland Saline Aquaculture.

He has been conferred awards *viz*. Clean and Green Campus Award of ICAR declared by Honourable Prime Minister of India, Dr. Rajendra Prasad Award, 100 Best Directors of India Award and Commendation Award by President ICAR, Government of India, New Delhi and Appreciation from various state governments.

Thermal remote sensing for marine freshwater identification

Hussein Harahsheh[1], Khalid Ben Dasmal[2] and **Ahmed Youssef[3]**

[1]AL Al Bayt University, Jordan
[2]Barjeel Aerila Photography Services, United Arab Emirates
[3]Ministery of Energy & Infrastructure, United Arab Emirates

The initial objective of this research is to understand if thermal remote sensing is a viable source to detect or identify submarine freshwater in the United Arab Emirates (UAE). It was established that the discharged freshwater was at least 0.5°C cooler than the surrounding seawater but the influence of the surrounding temperatures depends upon the time of year of observations. These findings are dependent upon the discharge volume of freshwater. Analysis of imagery acquired over the UAE began with two study areas: the first from Dubai to the Musandam peninsula, and the second from Abu Dhabi city north to Sir Abu Nu'Ayr. These two areas have been investigated using a time series of Landsat 8 thermal satellites to identify consistently appearing thermal anomalies on the sea surface. A trial area was chosen for ground truthing to validate the results using drop-down video and probe measurements. Several points were selected around each anomaly due to the large 100-meter pixel size of the thermal band. It is recommended to conduct the ground truthing focusing on anomalies in winter, which is a period of higher water table than in May. However, while submarine freshwater springs were not identified, there does appear to be some correlation with observations made from the remote sensing and features identified in the field. Therefore, the anomalies detected from the Landsat 8 imagery should not be discounted since it is highly probable that at least one of them may be identified because of groundwater discharge.

Biography

Hussein Harahsheh is serving as Assistant Professor of Remote Sensing at the university of Al Al Bayt. Hussein focuses on the applications of Remote Sensing technology that covers subjects on natural human hazards as resulted from climate changes and environmental degradation. His research covers desertification and land degradation process and its impact on agriculture and land resources management, as well the use of thermal remote sensing technology to study marine environment including the identification of marine freshwater springs. Hussein as well is focusing on marine hazards and pollution, particularly oil spill detection and monitoring using optical remote sensing and radar remote sensing (SAR).

He authored and co-authored more than 50 published works including 7 books all in remote sensing applications, other than managing around 20 projects for the industry of remote sensing.

Hussein holds a diploma in civil engineering from National School of Public Works of State (France/Lyon), 1986, a PhD on Remote Sensing from Chiba University (Japan/Chiba), 2001. He has 35 years' experience working in remote sensing and GIS fields. He was Lecturer at the University of United Arab Emirates, 2001-2003. Served in remote sensing and GIS industry in the Gulf region from 2003 till 2020.

Large-scale economic production of sustainable aviation fuels in Europe

Ralph-Uwe Dietrich, Felix Habermeyer, Simon Maier and **Julia Weyand**
German Aerospace Center, Institute of Engineering Thermodynamics, Germany

The EU commitment of greenhouse gas (GHG) emissions reduction in all sectors of at least 55 % by 2030, compared to 1990 levels, requires the transport sector to contribute substantially. Heavy-duty transportation, especially aviation and shipping, will continue to rely on liquid fuels for their higher energy density and must be replaced by sustainable alternatives. If European refineries start to supply an increasing share of sustainable aviation fuels (SAF) at EU airports as part of the ReFuelEU Aviation sustainable air transport initiative, an entire new market will be established and large-scale production capacities implemented.

