



PROCEEDINGS OF THE 11th WORLD CONGRESS ON NEW TECHNOLOGIES (NEWTECH 2025)

August 21 - 23, 2025 | Paris, France

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WELCOME MESSAGE FROM THE CONFERENCE CHAIR

On behalf of the International Academy of Science, Engineering and Technology (International ASET Inc.), the organizing committee would like to welcome you to the 11th World Congress on New Technologies (NewTech 2025).

NewTech is aimed to become one of the leading international annual congresses in the fields of new technologies. This congress will provide excellent opportunities to the scientists, researchers, industrial engineers, and university students to present their research achievements and to develop new collaborations and partnerships with experts in the field.

While each conference consists of an individual and separate theme, the 5 conferences share considerable overlap, which prompted the organization of this congress. The goal of this undertaking is to bring together experts in each of the specialized fields, and at the same time allow for cross pollinations and sharing of ideas from the other closely related research areas.

At the eleventh edition of this conference, nine Plenary Speakers and five Keynote Speakers will share their expertise, offering participants a broad range of insights and encouraging the exchange of ideas to inspire new research directions. Additionally, around 103 papers will be presented by professors, students, and researchers from around the globe.

We thank you for your participation and contribution to the 11th World Congress on New Technologies (NewTech 2025). We wish you a very successful and enjoyable experience.

Dr. Devika Chithrani

University of Victoria, Canada

Congress Chair and Proceedings Editor

NewTech 2025

Dr. Domenico Lombardo

CNR - (Consiglio Nazionale delle Ricerche), Italy

Congress Chair and Proceedings Editor

NewTech 2025

ABOUT NEWTECH 2025

NewTech is aimed to become one of the leading international annual congresses in the fields of new technologies.

This congress will provide excellent opportunities to the scientists, researchers, industrial engineers, and university students to present their research achievements and to develop new collaborations and partnerships with experts in the field.

There are 5 conferences included in the NewTech Congress:

ICNFA 2025 - 16th International Conference on Nanotechnology: Fundamentals and Applications

ICEPR 2025 - 15th International Conference on Environmental Pollution and Remediation

ICBB 2025 - 11th International Conference on Bioengineering and Biotechnology

ICERT 2025 - 9th International Conference on Energy Research and Technology

ICCEIA 2025 - 2nd International Conference on Civil Engineering: Innovations & Advancements (ICCEIA 2025)

While each conference consists of an individual and separate theme, the 5 conferences share considerable overlap, which prompted the organization of this congress. The goal of this undertaking is to bring together experts in each of the specialized fields, and at the same time allow for cross pollinations and sharing of ideas from the other closely related research areas.

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

Google Scholar

Scopus

Crossref

PORTICO

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SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the NewTech 2025 Congress:



Dr. Devika Chithrani
University of Victoria, Canada
Congress Co-Chair



Dr. Domenico Lombardo
CNR - (Consiglio Nazionale
delle Ricerche), Italy
Technical Program Chair

Scientific Committee Members for ICNFA 2025

- **Dr. Dayan Ban**, Waterloo University, Canada
- **Dr. Bernadeta Dobosz**, Adam Mickiewicz University in Poznań, Poland
- **Dr. Redhouane Henda**, Laurentian University, Canada
- **Dr. Jeff Th. M. De Hosson**, University of Groningen, Netherlands
- **Dr. Dongyang Li**, University of Alberta, Canada
- **Dr. Rahul M. Mane**, Shivaji University, India
- **Dr. Daisuke Onoshima**, Nagoya University, Japan
- **Dr. Muthukumaran Packirisamy**, Concordia University, Canada
- **Dr. CN Ramchand**, MagGenome Technologies Pvt.Ltd, India
- **Dr. K. K. Singh**, BITS Pilani Dubai, India
- **Dr. Aimin Song**, Institute of Nanoscience and Applications Southern University of Science and Technology Shenzhen, China
- **Dr. Jules Thibault**, University of Ottawa, Canada
- **Dr. Ludwig Vinches**, École de Technologie Supérieure, Canada

