



PROCEEDINGS OF THE 9TH WORLD CONGRESS ON MECHANICAL, CHEMICAL, AND MATERIAL ENGINEERING (MCM 2023)

**AUGUST 06, 2023 - AUGUST 08, 2023 | BRUNEL UNIVERSITY, LONDON,
UNITED KINGDOM**

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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 9th World Congress on Mechanical, Chemical, and Material Engineering (MCM 2023).

MCM is aimed to become one of the leading international annual congresses in the fields of mechanical, chemical, and material engineering. 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 4 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.

In the ninth meeting of this conference, one Plenary Speaker and four keynote speakers will share their expertise with the aim of exposing participants to a wide spectrum of applications, and to foster crosspollination of ideas and develop new research interests. In addition, approximately 121 papers will be presented from professors, students, and researchers across the world.

We thank you for your participation and contribution to the 9th World Congress on Mechanical, Chemical, and Material Engineering (MCM 2023). We wish you a very successful and enjoyable experience.

Dr. Huihe Qiu
Congress Chair and Proceedings Editor
MCM 2023

Dr. Yuwen Zhang
Congress Co-Chair
MCM 2023

Dr. Marcello Iasiello
Congress Local Chair
MCM 2023

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ABOUT MCM 2023

MCM is aimed to become one of the leading international annual congresses in the fields of mechanical, chemical, and material engineering.

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 4 conferences included in the MCM Congress:

[HTFF 2023](#) - 10th International Conference on Heat Transfer and Fluid Flow

[ICMIE 2023](#) - 12th International Conference on Mechanics and Industrial Engineering

[MIMME 2023](#) - 10th International Conference on Mining, Material and Metallurgical Engineering

[ICCPE 2023](#) - 9th International Conference on Chemical and Polymer Engineering

While each conference consists of an individual and separate theme, the 4 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.

MCM is an acronym for **M**echanical, **C**hemical and **M**aterial Engineering.

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

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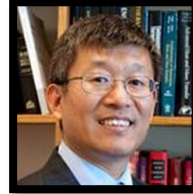
SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the MCM 2023 Congress:



Dr. Huihe Qiu

The Hong Kong University of Science & Technology, Hong Kong
Congress Chair



Dr. Yuwen Zhang

University of Missouri, USA
Congress Co-Chair



Dr. Marcello Iasiello

Università degli Studi di Napoli
Federico II, Italy
Congress Local Chair

Scientific Committee Members for HTFF 2023

- **Dr. Chamil Abeykoon**, The University of Manchester, UK
- **Dr. Jalel Azaiez**, The University of Calgary, Canada
- **Dr. Wilson Chiu**, University of Connecticut, USA
- **Dr. Yulong Ding**, University of Birmingham, UK
- **Dr. J.M. Floryan**, The University of Western Ontario, Canada
- **Dr. Frank Gerner**, University of Cincinnati, USA
- **Dr. Mohamed Hamed**, McMaster University, Canada
- **Dr. Hui Hu**, Iowa State University, USA
- **Dr. Marcello Iasiello**, Università degli Studi di Napoli Federico II, Italy
- **Dr. Tassos G. Karayiannis**, Brunel University London, UK
- **Dr. Fotini Labropulu**, University of Regina, Canada
- **Dr. Yang Liu**, The Hong Kong Polytechnic University, Hong Kong
- **Dr. Sylvie Lorente**, Villanova University, USA
- **Dr. Krishnaswamy Nandakumar**, Louisiana State University, USA
- **Dr. Gerardo Maria Mauro**, Università degli studi del Sannio, Italy
- **Dr. Oronzio Manca**, Università degli Studi della Campania, Italy
- **Dr. Christos Markides**, Imperial College, UK
- **Dr. Yulia Plaksina**, Moscow State University, Russia
- **Dr. Karthik Remella**, Ansys, USA
- **Dr. Ahmet Selamet**, The Ohio State University, USA
- **Dr. Ziad Saghier**, Toronto Metropolitan University (formerly Ryerson University), Canada
- **Dr. Kambiz Vafai**, UNIVERSITY OF CALIFORNIA, Riverside, USA
- **Dr. Dongsheng Wen**, University of Leeds, UK
- **Dr. Yuwen Zhang**, University of Missouri, USA⁵