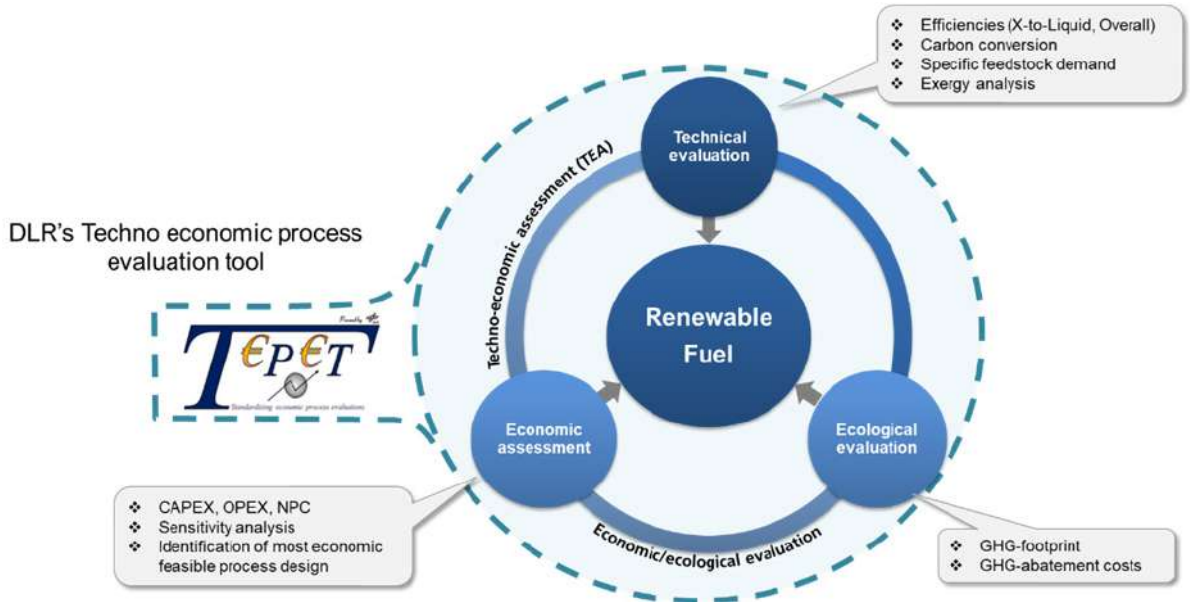

Fig. 1: Techno-economic and ecological assessment methodology @ DLR

Standardized, transparent holistic assessment of sustainable fuels can A) facilitate investment decisions and B) recommend regulation for market introduction towards true defossilization of transport. Applying our tool for simultaneous technical, economic and ecological assessment (TEPET, see Fig. 1) allows to identify the best possible choices of feedstocks, process design and system integration with reliable cost and GHG emissions reduction prediction.

SAF production ramp-up speed, overall supply costs and remarkable GHG abatement are the three key criteria aviation industry is demanding from future fuel suppliers. What are advantageous regions for European SAF production and what options for smooth system integration might be considered? What production costs, GHG emission reduction and overall production potential can be expected in each European region? What barriers prevent the Europe from reaching its GHG emissions reduction commitment by 2030?

Answers to all of these questions are interlinked and will be provided for the most promising SAF route. Combining the use of renewable electricity and nonfarm-based biomass allows large-scale low carbon fuels production (Power and Biomass to Liquid process). Syngas derived from biomass gasification is complemented with hydrogen from renewable electricity and converted to liquid hydrocarbons in the Fischer-Tropsch process. The product with some refinery upgrading steps is certified for global civil aviation as 50 percent blend to reduce the GHG emissions of the aviation industry.

Biography

Dr.-Ing. Ralph-Uwe Dietrich leads the research area Techno Economic Assessment (TEA) at the Institute of Engineering Thermodynamics of the German Aerospace Center (DLR e.V.) in Stuttgart since 2015. He is responsible for the research group on techno economic and ecologic evaluation of alternative fuels for aviation and global transport. He received his PhD in Engineering at the Technical University Clausthal in 2013 as a scientific associate at the Clausthaler Umwelttechnik Institute (CUTEC-Institut GmbH). He returned to science and science management after 15 years of project manager experience at different enterprises (SME and Fortune 500) of the process and automation industry. He published 20 scientific publications in the last five years alone.

The role of fossil fuels in changes of atmosphere and hydrosphere; Focusing on the Middle East and Iran

Mansour Ghorbani

Shahid Beheshti University, Iran

Human civilization, after the industrial revolution, with the use of fossil fuels and the peak of their use in 1950 until now, and the continuation of this trend until 2050, in about 100 years, will consume almost 80% of the world's accumulated reserves of fossil fuels. A sudden increase in CO_2 in such a short time means introducing a sudden shock to the compositions of the atmosphere, resulting in an increase in the Earth's heat, and this process is expected to become more intense. This problem has caused changes in the climate of the planet, and the result will be extreme changes in rainfall, drought in some areas, including Iran, the Middle East, and North Africa.

Biography

Dr. Mansour Ghorbani was born In Malayer on 1961. He studied geology at the University of Shahid Beheshti. He received his master's (M.Sc.) and Doctor of Philosophy (Ph.D.) degrees in 1993 and 1999, respectively. Following his academic accomplishments, he joined the geology faculty at the Shahid Beheshti University and has been teaching undergraduates, postgraduates and Ph.D. students till now. He currently holds the associate professor position at the University. From 1991 to 1996, he was involved in the treatise on the geology at geological survey of Iran. He wrote and compiled a lot of literatures on the geology and mineral deposits. The rewards and outcome of these years of studying and working are 38 books, more than 200 academic papers, supervising 10 research projects, advising and supervising of 80 theses in M.Sc. and Ph.D. degrees, over 120 scientific and technical reports in reference to natural and mineral resources in Iran and Iranology, as well as the compilation of international metallogeny and gem distribution maps of the Middle East geology maps of Iran.