SCIENTIFIC COMMITTEE

Scientific Committee Members for ICEPR 2025

- Dr. Zeki Ayag, University Quality Commission-Advisor, Turkey
- Dr. Priscilla Boccia, INAIL/DIT, Italy
- Dr. Monika Bojko, Jagiellonian University, Poland
- Dr. Elisabetta Franchi, Eni S.p.A., Italy
- Dr. Jennifer Gubitosa, University of Bari, Italy
- Dr. Oliver Terna Iorhemen, University of Northern British Columbia, Canada
- Dr. Jianbing Li, Univeristy of Northern British Columbia, Canada
- Dr. Charles Lee, The University of Newcastle, Singapore
- Dr. Woo Hyoung Lee, University of Central Florida, USA
- Dr. Domenico Morabito, Université d'Orléans, France
- Dr. Maria Rita Muzzi, Universidade Federal de Minas Gerais, Brazil
- Dr. Parveen Fatemeh Rupani, Cranfield University, uk
- Dr. Vito Rizzi, University of Bari, Italy
- Dr. Chih-Huang Weng, I-Shou University, Taiwan
- Dr. Chunlong Zhang, University of Houston-Clear Lake, USA

Scientific Committee Members for ICBB 2025

- Dr. Mergen Ghayesh, The University of Adelaide, Australia
- Dr. Andreas Kremling, Technische Universität München, Germany
- Dr. Andrey V Kuznetsov, North Carolina State University, USA
- Dr. Wensheng Qin, Lakehead University, Canada
- Dr. Bindu S., Ramaiah Institute of Technology, India

Scientific Committee Members for ICERT 2025

- Dr. Umberto Berardi, Toronto Metropolitan University, Canada
- Dr. Andrey V Kuznetsov, North Carolina State University, USA
- Dr. Ming-Chang Lu, National Taiwan University, Taiwan
- Dr. Simone Mancin, University of Padova, Italy
- Dr. Grzegorz Sierpiński, Silesian University of Technology, Poland
- Dr. Md Shafiullah, King Fahd University of Petroleum & Minerals, Saudi Arabia

SCIENTIFIC COMMITTEE

Scientific Committee Members for ICCEIA 2025

- **Dr. Massimo Fragiaco**, University of L'Aquila, Italy
- **Dr. Iman Hajirasouliha**, University of Sheffield, UK
- **Dr. Venkatesh Kodur**, Michigan State University, USA
- **Dr. Firas AL Mahmoud**, University of Lorraine, France
- **Dr. Danuta Leszczynska**, Jackson State University, USA
- **Dr. Jiabin Li**, Katholieke Universiteit Leuven, Belgium
- **Dr. M. Shamim Miah**, Graz University of Technology (TU Graz), Austria
- **Dr. Vipulkumar Ishvarbhai Patel**, La Trobe University, Australia
- **Dr. Cao Hung Pham**, University of Sydney, Australia
- **Dr. Payam Shafigh**, Wenzhou University of Technology, China
- **Dr. Roger Tilley**, University of California Santa Cruz, United States, USA
- **Dr. Kejin Wang**, Iowa State University, USA
- **Dr. Kamyab Zandi**, Director and CEO at Timezyx Inc., Canada

PLEANRY & KEYNOTE SPEAKERS

THE PLENARY/KEYNOTE INFORMATION FOR THE 11TH WORLD CONGRESS ON NEW TECHNOLOGIES (NEWTECH 2025) IS AS FOLLOWS:

Plenary Speakers



Dr. Leela Mohana Reddy
Arava
Wayne State University, USA
ICERT 2025 Plenary Speaker



Dr. Shahria Alam
University of British Columbia,
Canada
ICCEIA 2025 Plenary Speaker



Dr. Devika Chithrani
University of Victoria, Canada
ICNFA 2025 Plenary Speaker



Dr. Nawawi Chouw
The University of Auckland, New
Zealand
ICCEIA 2025 Plenary Speaker