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SCIENTIFIC COMMITTEE

Scientific Committee Members for ICMIE 2023

- **Dr. Alvaro Aguinaga**, Escuela Politécnica Nacional, Ecuador
- **Dr. Carlos Avila**, California Institute of Technology (Caltech), USA
- **Dr. Aslan Deniz Karaoğlan**, Balikesir University, Turkey
- **Dr. Luca Greco**, CNR-INM INStitute of Marine Engineering, Italy
- **Dr. Angel Huminic**, Transilvania University of Brasov, Romania
- **Dr. Mohammad Mehdi Rashidi**, University of Electronic Science and Technology of China, China
- **Dr. Arturo Molina**, Institute of Advanced Materials for Sustainable Manufacturing Tecnologico de Monterre, Mexico
- **Dr. Ruxandra Botez**, École de technologie supérieure, University of Quebec, Canada
- **Dr. Marton Takacs**, Budapest University of Technology and Economics, Hungary

Scientific Committee Members for MMME 2023

- **Dr. Alvaro Aguinaga**, Escuela Politécnica Nacional, Ecuador
- **Dr. Carlos Avila**, California Institute of Technology (Caltech), USA
- **Dr. Aslan Deniz Karaoğlan**, Balikesir University, Turkey
- **Dr. Luca Greco**, CNR-INM INStitute of Marine Engineering, Italy
- **Dr. Angel Huminic**, Transilvania University of Brasov, Romania
- **Dr. Mohammad Mehdi Rashidi**, University of Electronic Science and Technology of China, China
- **Dr. Arturo Molina**, Institute of Advanced Materials for Sustainable Manufacturing Tecnologico de Monterre, Mexico
- **Dr. Ruxandra Botez**, École de technologie supérieure, University of Quebec, Canada
- **Dr. Marton Takacs**, Budapest University of Technology and Economics, Hungary

SCIENTIFIC COMMITTEE

Scientific Committee Members for MMME 2023

- **Dr. Zdzislaw Adamczyk**, Silesian University of Technology, Poland
- **Dr. Corby Anderson**, Colorado School of Mines, USA
- **Dr. Pura Alfonso**, Escola Politècnica Superior d'Enginyeria de Manresa (EPSEM), Spain
- **Dr. Marc Bascompta**, Universitat Politècnica de Catalunya, Spain
- **Dr. Tung-Han Chuang**, National Taiwan University, Taiwan
- **Dr. Frank Cheng**, University of Calgary, Canada
- **Dr. Ioanna Giannopoulou**, National and Kapodistrian University of Athens, Greece
- **Mohammad 'Behdad' Jamshidi**, University of West Bohemia, Czech Republic
- **Dr. Shaidah Jusoh**, Xiamen University Malaysia, Malaysia
- **Dr. Zi-Kui Liu**, The Pennsylvania State University, USA
- **Dr. Willie Nheta**, University of Johannesburg, South Africa
- **Dr. Katarzyna Nowińska**, Silesian University of Technology, Poland
- **Dr. Fernanda Margarido**, Instituto Superior Técnico, Portugal
- **Dr. Paul H. Mayrhofer**, Technische Universität Wien, Austria
- **Dr. Andre Carlos Silva**, Universidade Federal de Goiás, Brazil
- **Dr. Flávio de Andrade Silva**, Pontifícia Universidade Católica, Brazil

Scientific Committee Members for ICCPE 2023

- **Dr. Farhang Abbasi**, Sahand University of Technology, Iran
- **Dr. Bahar Bayrak**, Atatürk Üniversitesi, Turkey
- **Dr. Amir H Mohammadi**, University of KwaZulu-Natal, South Africa
- **Dr. Masami Okamoto**, Toyota Technological Institute, Japan
- **Dr. Dimitrios Sidoras**, University of Piraeus, Greece
- **Dr. Jingbo Wang**, Borealis Polyolefine GmbH, Austria

PLENARY & KEYNOTE SPEAKER

The keynote information for the 9th World Congress on Mechanical, Chemical, and Material Engineering (MCM 2023) is as follows:

Plenary Speaker



Dr. Perumal Nithiarasu
Swansea University, UK
HTFF 2023 Keynote Speaker

Keynote Speakers



Dr. Wilson Chiu
University of Connecticut, USA
HTFF 2023 Keynote Speaker



Dr. Hsi-Yung (Steve) Feng
The University of British
Columbia, Canada
ICMIE 2023 Keynote Speaker



Dr. Wagdi G. Habashi
McGill University, Canada
HTFF 2023 Keynote Speaker



Dr. Luc Mongeau
McGill University, Canada
HTFF 2023 Keynote Speaker

PLENARY SPEAKER



Titles: Fundamental Challenges of Building Digital Twins

Dr. Perumal Nithiarasu, Swansea University, UK

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Professor P. Nithiarasu currently holds the Associate Dean for Research, Innovation and Impact for Science and Engineering position at Swansea. Previously he held various roles, including the Deputy Head of Engineering, Dean for Academic Leadership and Head of the Zienkiewicz Centre for Computational Engineering. His research areas include computational engineering, especially healthcare engineering. Professor Nithiarasu is particularly interested in digital twins and translational biomedical engineering. Professor Nithiarasu extensively published in computational engineering. He is the editor-in-chief of the International Journal for Numerical Methods in Biomedical Engineering, published by Wiley-Blackwell.

KEYNOTE SPEAKER



Titles: Heat Transfer and Fluid Flow in Architected Open Cell Foams

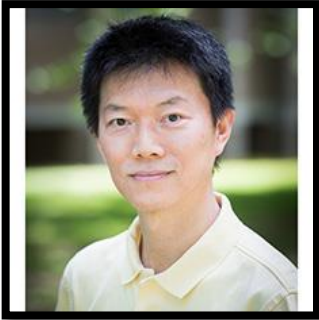
Dr. Wilson Chiu, University of Connecticut, USA

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Wilson K. S. Chiu earned his M.S. and Ph.D. degrees in Mechanical Engineering from Rutgers University in 1997 and 1999, respectively. His research was supported by the U.S. Army Research Office, Department of Energy, National Science Foundation, Office of Naval Research, and industry. He published 8 book chapters/special volumes, 126 journal articles and 203 conference articles/abstracts. Among his honors, he was elected Fellow of the American Society of Mechanical Engineers (ASME), American Society of Thermal and Fluids Engineers (ASTFE), and the Electrochemical Society (ECS). He is an elected member of the Connecticut Academy of Science and Engineering, awarded the Otto Mønsted Guest Professorship at the Technical University of Denmark, and the United Technologies Corporation Professorship in Engineering Innovation at the University of Connecticut. He received the Office of Naval Research Young Investigator (YIP) Award, Army Research Office Young Investigator (YIP) Award, and the NSF CAREER Award. He is the Editor-in-Chief of the ASME Journal of Electrochemical Energy Conversion and Storage, and served as an associate editor for the International Journal of Thermal Sciences and ASME Journal of Heat Transfer, and on the editorial board of Scientific Reports and several other journals. He has given over 120 plenary, keynote and invited lectures in the United States and abroad.

KEYNOTE SPEAKER



Titles: Voxel-based Machining Simulation for Fast Process Validation

Dr. Hsi-Yung (Steve) Feng, The University of British Columbia, Canada

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Hsi-Yung (Steve) Feng is a Professor in the Department of Mechanical Engineering at the University of British Columbia. He is known internationally for his research contributions in computer-aided design and manufacturing (CAD/CAM) and 3D laser scanning. To date, his research group has developed many advanced geometric computing algorithms to address technical challenges in CAD modeling, multi-axis machining, and scanned point cloud processing. Notable achievements include a highly flexible geometric modeling scheme for intuitive CAD modeling, a voxel-based workpiece model update method for fast machining simulation, a tensor field based tool path generation method for efficient sculptured surface machining, and scanned data processing algorithms for automatic point cloud simplification and outlier removal. He is a Fellow of the American Society of Mechanical Engineers.

KEYNOTE SPEAKER



Titles: Machine Learning and Automatic Mesh Optimization: Watershed Technologies for Heat Transfer and Fluid Flow Optimal Simulations

Dr. Hsi-Yung (Steve) Feng, The University of British Columbia, Canada

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Wagdi Habashi is a Professor in the Mechanical Engineering Department of McGill University and directs its Computational Fluid Dynamics Laboratory. He has held 3 successive 5-year NSERC Industrial Research Chairs with Bombardier (aircraft), Bell (helicopters), CAE (flight simulators), and Lockheed Martin (hypersonic civil transport).