Sulfide ores of deposits in the South of the Siberian Craton

B. Gongalsky

Institute of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry RAS, Russia

Southern Siberia represents a huge Cu metallogenic province located within the Kodar-Udokan trough consisting of PR sedimentary rocks (10 km thick). It comprises world-class Cu sandstone-hosted Udokan (Cu 26.7 Mt) with small satellites and Chineysky magmatic PGE-Cu deposits (Cu around 15 Mt). Their origin and genetic relationships have been discussed during long time. We have studied mineral composition of ores and their sulfur isotope composition in deposits located at different levels of the stratigraphic sequence and in gabbro. There are some differences: the Burpala, Skvoznoy deposits consist of chalcocite-bornite association which have only negative $\delta^{34}S$. The Udokan deposit is characterized by wide range of $\delta^{34}S$, mostly it<0 (up to -28‰), but some values are 2-4 and 12-13 ‰. The Chineysky and Luktursky sulfide deposits located in gabbro are characterized by positive $\delta^{34}S$ (average 3-4‰). Two Cu sandstone-hosted deposits have very complex ore composition: (i) the ores of the Krasny deposit consists of chalcopyrite-pyrrhotite as siciation, besides Cu it is enriched in Co, Ni, Bi, Zn, Se, Te, Sb, Mo, Pb, U ($\delta^{34}S$ =- 10 -+14‰); (ii), the Pravoingamakitsky deposit (Basaltovy section) comprises quartz-chalcopyrite veins enriched in high PGE and the $\delta^{34}S$ values = 3±8 ‰. These deposits occur in exocontact zones of the gabbro massifs, and we suppose that in their ore formation magmatic fluids take part. The common setting of deposits in rift zones, the proximity of mineral and isotopic composition allow us to conclude that the main source of copper could be rocks of basic composition because only they contain high Cu contents. Fluids from deep zones could penetrate to the surface and form Cu sandstone-hosted deposits.

Biography

Bronislav Gongalsky graduating from Kiev Geological Prospecting Collegeand worked as a geologist of the Sosnovsky Uranium Expedition (Irkutsk sity) since 1969. Then he graduated from Moscow Geological Institute in 1973. Hedefended his PhD thesis on the topic “Petrogenesis of Paleozoic granites of Eastern Transbaikalia”. In 1982-1995 he was a head of the Laboratory of Geology at the Institute of Natural Resources of the Siberian Branch of Russian Academy of Sciences (Chita city). The main objects of his study are ore deposits of

Transbaikalia including Au-quartz deposits, Cu sandstone-hosted, and Cu-Ni deposits. B.Gongalsky defended the Doctor thesis in 2012, and got a status of Doctor of geology-mineralogy sciences. At the moment, he is a Leader Researcher at IGEM RAS, Moscow. Bronislav Gongalsky was awarded by Special Mark of Russian Government "Excellence in mineral exploration" (2006). He is author of 3 books, 4 book chapters, and many articles in international journals.

Bisphenol-A exposure alters liver, kidney, and pancreatic Klotho expression by HSP60-activated mTOR/autophagy pathway in male albino rats

Ezat A. Mersal[2,3], Ahmed A. Morsi[1], Ahmed Othman Alsabih[4], Shaimaa Alakabawy[5], Riham G Elfawal[5,6], Eman M Sakr[3,7], Eman Mohamed Faruk[8,9], Mohammed Abu-Rashed[10], Fatimah Alhaddad[10], Zahra Alkhawajah[10], Abdulrahman Hasari[10], Khalid Elfaki Ibrahim[11] and **Ahmed M Abdelmoneim[12]**

[1]Department of Histology and Cell Biology, Faculty of Medicine, Fayoum University, Egypt
[2]Biochemistry Department, Faculty of Science, Assiut University, Egypt
[3]Department of Basic Medical Sciences, Vision Colleges, Saudi Arabia
[4]Department of Physiology, College of Medicine, King Saud University, Saudi Arabia
[5]Department of Clinical Sciences, Vision Colleges, Saudi Arabia
[6]Clinical Pathology Department, Faculty of Medicine, Alexandria University, Egypt
[7]National Institute of Oceanography and Fisheries (NIOF), Egypt
[8]Anatomy Department, College of Medicine, Umm Al-Qura University, Saudi Arabia
[9]Department of Histology and Cytology, Faculty of Medicine, Benha University, Egypt
[10]Medical Students, Vision Colleges, Saudi Arabia
[11]Department of Zoology, College of Science, King Saud University, Saudi Arabia
[12]Department of Physiology, Faculty of Medicine, Fayoum University, Egypt