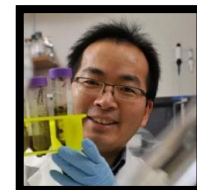
Dr. Mamadou Fall
University of Ottawa, Canada
ICCEIA 2025 Plenary Speaker



Dr. Joseph A. Fraietta
University of Pennsylvania, USA
ICBB 2025 Plenary Speaker



Dr. Ian Holmes
UC Berkeley, USA
ICBB 2025 Plenary Speaker



Dr. Jianbing Li
University of Northern British
Columbia (UNBC), Canada
ICEPR 2025 Plenary Speaker



Dr. Jason Zhang
University of Ottawa, Canada
ICBB 2025 Plenary Speaker

PLEANRY & KEYNOTE SPEAKERS

THE PLENARY/KEYNOTE INFORMATION FOR THE 11TH WORLD CONGRESS ON NEW TECHNOLOGIES (NEWTECH 2025) IS AS FOLLOWS:

Keynote Speakers



Dr. Jinju (Vicky) Chen
Loughborough University, UK
ICNFA 2025 Keynote Speaker



Dr. Sailin Liu
University of Adelaide, Australia
ICEPR 2025 Keynote Speaker



Dr. Borja G. Reguero
University of California Santa Cruz, USA
ICEPR 2025 Keynote Speaker



Dr. Huichun (Judy) Zhang
Case Western Reserve University, USA
ICEPR 2025 Keynote Speaker



Dr. Mijia Yang
North Dakota State University, US
ICCEIA 2025 Plenary Speaker

PLENARY SPEAKER



Titles: N/A

Dr. Leela Mohana Reddy Arava, Wayne State University, USA

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Dr. Arava received his Ph.D. from Indian Institute of Technology Madras. He conducted his postdoctoral research at University of Pittsburgh and Rice University. He then spent a year as a research scientist at Rice University. In fall 2013, he joined Wayne State University as an Assistant Professor of Mechanical Engineering and promoted to Associate professor 2018. Dr. Arava's Research Group is interested in fundamental electrochemical principles underlying in energy systems such as batteries, supercapacitors and fuel cells. His group focused on designing variety of nanomaterials and understands their transport phenomena, electrode kinetics, electrocatalytic activity, and thermal and electrochemical stabilities under extreme environments. His diverse activities in terms of applications include developing high energy and safe batteries for electric vehicles, micro-batteries to power micro-sensors, and flexible hybrid energy devices for wearable assistive technologies. Dr. Arava has published 100 peer-reviewed international journals papers, 2 book chapters, 8 patents and delivered more than 50 invited talks and seminars in academia and industry. His research has been cited more than 10,000 times and has h-index of 43.

PLENARY SPEAKER



Titles: Harnessing AI for Sustainable Design and Seismic Resilience of UHPC Structures

Dr. Shahria Alam, University of British Columbia, Canada

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Dr. Shahria Alam is a Full Professor of Civil Engineering and the Tier-1 Principal's Research Chair in Resilient & Green Infrastructure at The University of British Columbia (UBC)'s Okanagan campus. He is an elected Fellow of the American Society of Civil Engineers (ASCE) and the Canadian Society for Civil Engineering (CSCE). Dr. Alam is the director of the Green Construction Research & Training Center (GCRTC) and the acting director of the Materials and Manufacturing Research Institute (MMRI) at UBC. Dr. Alam is the Vice President (Technical Program) of the Canadian Society for Civil Engineering (CSCE). He was the past Chair of CSCE's Engineering Mechanics and Materials Division. He received his PhD in Civil Engineering from Western University in 2008. His research interests include resilient infrastructure, smart and recycled materials and their structural engineering applications, and their performance-based design. He has published more than 500 peer-reviewed articles and technical reports in these areas. Dr. Alam has received many national and international awards, including four best paper awards and, more recently, the Killam Faculty Research Prize.