Professor Habashi holds a Ph.D. in Aeronautical Engineering from Cornell and has a lifetime of international collaboration with Aerospace OEMs, with more than 400 publications at least one-third of them jointly with industrial partners.

Dr. Habashi established Newmerical Technologies International Inc. (NTI); the developer of the FENSAP-ICE 3D In-Flight Icing Simulation System currently used in close to 30 countries. NTI's assets were acquired by ANSYS in 2015 to boost its icing simulation capabilities. Following this, Professor Habashi created CERTIF-ICE Inc., a one-stop shop for all aspects of in-flight icing certification. CERTIF-ICE successfully conducted in Canada the natural icing campaigns of COMAC's ARJ21 (Regional Jet) and AVIC's Y-12F (Turboprop).

Habashi is a Knight of the Order of Québec, a Fellow of the Academy of Sciences of the Royal Society of Canada, the Canadian Academy of Engineering, the American Institute of Aeronautics and Astronautics, the American Society of Mechanical Engineers, and Pratt & Whitney Canada.

KEYNOTE SPEAKER



Titles: Role of Vertical Structures on Heat Exchange within Acoustic Standing Waves

Dr. Luc Mongeau, McGill University, Canada

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Luc Mongeau is a James McGill Distinguished Professor in the Department of Mechanical Engineering at McGill University. His current research interests are in Bioengineering of soft tissues for laryngology applications. He has worked in the areas of acoustics, vibrations, fluid dynamics and heat transfer. He is presently involved in studies of synthetic jet actuators for surfaces cleaning, needle-free injection technologies and organoids fabrication using bioprinting. He has supervised the work of over 40 Ph.D. and 50 M.S. students over the past 30 years, and has published 130 scientific articles in various journals.

LIST OF PAPERS

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

CFD

Combined Natural Convection and Radiative Heat Transfer from a Horizontal Helical Coil Placed on the Ground and in Air: A Comparative Study

Authors: Gloria Biswal, Sukanta Kumar Dash

Experimental and Numerical Investigation of Controlled Rotomolded Axial Fan by Internal Air Injection at Gap Clearance

Authors: Ayoub BOUANIK, Abderrahim LARABI, Tarik AZZAM, Mahmoud MEKADEM, Farid BAKIR

Development and Validation of a Tubesheet Geometry Generator Tool for Efficient Heat Exchanger Design

Authors: Isaak Dassa, Konstantinos Karamitsios, Dimitrios Mertzis

Development and Validation of a Tubesheet Geometry Generator Tool for Efficient Heat Exchanger Design

Authors: Xuejing He, Zhenlin Li, Ji Wang

Development and Validation of a Tubesheet Geometry Generator Tool for Efficient Heat Exchanger Design

Authors: Xuejing He, Zhenlin Li, Ji Wang

Numerical research on a drag reduction technique used for the NACA 0012 airfoil

Authors: : Amine AGRISS, Mohamed AGOUZOU, and Abdeslem ETTOUIL

On Thixotropic Effect of Borehole Flow under Steady Flow Rate

Authors: Alexander Starostin

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

CFD

[On Turbulent Convective Diffusion in the Free Atmosphere](#)

Authors: Kulyash Kaliyeva

[Fluid Dynamics Analysis Of A Kayak Slalom Whitewater Course](#)

Authors: Sean Ansell, Thomas Confrey, Lilibeth A. Zambrano M.

[Thermal Entrance Length for the Laminar Forced Convection in Microtubes](#)

Authors: Mohamed Shaimi, Rabha Khatyr, Jaafar Khalid Naciri

[Unsteady Wake And Dynamic Characteristics Of Flow Past Two Inline Circular Cylinders](#)

Authors: Shristi singh, Shaligram Tiwari

[3D simulation of the Melting of PCM within a Horizontal Shell and Tube Heat Exchanger](#)

Authors: Julie Frank, Duncan Borman, Evaldas Greiciunas, Amirul Khan, Jon Summers

[Unified Finite Volume Physics Informed Deep Learning to Solve Heat Transfer Problems](#)