The effect of bisphenol-A (BPA) on Klotho protein (aging-suppressing protein) expression in different body organs has not been sufficiently addressed by literature studies. The study investigated the impact of BPA on Klotho expression in multiple organs including the liver, kidney, and pancreas and suggested the involved mo-lecular pathways. Twenty-seven male Wistar albino rats were divided into 3 equal groups: control, low-dose BPA (4.5 µg/L), and high-dose BPA (8 µg/L) groups in drinking water for 45 consecutive days. Liver, kidney, and pancreatic specimens were prepared for a gene study of Klotho, HSP60, mTOR, and ULK1 mRNA expres-sions. Also, the tissue specimens were measured for malondialdehyde (MDA), superoxide dismutase (SOD), and nitric oxide (NO) levels. Paraffin-embedded sections were also prepared and subjected to Hematoxylin and Eosin (H&E) staining and immunohistochemical detection of Klotho and HSP60. The results revealed an alteration in the MDA, SOD, NO tissue levels, disturbed gene expression profile, and apoptotic changes in the histological

findings of the examined organs which were obvious ($p < 0.05$) in the high-dose group. The anti-aging Klotho gene/protein expression was reduced ($p < 0.05$) more in the high-dose BPA group than in the low dose. In contrast, HSP60 gene/protein expression was significantly increased ($p < 0.05$) more in the high dose.The increased mTOR gene expression was strongly correlated ($p < 0.05$) with the decreased autophagy related gene ULK1. It was concluded that BPA exposure contributed to cell stress and markedly reduced Klo-tho protein expression in liver, kidney, and pancreatic tissues, possibly by modulation of the HSP60-activated mTOR/autophagy signaling.

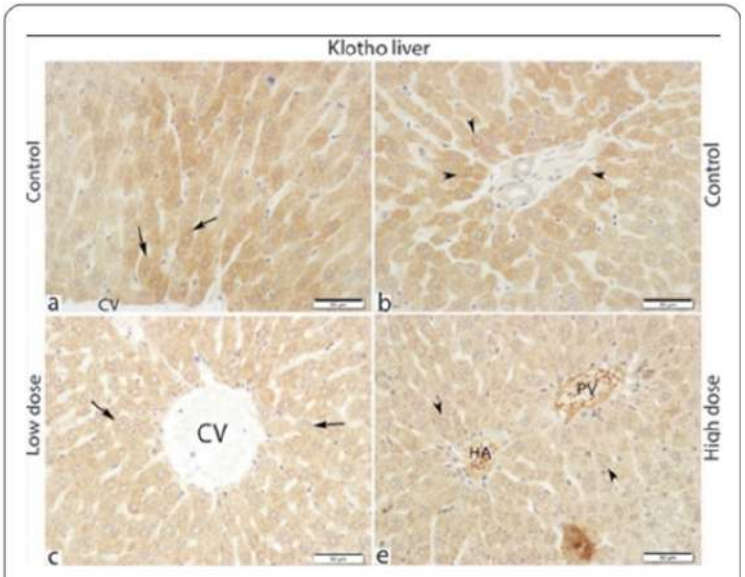

Figure 6. Effect of the two-dose-BPA exposure on the immunohistochemical expression of Klotho in the livers of the study groups. Control group (a, b) shows diffuse weak cytoplasmic klotho expression with marked hepatocytes expression (arrows) around the central vein (CV) and those (arrowheads) around the portal tract. Both low (c) and high dose (e)-exposed groups show loss of the characteristic pericentral (CV) and periportal klotho distribution. The portal tract is indicated by the presence of hepatic artery (HA) and portal vein (PV) branches. Anti-Klotho immune-light photomicrographs, scale bar: 50 µm.