PLENARY SPEAKER



Titles: Harnessing Nanotechnology to Improve Targeted Cancer Treatment: Overcoming Hurdles in Its Clinical Implementation

Dr. Devika Chithrani, University of Victoria,

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Prof. Devika Chithrani is the recipient of faculty gold medal and the gold medal for physics when she received her bachelor's degree in physics. She is a recipient of many fellowships by Natural Sciences and Engineering Research Council of Canada during her graduate and post-doctoral work. Now, she is a full professor at University of Victoria. She is also the director of Nanoscience and technology Development laboratory at University of Victoria. She leverages nanotechnology to create innovations that advance the care of cancer patients. Her work is featured on the cover of journals and her publications have received over 13,000 citations in few years. She is among the world's top 2% scientists according to the published data by Stanford University. Her passion is to develop smart nanomaterials to improve exiting cancer therapeutics.

PLENARY SPEAKER



Titles: The Importance of Soil Behaviour for Structures during Earthquakes

Dr. Nawawi Chouw, The University of Auckland, New Zealand

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Professor Nawawi CHOUW was Director of the University of Auckland Centre for Earthquake Engineering Research in New Zealand. He worked at universities in Germany, Japan, and Australia before joining the University of Auckland. He received his doctorate in Civil Engineering from the Ruhr University Bochum in Germany. He has twice been awarded the Gledden Fellowship of the University of Western Australia, the Fritz-Peter-Mueller Prize of the Technical University of Karlsruhe, Germany, the Best Research Award of Chugoku Denryoku Research Foundation, Japan, and received two recognitions for excellence in research supervision from Chinese Scholarship Council. He has published 458 publications, including 147 in international journals. He was invited to teach at several universities in Europe, China, and Japan. He was guest editor of several journals, e.g., Protective Structures, Soil Dynamics and Earthquake Engineering. He is the associate editor of Materials, Shock and Vibration and Frontiers in Build Environment – Earthquake Engineering and serves on the editorial board of several international journals, e.g., Engineering Structures. He was a visiting and guest professor at several universities in China, Germany, Canada, Australia, and Japan.

PLENARY SPEAKER



Titles: Safe Below, Clean Above: Subsurface Engineering for Sustainable Nuclear Energy

Dr. Mamadou Fall, University of Ottawa, Canada

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Prof. Mamadou Fall is a Distinguished University Professor and Chair of the Department of Civil Engineering at the University of Ottawa (Canada), where he also holds the prestigious University Research Chair in Geotechnical Engineering for Net Zero Transitions. A Fellow of the Engineering Institute of Canada, Dr. Fall is internationally recognized as a leading expert in geotechnical and geoenvironmental engineering, with a particular focus on technologies that are critical for the construction and maintenance of sustainable structures and net zero transitions. Throughout his career, Prof. Fall has secured substantial research funding and produced over 325 publications, with his work being widely adopted by industry, governmental agencies, and research institutions around the world. He has supervised and trained more than 100 highly qualified personnel (HQP), many of whom now occupy leadership positions in academia, government, and industry. Prof. Fall has delivered numerous keynote lectures and contributed to scientific committees across five continents. His outstanding contributions have earned him multiple prestigious honors, including the John B. Stirling Medal, the Franz-Special Award for Geotechnical Engineering, the University of Ottawa Award for Research Excellence, and recognition among the world's top 2% of scientists by Stanford University. Beyond his research, Prof. Fall has held several strategic leadership roles, including Vice-President Technical of the Canadian Geotechnical Society, Director of the Ottawa-Carleton Institute for Environmental Engineering, and Coordinator of the German Research Chair in Environmental Geosciences and Geotechnics.