Authors: Di Mei, Chun-Ho Liu

[Unified Finite Volume Physics Informed Deep Learning to Solve Heat Transfer Problems](#)

Authors: Cho-Yu Lee, Dani Joseph Veera

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

CFD

[Design and CFD Analysis of Valves- Pulse Jet Engine](#)

Authors: Haifa El-Sadi, Semyon Lopatkin, Eric Kruzyk, Kevin Howard

[Study the Effect of the Diameter of Annular Parachute on Drag Using CFD](#)

Authors: Haifa El-Sadi, Eric Kruzyk, KM Ashik and Chris Alcantara

[Rayleigh Benard convection of Bingham fluid in a square enclosure with sinusoidal temperatures](#)

Authors: Keddar Mohammed, Draoui Belkacem, Mebarki Brahim and Medale Marc

[Numerical Simulation Of Turbulent Flow In Stepped-Section Vortex Tube](#)

Authors: Guen Mohammed

[Transient Buoyant Convection of A Highly Thermodependant Viscous Fluid in A 3D Cylindrical Drum](#)

Authors: Charles Brissot, Rudy Valette, Arnaud Poulesquen

[Numerical Analysis of Newtonian Fluid Flow Through Multi-Hole Orifice Meter](#)

Authors: Jaber Almutairi, Amra Hasečić, Ejub Džaferović

[Numerical Analysis of a Solar-Powered Tube Heater](#)

Authors: Hadi Tannous, Valentina Stojceska, Savvas Tassou

[Validation of Numerical Modelling Phase Change Material \(PCM\) Heat Sinks by Calculating Mushy Zone Constant](#)

Authors: Ahmet KOYUNCU, Dr. Abdullah Berkan ERDOĞMUŞ, Abdullah ULAŞ

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CFD

Turbulent Heat Transfer in Elliptical tube with Dimples

Authors: Vaibhav Hiwale, S Vengadesan

A Three-Dimensional CFD Analyses for the Gas Holdup of the Oxygen Production Bubble Column Reactor in the Cu-Cl Cycle of Hydrogen Production

Authors: M. W. Abdulrahman, N. Nassar

Effect of Static Liquid Height on Gas Holdup of a Bubble Column Reactor

Authors: M. W. Abdulrahman, N. Nassar

Three Dimensional CFD Analyses for the Effect of Solid Concentration on Gas Holdup in a Slurry Bubble Column

Authors: M. W. Abdulrahman, N. Nassar

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Experimental Fluid Flow and Heat & Mass Transfer

Experiment on Heat Transfer Enhancement for a Double Pipe Heat Exchanger with Air Injection of Perforated Turbulator

Authors: Ali A. Abdulrasool, Muhsen M. Alsilbi, Abdalrazzaq K. Abbas , Mohammed W. Aljibory

New Type Of Bisphenol A-Free Vinyl Ester Resin

Authors : Przemysław Pączkowski, Barbara Gawdzik

Jet Vectoring by Suction Flows on Surface of Circular Cylinder

Authors : Kaito Suzuki, Minoru Nakagawa, Koichi Nishibe, Donghyuk Kang, Kotaro Sato

Jet Direction Control Using Active Switching Nozzle

Authors : Taisei Suzuoka, Koichi Nishibe, Kotaro Sato, Donghyuk Kang

Experimental and Analytical Investigation of Refrigerant Charge Impact on the Performance of a Novel Heat Pump Integrated Dishwasher

Authors : Mahyar Taghizadehalvandi, Şevket Özgür Atayılmaz

A Study of the Application of Newtonian Fluids in Heat Transfer

Authors : Dominga Guerrero, Surupa Shaw

Measurement Of Thermophysical Properties Of Heavy Density Concrete Using Inverse Solution For One-Dimensional Heat Conduction

Authors : Anuj Kumar, K. Yogi, Akshay U. Shirsat¹, S. V. Prabhu

Experimental Study to Enhance the Overall Cooling Capacity of Lanthanum Based Magnetic Refrigeration System

Authors : Sudeep Shankar, Manish Chandra, Satyanarayanan Seshadri

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Experimental Fluid Flow and Heat & Mass Transfer

Condensation of R-134a inside the Vertical Smooth and Dimpled Helically Coiled Tubes