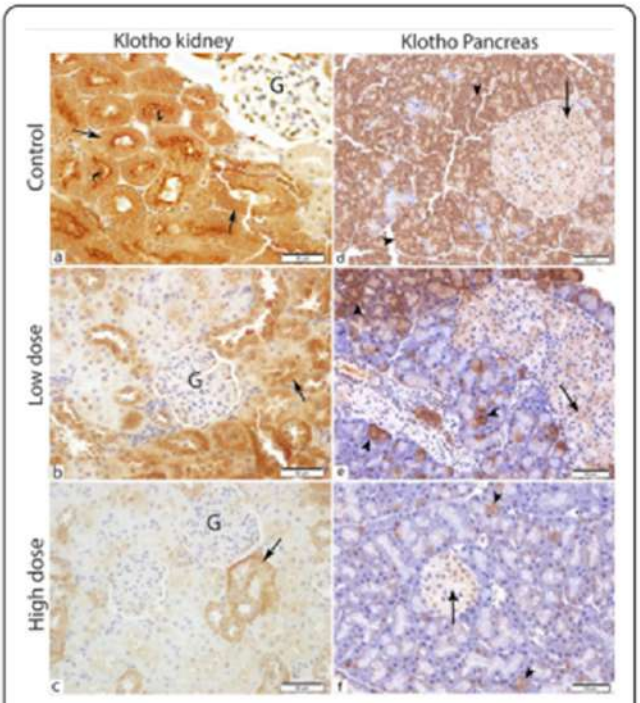

Figure 7. Effect of the two-dose-BPA exposure on the immunohistochemical expression of Klotho in the kidneys and pancreas of the study groups. a-c: kidney immunostaining. d-f: pancreas immunostaining. Control group (a) shows marked cytoplasmic klotho expression in the renal tubules (arrows) with prominent apical brush border immunopositivity (curved arrows). The renal glomeruli (G) are faintly reacted. Low-dose BPA group (b) shows a notable decrease in the renal tubular klotho expression (arrow) sparing renal glomeruli (G). High-dose group (c) shows diffuse faint klotho immunostaining and few renal tubules show weak reaction (arrow). Control group (d) shows diffuse cytoplasmic klotho immunopositivity in pancreatic acini (arrowheads) and faint islet cells (arrow) reaction was observed. Low-dose BPA group (e) shows scattered acinar (arrowheads) and islet cell (arrow) immunoreactions. High-dose group (f) shows a diffuse negative reaction.Very few acinar reactions are noticed (arrowheads) and islet cells (arrows) show negative reactivity. Anti-Klotho immune-light photomicrographs, scale bar: 50 µm.

Agile leadership: Empowering female managers in addressing climate change

Bulent AKKAYA[1] and **Maria Palazzo**[2]

[1]Manisa Celal Bayar University, Turkey
[2]Universitas Mercatorum, Italy

The article highlights the synergy between agile leadership and the empowerment of female managers in addressing climate change. Agile leadership, with its emphasis on adaptability and innovation, is depicted as a crucial framework for navigating the complexities of environmental challenges. Female managers, known for their collaborative and empathetic leadership style, are positioned as catalysts for inclusive and sustainable solutions. The current paper underscores the importance of diversity in leadership and the need to empower women within organizations for effective climate action. It concludes by advocating for the integration of agile principles and female empowerment to create a more resilient and sustainable future.

Biography

Bulent AKKAYA (Associate Professor) is from Manisa Celal Bayar University, Manisa, Turkey. He is the head of the Department of Office Management and works as an associate professor at the same university. He is also the Erasmus coordinator of Ahmetli VHS of Manisa Celal Bayar University. He has authored over 70 research papers, book chapters, and proceedings, and also edited eight books published by highly regarded publishers such as Emerald, IGI Global, and Sciendo. His research has been cited by other researchers over a thousand times on Scholar Google. He has developed and adapted numerous scales. His research interests include networks and partnerships in diverse disciplines and health management. His research interests include climate change, healthcare management, female leaders, dynamic capabilities, agility, organizational agility, agile leadership, Industry 4.0 and 5.0, and the quality of management in contemporary enterprises. He has completed scientific collaborations and visits to many universities *via* the Erasmus program and MoU.

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Seismic wave simulation with the lattice Boltzmann and lattice spring model coupled schemes

Muming Xia[1,2], Hui Zhou[3], Hanming Chen[3], Jinming Cui[3], Yong Zeng[3] and **Zongwei Li[2]**

[1]China University of Geosciences, Beijing, China
[2]Institute of Geology and Geophysics, Chinese Academy of Sciences, China
[3]China University of Petroleum, China

Seismic wave propagation in fluid-solid coupled media is currently a popular topic. However, traditional wave equation-based simulation methods have limitations when dealing with complex fluid-solid boundaries. To address this challenge, we proposed a novel numerical scheme that integrates the lattice Boltzmann method (LBM) and lattice spring model (LSM). The LBM calculates viscoacoustic wave propagation in the fluid areas, while the LSM simulates elastic wave propagation in the solid areas. We also introduce three different LBM-LSM coupling strategies, the standard bounce-back scheme, the specular reflection scheme, and a hybrid scheme to describe seismic wave propagation across the fluid-solid boundaries.

To validate the LBM-LSM coupling schemes, we devised some two-layered models. We conducted two cases of wave excitation in the fluid and solid areas to investigate the accuracy of seismic wave calculations passing through fluid-solid interfaces from different directions. The LBM-LSM simulation results were compared with the reference wavefields obtained by the finite difference method and with analytical solutions. The proposed schemes are verified effective, as the relative errors between the simulation and reference wavefields are within an acceptable range, approximately 1.00%. We also employ the new numerical tool to simulate seismic wavefields in a seabed model with practical application value for ocean seismic exploration.

In general, we developed a novel seismic forward modeling method that does not solve wave equations. This method has potential applications in various fields, such as seismic forward modeling, seismic inversion, and rock physics, especially in dealing with wave propagation problems in two- and multi-phase media.