PLENARY SPEAKER



Titles: CCR5-Engineered $\gamma\delta$ CAR-T Cells as a Platform for HIV-Associated B-Cell Lymphoma Therapy

Dr. Joseph A. Fraietta, University of Pennsylvania, USA

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Dr. Joseph Fraietta completed his doctoral studies in Microbiology and Immunology and proceeded to a post-doctoral fellowship at the University of Pennsylvania under the tutelage of Drs. Carl June and Marcela Maus. Here, he drove critical advancements in T cell genetic modification for cancer treatment, contributing to the FDA approval of the first CAR T cell therapy. Today, as Principal Investigator of his research laboratory as well as Director of Translational and Correlative Sciences in the renowned Center for Cellular Immunotherapies, Dr. Fraietta spearheads efforts to elucidate factors influencing response and resistance in patients undergoing cell-based immunotherapies, aiming to enhance therapeutic outcomes. His seminal work encompasses the first identification of molecular and cellular biomarkers tied to patient responses to CAR T cell therapy, the discovery that a single epigenetically-programmed CAR T cell can expand and effect sustained leukemia remission in a human, and co-leading the first-in-human clinical trial of CRISPR/Cas9-engineered T cells. A tenure-track faculty member at the Perelman School of Medicine Department of Microbiology, Dr. Fraietta's high-impact findings are frequently published in top-tier journals including Nature and Science. Among his honors, he holds the 2019 National Clinical Research Award, which recognizes the ten most outstanding clinical research accomplishments in the United States during the preceding twelve months. Further highlighting his commitment to medical science progression, he was recently invited to Capitol Hill in Washington, D.C. where he spoke to congressional leaders about the importance of translational research and the need for continued funding.

PLENARY SPEAKER



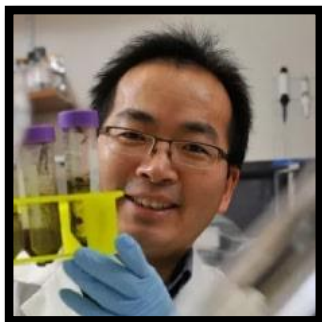
Titles: Machine Learning In the Genome Browser

Dr. Ian Holmes, UC Berkeley, USA

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Ian Holmes is a professor at UC Berkeley affiliated with the departments of Bioengineering and Computer Science, and with the Center for Computational Biology. He was trained in theoretical physics and genetics at the University of Cambridge.

PLENARY SPEAKER



Titles: Petroleum Sludge Valorization via Pyrolysis: Modelling and Experimental Studies

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

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Dr. Jianbing Li is a professor and professional engineer in the School of Engineering at the University of Northern British Columbia (UNBC), Canada. He obtained his PhD degree in environmental engineering from the University of Regina in 2003. He has research interests in environmental pollution control, petroleum waste management, environmental modeling, risk assessment, and oil spill response. He has produced more than 300 publications in international journals and conferences, with an h-index of 55 (Google Scholar). His research has been supported by many federal and provincial funding organizations. He was a semi-finalist and finalist of Canada's Oil Spill Response Challenge (OSRC) in 2023/24 and received \$1.3 million to develop an operational-scale and mobile oil/water separation system for oil spill response. His research has been recognized by various awards, such as multiple UNBC Research Excellence Awards. In 2023, Dr. Li received the Dr. Albert E. Berry Medal from Canadian Society for Civil Engineering (CSCE) to recognize his outstanding contribution to the field of environmental engineering in Canada. He provided extensive services to the professional community, such as the Research Tools and Instruments (RTI) selection committee (Civil, Industrial and Systems Engineering, 1609) of Natural Sciences and Engineering Research Council of Canada (NSERC) (2016 – 2021), the Discovery Grant Evaluation Group (Civil, Industrial and Systems Engineering, EG1509) of NSERC (2022 to 2025), Canada Foundation for Innovation (CFI) Experts Panel (2023), and the Program Fit Advisor (PFA) for the Discovery Horizons (DH) Program of NSERC (2025). Since 2017, he has been serving as a member of the Academic Examiners Subcommittee of Engineers and Geoscientists British Columbia (EGBC). From 2018 to 2022, he served as the Co-Lead of the Program Area "Decanting and Oily Waste Management" of the Multi-Partner Oil Spill Research Initiative (MPRI) under Canada's Oceans Protection Plan (OPP). He is serving as an Associate Editor or Editorial Board Member for seven international journals. He served as the inaugural Chair of the CSCE Northern British Columbia Section and served as the Chair of CSCE Cold Regions Division from 2022 to 2025. Dr. Li is a Fellow of the Canadian Society for Civil Engineering (FCSCE), a Fellow of the Canadian Society of Senior Engineers (FCSSE), a Fellow of Engineers Canada (FEC), and a Fellow of the Engineering Institute of Canada (FEIC).