Authors : Ravi Kumar, Anand Kumar Solanki

The Effect of Solar Sphere Thickness on the Fluid to Generate Power

Authors: Hassan Abdulmouti, Fady Alnajjar

Local Flow and Concentration Evolution in Pre-mixed and In-situ Mixing Multicomponent Droplets

Authors : Xin Ye, Yinchuang Yang, Dong Liao, Huihe Qiu

A Novel Battery Thermal Management System based on Capillary Driven Evaporative Cooling

Authors : Delika M. Weragoda, Guohong Tian, Qiong Cai

Experimental investigation of heat pipes and liquid cooling based hybrid Battery Thermal Management System

Authors : Arman Burkitbayev, Dr Guohong Tian, Delika Weragoda, Dr Ciampa Francesco

Investigation Of Porous Carbon Foamed Surface Under A Circular Air Jet Impingement For Uniform Heat Transfer

Authors : Ketan Yogi, Anuj Kumar, Shankar Krishnan, S. V. Prabhu

Influence of Slot Geometry on the Behavior of Synthetic Jets

Authors : Kota Ishiwata, Koichi Nishibe, Donghyuk Kang, Kotaro Sato

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Experimental Fluid Flow and Heat & Mass Transfer

[A Flexible Pulsating Heat Pipe with Multiple Heat Transfer Branches](#)

Authors : Zhanxiao Kang, Jintu Fan

[Flow Characteristics of Synthetic Jet Near Curved Wall](#)

Authors : Takuya Okada, Takaya Hiruma, Koichi Nishibe, Kotaro Sato

[The Effect of Interspersed Nanoparticles on Long Wavelength Heat Radiation through Opaque and Transparent Passive Skylight Glass](#)

Authors : Gopalakrishna Gangisetty, Jan-Henrik Smått, Ron Zevenhoven

[The Effect of Fluid Type and Volume on Concentrated Solar Sphere Power Generation](#)

Authors : Hassan Abdulmouti, Fady Alnajjar

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Multiphase Flow and Heat Transfer

Droplet Statistics and Vorticity Evolution Of Immiscible Rayleigh-Taylor Turbulence

Authors : Dongxiao Zhao, Gaojin Li

On the Heat Transfer in Particle-laden Turbulent Flows: the Effect of Collision in an Anisothermal Regime

Authors : Hamid Reza Zandi Pour, Michele Iovieno

Effect Of Surface Wettability On Nucleate Pool Boiling Under Low Gravity Conditions

Authors : Abhishek K. Sharma, Shaligram Tiwari

Effect of Forcing Amplitude during Lateral Sloshing At Low Liquid Depth

Authors : Sadham Usean Ramasamy, Shyama Prasad Das, Shaligram Tiwari

The CFD Computation and Validation of Effects of Adaptive Mesh Refinement in Sloshing Simulation in A Narrow Tank

Authors : Emre Sayak, Sitki Uslu

Aerodynamic Drop Breakup Suppression Due To Vaporization

Authors : Bradley Boyd, Sid Becker, Yue Ling

On Coherent Dynamic Structures of Oscillatory Thermal Convection in Liquid Bridges due to Free Surface Heat Gain under Microgravity

Authors : Jayakrishnan R, Shaligram Tiwari

Molecular Dynamics Simulation Of Adiabatic Two-Phase Flow In Nanochannels

Authors : Yunmin Ran, Volfango Bertola

Heat Transfer And Wall Temperature Distribution During Flow Boiling In Conventional And Mini Channels

Authors : Arvind Kumar, Hardik Kothadia

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Pediatrics Bone Fixation Device of the Femur

Authors: Haifa El-Sadi, Stefan Gutierrez

Finite Element Analysis for Improved Crutches Design

Authors: Haifa El-Sadi, Mark Guerard, Garrett Guilmett, Charles Petkavich, Kevin Sheehan, and Nick Varieur

Analysis and Design of an Optimum Powertrain for an Electric Battery Vehicle for AUM Campus Shuttle Service

Authors: Murat Otkur, Abdullah Khalfan, Ahmed ALHaddad, Jassim ALAutbi, Ali ALShatti, Faisal Allanqawi

Virtual Testing of Synthetic Polycrystal Microstructures Predicting Elastic Properties of Additive Manufactured Alloy 718