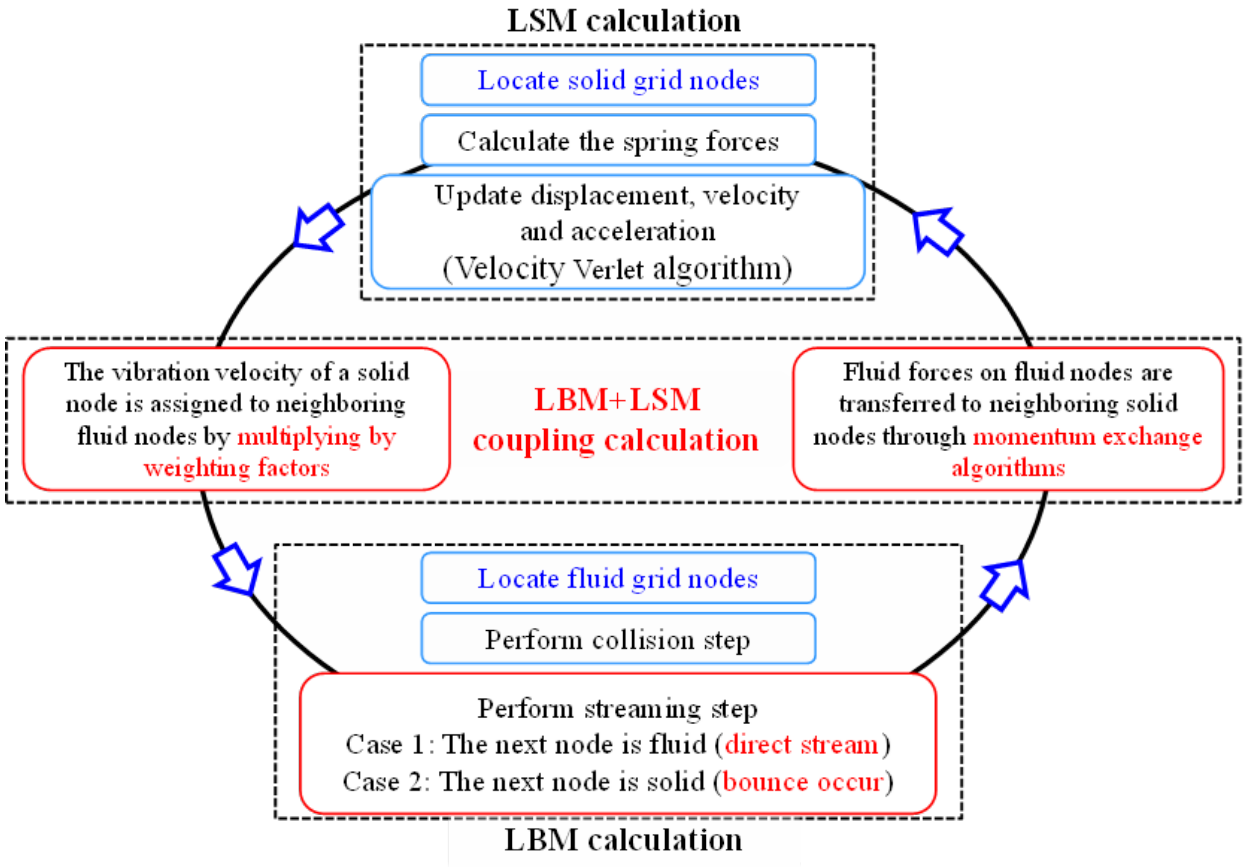

Fig. 1. Flow chart of the LBM-LSM coupling schemes

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Biography

Muming Xia received a Ph.D. degree in geophysics from the China University of Petroleum, Beijing (CUPB), Beijing, China, in 2019. From 2018 to 2019, he was a Visiting Fellow at Harvard University, Boston, MA, USA. From 2020 to 2024, he was a Postdoctoral Researcher at the Institute of Geology and Geophysics, Chinese Academy of Sciences (IGGCAS). Since August 2024, he will be a Lecturer at the China University of Geosciences, Beijing (CUGB). His research interests include wave propagation in complex fluid-solid coupled media, logging while drilling (LWD), sonic logging, and the application of AI in Geophysics.

Leveraging energy-efficient high-performance computing with Flamingo Search Algorithm for sustainable precision agriculture in the context of climate change adaptation

Paul Rodrigues, Zahra Sheekheen, Mohammad Alhefdi and Ayman Qahmash

Department of Computer Engineering, College of Computer Science, King Khalid University, Saudi Arabia

The integration of high-performance computing (HPC) with bio-inspired optimization algorithms offers a promising pathway for addressing critical challenges at the intersection of Earth science, climate change, and sustainable agriculture. This research investigates the application of HPC techniques in conjunction with the Flamingo Search Algorithm (FSA) to enhance energy efficiency and computational performance in precision agriculture—a sector increasingly vital for climate adaptation and resilience.