PLENARY SPEAKER



Titles: Photocatalytic Disinfection for Bio & Chemical Hazard Removal from Air, Water and Solid Surfaces

Dr. Jason Zhang, University of Ottawa, Canada

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Dr. Jason Zhang is a full professor in the Department of Chemical and Biological Engineering at the Faculty of Engineering, University of Ottawa, Canada. He completed his undergraduate study at Hebei University of Technology in Tianjin, China and his Ph.D. degree from the University of Waterloo, Canada. After over 30 years of practice as a professional engineer, he has gained rich R & D and consulting experience in chemical, biochemical, as well as environmental engineering, co-authored around 260 articles in referred journals, and has trained more than 70 graduate students and post-doctoral fellows. Currently his research is focused on catalyst, process, and equipment development for photo- and bio-catalytic for renewable energies, environmental control and solar energy conversion.

KEYNOTE SPEAKER



Titles: Nanomaterials for Antibiofilm Applications

Dr. Jinju (Vicky) Chen, Loughborough University, UK

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Prof. Chen holds the Chair in Biointerface Engineering at Loughborough University, UK, where she leads pioneering research at the intersection of nanotechnology, microbiology, and advanced materials. Her interdisciplinary work addresses critical global challenges in healthcare and biomedicine, with a focus on antimicrobial surface engineering, biofilm control, and nanoscale cell-material interactions. By designing bioinspired surfaces that resist microbial colonization, her lab bridges materials engineering, biomechanics, computational modeling, and translational innovation to combat antimicrobial resistance and implant-related infections.

A globally recognized leader in her field, Prof. Chen has secured over £9.35M in competitive research funding, authored 85+ high-impact publications, and delivered 93 keynote and invited talks at major international conferences. Her contributions have earned her prestigious accolades, including Fellowship in the Royal Microscopical Society and membership in the UKRI Talent Panel College. She also shapes the scientific discourse as Principal Editor of the Journal of Materials Research and Editorial Board Member for Scientific Reports and Colloids and Surfaces B: Biointerfaces.

KEYNOTE SPEAKER



Titles: Non-Flammable Batteries: Electrolyte Design for Harsh Temperatures

Dr. Sailin Liu, University of Adelaide, Australia

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Dr. Sailin Liu is an ARC-funded Industry Early Career Research Fellow (IE24) at the University of Adelaide. She is also an Associate Investigator at the ARC Centre of Excellence for Green Electrochemical Transformation of Carbon Dioxide. She is an emerging leader in materials science and electrochemistry, demonstrating productivity and influence throughout her career since completing her PhD in 2021. Her research focuses on developing safe non-flammable electrolytes and stable electrode/electrolyte interfaces for lithium metal, Li-CO₂, potassium ion, and aqueous batteries (eg. aqueous zinc ion batteries and aqueous lithium-ion batteries). Dr. Liu has expertise in electrolyte research, fostering industrial skills and research collaborations. She has extensive experience utilizing Synchrotron FT-IR, PD and XAS beamlines and has been awarded the AINSE-PGRA and AINSE-ECRG for her work with in-situ Synchrotron FTIR in Australia.

KEYNOTE SPEAKER



Titles: Nature as a Design Partner: Natural and Hybrid Infrastructure for Climate Resilience

Dr. Borja G. Reguero, University of California Santa Cruz, USA

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Borja works at the intersection of civil engineering, risk management, and policy to advance climate resilience through sustainable and actionable solutions. He is an associate professor at UC Santa Cruz in the Coastal Science and Policy Program, where his research and teaching focus on climate risk and adaptation, coastal hazards, and the role of natural infrastructure and nature-based solutions as integrated strategies for reducing climate impacts. His work is developed in close collaboration with public agencies and private partners, helping shape forward-looking policy and pioneering innovative approaches such as resilience-based insurance solutions to align climate risk reduction and environmental and societal goals.

KEYNOTE SPEAKER



Titles: Building Mechanistically Sound Machine Learning Models for Environmental Applications

Dr. Huichun (Judy) Zhang, Case Western Reserve University, USA

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Dr. Huichun (Judy) Zhang is the Frank H. Neff professor in the Department of Civil and Environmental Engineering at Case Western Reserve University. She earned her Ph.D. from Georgia Institute of Technology and her B.S. and M.S. from Nanjing University. Her research focuses on the fate and transformation of environmental contaminants in natural and engineered aquatic environments and the removal of organic contaminants from contaminated water. Her recent research areas also include predictive modeling for contaminant reactivity and sorption using machine learning tools. Dr. Zhang has published in numerous journals, such as Chemical Reviews, Environmental Science and Technology, and Water Research. She has received seven competitive research grants from the NSF as the PI, and directed research projects for many other agencies and industry. She is an Associate Editor for ACS ES&T Water and a member of AEESP Board of Directors. She is a past recipient of Nanova/CAPEES Frontier Research Award, CAPEES Award for Environmental Application of AI/ML, and ES&T Best Paper Award, among others.

KEYNOTE SPEAKER



Titles: DeepShap Explanation XAI of Using Fused Data of Damage Images and Vibration Signals in Structure Health Monitoring

Dr. Mijia Yang, North Dakota State University, USA

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Dr. Mijia Yang, P.E., was a tenured professor at Department of Civil, Construction and Environmental Engineering, North Dakota State University. Dr. Yang received his Ph.D. in Structural Engineering 2006. Before joining NDSU, he worked as an assistant professor at the University of Texas at San Antonio and was a postdoctoral researcher at the University of Nebraska-Lincoln. Dr. Yang has practiced teaching and research broadly in structural engineering. His research concentrates on impact and blast protection with advanced engineering materials, multi-scale modeling of composite and concrete materials, smart health monitoring in Civil Infrastructure, and self-healing concrete. His representative work included developing a systematic design method for impact barriers, a unified fatigue criterion for uniaxial Polyurethane E-Glass composite laminates, damage detection through guided wave, and a creep design methodology for Epoxy bonded anchor systems. Dr. Yang is currently serving as the associate editor of Journal of Materials in Civil Engineering, ASCE, and has more than 100 publications, including journal papers, conference papers, and reports in the field of composites, structural testing and characterization.

LIST OF PAPERS

The following papers were presented at the 9th World Congress on Mechanical, Chemical, and Material Engineering (NewTech 2023)

Plenary & Keynote Speakers Session

Harnessing AI for Sustainable Design and Seismic Resilience of UHPC Structures

Authors: M. Shahria Alam* [presenting author] and Tadesse G. Wakjira

The Importance of Soil Behaviour for Structures during Earthquakes

Authors: Nawawi Chouw

Safe Below, Clean Above: Subsurface Engineering for Sustainable Nuclear Energy

Authors: Prof. Mamadou Fall

Harnessing Nanotechnology to Improve Targeted Cancer Treatment: Overcoming Hurdles in Its Clinical Implementation

Authors: Dr. Devika Chithrani

Nanomaterials for Antibiofilm Applications

Authors: Jinju (vicky) Chen

CCR5-Engineered $\gamma\delta$ CAR-T Cells as a Platform for HIV-Associated B-Cell Lymphoma Therapy

Authors: Joseph A. Fraietta

Machine Learning In the Genome Browser

Authors: Dr. Ian Holmes

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Photocatalytic Disinfection for Bio & Chemical Hazard Removal from Air, Water and Solid Surfaces

Authors: Dr. Jason Zhang

Petroleum Sludge Valorization via Pyrolysis: Modelling and Experimental Studies

Authors: Jianbing Li, Beidou Xi

Nature as a Design Partner: Natural and Hybrid Infrastructure for Climate Resilience