As climate change intensifies, precision agriculture, powered by advanced technologies such as sensors, drones, and big data analytics, plays a crucial role in optimizing crop production, conserving water, and maintaining soil health. However, the substantial computational demands of these technologies necessitate energy-efficient solutions, especially as agriculture adapts to changing environmental conditions. Addressing these challenges is essential not only for sustainable land management but also for mitigating the broader impacts of climate change on food security and resource conservation.

In this study, the GEM5 simulator and OpenMP are employed to model and enhance the performance of parallel computing processes tailored for precision agriculture. By leveraging these HPC tools, the research develops an energy-efficient algorithm, HPC-FSA, that demonstrates superior resource allocation and energy savings, outperforming current state-of-the-art techniques. This advancement supports the goals of sustainable development by aligning agricultural practices with environmental conservation and climate change mitigation.

The findings contribute to both Earth science and climate change discourse by showcasing how computational advancements can facilitate adaptive strategies in agriculture. By integrating HPC and bio-inspired algorithms, this study offers scalable solutions for sustaining agricultural productivity in the face of global environmental changes, reinforcing the importance of interdisciplinary approaches in the fight against climate-related challenges.

Biography

Paul Rodrigues is a Professor in the Department of Computer Engineering (ABET and NCAAA accredited) at King Khalid University, Saudi Arabia. He holds a Ph.D. in Computer Science and Engineering from Pondicherry University, India. With 32 years of experience spanning teaching, research, and industry, his expertise includes delivery management, ISO, CMMI, quality assurance & management, software engineering, product development, budget management, and business development. He has extensive experience in administration and has been instrumental in the end-to-end development and implementation of ABET and NCAAA processes. Widely traveled, he has delivered over 32 lectures at international conferences and has published more than 168 peer-reviewed papers in international and national journals, and conference proceedings. His research interests include software engineering, hardware security, artificial intelligence, Optimizing Energy Efficiency and high-performance computing.

Compositional insight into sustainable firefighting foam for strategic applications

Durgesh Nandini, Pragya Malik and **Inder Pal Singh Kanwal**
Centre for Fire, Explosive and Environment Safety, Defence R & D Organization, India

Firefighting foams are aggregates of small bubbles which efficiently combat Class B fire by forming a vapor suppressing blanket over the fuel surface. The firefighting efficacy of the aqueous film forming foams (AFFF) can be attributed to the presence of perfluorinated molecules as the significant ingredient. Following the regulations imposed on the use of long chain fluorinated compounds, researchers have been actively engaged in developing safer and more sustainable alternatives to legacy firefighting foams having 'forever chemicals'. The release of firefighting foams into the soil and water bodies arises as a matter of environmental concern due to the persistent, bioaccumulative and toxic nature of fluorinated ingredients. Pertaining to the toxicity, perfluorooctanoic acid has a half-life of more than five years in adult humans. Alternative compounds such as perfluorobutane sulfonate has a shorter half-life of 45 days in adult humans, yet its impact on soil and aquatic ecosystems is still under investigation. Recently, fluorine free foams containing siloxane-based surfactants have emerged as alternatives to traditional AFFFs, drawing attention of regulatory bodies leading to the revised performance parameter in US military standard (MIL-PRF-32725). However, the proprietary nature of both fluorine-containing and fluorine-free film forming foam formulations is a challenge in developing advanced and sustainable firefighting foams in respect of their performance, cost, and environmental regulations.

Biography

Dr. (Ms) Durgesh Nandini is serving as a Scientist in the Centre for Fire, Explosive and Environment Safety, Defence Research and Development Organization, Government of India for the past 19 years. She earned her PhD in Chemistry from Banaras Hindu University, Varanasi. Her area of expertise is in the process development of halon alternatives to be used as fire extinguishing agents. She has played a vital role in the development of process technology of Heptafluoropropane, a worldwide acceptable closest substitute of Halons. She is the recipient of National level DRDO Young Scientist Award in year 2012 for her contribution in the area of fire safety and National science Day award in year 2018 for development of Fluorosurfactants for firefighting foam. Presently, she is engaged in developing sustainable and environmentally compliant technologies in the field of fire safety products for strategic applications.

Plant extract preparation and green synthesis of silver nanoparticles using *Swertia chirata*: Characterization and antimicrobial activity against selected human pathogens