Authors: Dr. Borja G. Reguero

Building Mechanistically Sound Machine Learning Models for Environmental Applications

Authors: Prof. Huichun (Judy) Zhang

Non-Flammable Batteries: Electrolyte Design for Harsh Temperatures

Authors: Sailin Liu, Zaiping Guo

LIST OF PAPERS

New Technologies, Methods and Techniques in Civil Engineering

Design of a Prefabricated Concrete Element Using Tailings Material from the Mining Extraction Area of the Portovelo Canton

Authors: Raphaela Álvarez, Darwin Gonzaga, Mónica Cisneros

Coastal Sediment Transport and Environmental Management Analysis of the Dredging Activity of Maloma River in San Felipe, Zambales, Philippines

Authors: André Joaquin V. Cayago, Juan Gabriel L. Balmores, Fíbor J. Tan

Translating Crack Detection Accuracy in Concrete Structures in Live Video Stream using Low Cost Mobile using Deep Learning YOLOv8 Model

Authors: Shyam Saseethar, Dilip Narkhede

Slope Stabilization Using Deep Pile Foundations: A Case Study from the Andean Highlands of Ecuador

Authors: JOSÉ LUIS CHAVEZ TORRES, KUNYONG ZHANG , TYRONE ALEXANDER GUARDERAS CABRERA, ALEJANDRA NATHALY FLORES GRANDA , ANAHÍ DE LOS ÁNGELES AUCAPIÑ ABELTRÁN, BRYAN ARIEL ALEJANDRO CAMACHO , MANUEL SEBASTIÁN ANGAMARCA SALINAS

Seismic Performance Enhancement of RC Bridge Bents Using Advanced Retrofit Techniques

Authors: Jumana Hasina, Aman Mwafy, Anas Issa

Stability Analysis and Geotechnical Characterization for Slope Urbanization Using Geotextiles, Drainage Systems and Deep Foundations in Southwestern Loja, Ecuador

Authors: José Luis Chavez Torres, Kunyong Zhang, Tyrone Alexander Guarderas Cabrera, Camila Nickole Fernández Morocho And Pablo Gabriel Loaiza Jimenez

LIST OF PAPERS

New Technologies, Methods and Techniques in Civil Engineering

Effect of Incinerator Fly Ash on the Properties of Slag-Based Geopolymer Mortar

Authors: Elen Abuowda, Hilal El-Hassan, Tamer El-Maaddawy

Estimation of Basin Water Balance Components Using SWAT Model, In South Africa

Authors: Dineo Mollo, Saheed Adeyinka Oke

Hot Mix Asphalt Behavior with Recycled PET and Crumb Rubber as Aggregate Substitutions

Authors: Ana Ortiz-Viñán, Jhonathan Verdesoto

Assessment of Extreme Rainfall in Chiang Mai Utilizing the ACER Method

Authors: Chana Sinsabvarodom, Thirasak Panyaphirawat, Damrongsak Rinchumphu, Pheerawat Plangoen and Phattrawich Namracha

Decision Factors to Walk from House to a Park in Housing Estate Projects: Case of Chiang Mai, Thailand

Authors: Kriangkrai Arunotayanun, Padej Sukpattanacharoen, Sattaya Manokeaw, Panupong Khankham, Damrongsak Rinchumphu

GIS-Enhanced River Stage Prediction for Ungauged Basins: A Case Study of the Upper Ping River Basin, Thailand

Authors: Thirasak Panyaphirawat, Chana Sinsabvarodom, Damrongsak Rinchumphu, Pheerawat Plangoen, Oleg Gorbunov

BIM-based Automation for OTTV Calculation and Construction Cost Estimation in Energy-Efficient Building Design

Authors: Nichakarn Morakote, Damrongsak Rinchumphu, Sattaya Manokeaw, Pattarraporn Khuwuthyakorn, Ying-Chieh Chan, Non Phichetkunbodee

LIST OF PAPERS

New Technologies, Methods and Techniques in Civil Engineering

Modeling Air Conditioner Power Consumption with Machine Learning Techniques

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