Muhammad Adnan Shereen, Aftab Ahmad and **Hashir Khan**

Department of Microbiology, Kohsar University Murree, Pakistan

Herbal medicinal plants have been used for centuries in traditional medicine, and it is interesting to see how modern research has identified the active compounds responsible for their therapeutic effects. The green synthesis of silver nanoparticles using herbal medicinal plants, such as Swertia chirata, is particularly noteworthy due to its antimicrobial properties. In the current study, the Swertia chirata plant was collected for the first time from the region of Murree, Punjab, Pakistan. After collection, extracts were prepared in different solvents (ethanol, methanol, chloroform, and distilled water), and silver nanoparticles were synthesized by reducing silver nitrate ($AgNO_3$). The UV–visible spectrophotometer, SEM, and EDX were used to characterize the synthesized nanoparticles in terms of their size and shape. The phytochemical analysis of crude extract was performed to determine the presence of different kinds of phytochemicals. The antibacterial activity of plant extracts and the silver nanoparticles were then assessed using the agar well diffusion method against various pathogenic bacteria. The results showed that the plant contains several phytochemicals with remarkable antioxidant potential. The antibacterial analysis revealed that silver nanoparticles and the plant extracts exhibited a significant zone of inhibition against human pathogenic bacteria (Escherichia coli, S. capitis, B. subtilis, and Pseudomonas aeruginosa) as compared to the cefixime and norfloxacin. This implies that the nanoparticles have the potential to be used in nano-medicine applications, such as drug delivery systems, as well as for their antibacterial, antifungal, and antiviral activities. Additionally, the development and application of materials and technologies at the

Biography

Dr. Muhammad Adnan Shereen is a dedicated researcher at Northwestern University, US, and Head of the Department of Microbiology at Kohsar University, Murree, Pakistan. His work emphasizes the characterization and antimicrobial properties of these Plant nanoparticles against various human pathogens. Dr. Shereen's research aims to harness the potential of natural products for developing sustainable and eco-friendly

solutions in nanotechnology and Microbiology. His efforts contribute significantly to the fields of medicine and microbiology, offering innovative approaches to combating microbial infections, and therefore, ranked among the top 2% of influential scientists in the world by Stanford University. Throughout his career, Dr. Shereen has demonstrated a strong commitment to scientific excellence, reflected in his numerous publications (40+ articles / 300 IF / 7500 citations) and contributions to the broader scientific community. He holds a Ph.D. and has been actively involved in both teaching and research, fostering the next generation of scientists.

Assessment of the links between climate, air pollution, and human health: Effects, adaptation measures, and mitigation approaches

Oumaima EL-GHAMMAD[1], Jamal MABROUKI[2] and **Miloudia SLAOUI[1]**

[1]Energy, Materials and Sustainable Development (EMDD) Laboratory - Higher School of Technology – SALE, Center of Water, Natural Resources, Environment and Sustainable Development (CERN2D), University Mohammed V in Rabat, Morocco
[2]Laboratory of Spectroscopy, Molecular Modelling, Materials, Nanomaterials, Water and Environment, CERN2D, Mohammed V University in Rabat, Faculty of Science, Morocco

Climate change poses a major global threat to human health, manifesting through both direct and indirect impacts. Direct effects include heatwaves, severe storms, floods, and deteriorating air quality. These events contribute to various health issues: heatwaves can cause heat-related illnesses and increase mortality rates; severe storms and floods can lead to injuries, infectious diseases, and damage to health infrastructure; and air pollution is linked to serious respiratory and cardiovascular conditions.

Indirectly, climate change exacerbates problems such as population displacement, food insecurity, and fluctuations in water resources. Extreme weather events and rising sea levels can displace communities, leading to overcrowded and inadequate living conditions that strain health systems. Food insecurity, driven by shifting climate patterns, affects nutrition and can result in malnutrition and related health complications. Changes in water availability can impact sanitation and hygiene, potentially increasing the risk of waterborne diseases.

This research provides a detailed review of scientific literature to elucidate the complex relationship between climate change, air pollutants, and human health. It underscores how rising global temperatures may worsen these impacts, heightening health risks. To address these challenges, it is crucial to implement both mitigation and adaptation strategies.

Mitigation focuses on reducing greenhouse gas emissions to slow global warming and its impacts. Adaptation involves enhancing infrastructure to cope with extreme weather, promoting sustainable agricultural practices for food security, and developing effective public health policies. Integrating these approaches is essential for minimizing health impacts and building resilient communities, ensuring better protection against the evolving threats of climate change.

Biography

Currently a first-year PhD student at the Energy, Materials, and Sustainable Development (EMDD) Laboratory at the Higher School of Technology – SALE, and the Center for Water, Natural Resources, Environment, and Sustainable Development (CERN2D) at Mohammed V University in Rabat, Morocco, Oumaima EL GHAMMAD is also a contributor to several significant publications. She has co-authored the chapter titled "A Wise Agriculture for Sustainable Productivity and Healthy Ecosystems," included in the book "Advancements in Climate and Smart Environment Technology," edited by Mabrouki and published by IGI Global Publishing (DOI: 10.4018/979-8-3693-3807-0). Additionally, Oumaima EL GHAMMAD is a co-author of the chapter "Digitalization of a System Transport and Distribution of Drinking Water by Designing an Online Digital Model on a Virtual Platform," published in the book "Technical and Technological Solutions Towards a Sustainable Society and Circular Economy" by Springer Cham (DOI: https://doi.org/10.1007/978-3-031-56292-1).

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INDEX

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