Authors: Liene Zaikovska, Magnus Ekh, Chamara Kumara

3D Printed Structures for Under Water Robots Design

Authors: Jose Luis Ordoñez-Avila, Silvio Javier Lazaro-Cardenas, Rodrigo Espinal Lanza

Forced Convective Heat Transfer for Stokes Flow with Viscous Dissipation in Wavy Channels

Authors: Mohamed Shaimi, Rabha Khatyr, Jaafar Khalid Naciri

Thermal Entrance Length for the Laminar Forced Convection in Microtubes

Authors: Mohamed Shaimi, Rabha Khatyr, Jaafar Khalid Naciri

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Mechanical & Industrial Engineering

[Kinematic Analysis of a Variable Speed Deep Drawing Press Using GIM Software](#)

Authors: Manar AlJaimaz, Zahraa AlMazidi, Haya AlDousari, Fatmah Ebrahim, Danah AlZayyan, Eddie Gazo Hanna

[Numerical Analysis of Gas Diffusion Characteristics During Thermal runaway in Lithium-ion battery module](#)

Authors: Dong Woo Kim, Young Man Lee, Seong Hyuk Lee and Hong Sun Ryou

[Energy Storage Systems: Current Techniques and Future Prospects](#)

Authors: Fatima El Bakkari, Hamid Mounir

[L-Brackets for Heavy Duty Shelves: Stress Analysis](#)

Authors: Ahmad Eshaiyan, Faisal Khalifa, Ali Aladwani, Mohammed H. Mohammed, Abdulaziz Bonashi

[Productivity Improvement In An Automotive Workshop Through Lean Manufacturing Methodology](#)

Authors: Geovanna Noemy Galo Bruner, Paola Michelle Pascua Cantarero

[The Mechatronic Approach in the Mathematical Modelling And Simulation To Control The Water Hammer In Hydraulic Facilities](#)

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[Evaluation of the Revaluation of the Coffee Husk as Bio-composite](#)

Authors: Rosangela Fonseca, Maria Elena Perdomo

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Mining Fundamentals & Techniques

[Effect Of Lanthanides On The Mineralogical Composition Of Portland Clinker Accessed By Thermodynamic Modelling](#)

Authors: Ana R. D. Costa, Luanne B. de B. Barbosa, Ana Paula Kirchheim, Jardel P. Gonçalves

[Thermodynamic Modelling Of Belite Clinker Mineralogy During Manufacture](#)

Authors: Ana R. D. Costa, Luanne B. de B. Barbosa¹, Bruna S. Rosa, Ana Paula Kirchheim, Jardel P. Gonçalves

[Modelling And Evaluation Of Aggregate And Ornamental Rock Quality](#)

Authors: Alejandra Vera-Burau, Lluís Sanmiquel, Marc Bascompta¹, Daniel Álvarez-Ramírez

[Risk Estimation of In-Pit Crushing System at the Operational Copper Mine in Kazakhstan](#)

Authors: Sergei Sabanov, Meruyert Khudaibergen, Zhaudir Dautbay, Gulim Kurmangazy

Mechanical Engineering

[Modelling and Analysis of Vortex-Induced Vibrations for Flexible Cylinders Conveying Two-Phase Slug Flows](#)

Authors: Hareesh Narain Ravindran Meenakumari, Hossein Zanganeh, Mamdud Hossain

[Mechanical Behavior and Fatigue Responses of Hybrid Nanocomposite Laminates with Kinked Edge Cracks](#)

Authors: Ming-Hwa R. Jen, Jun-Ming Yang, Yu-Hsiang Tseng, Ying-Hui Wu

[Design and Testing of a Pneumatic Grain Aspirator for Efficient Separation of Impurities](#)

Authors: Paul Greyvensteyn, Ockert Koekemoer, LJ Grobler¹, Danie Vorster

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Metallurgical & Material Engineering

Sputtering of Ultra-thin Cu Nano-twinned Films on Si Wafers for Application in Advanced 3D-IC Packaging

Authors: Zi-Hong Yang and Tung-Han Chuang

Deposition of Ag Nanotwinned Films on Graphene/ Si Photoelectrochemical Cell for CO₂ Reduction and Hydrogen Production

Authors: Yen-Ting Chen, Tsung-Hsin Liu, Chun-Wei Chen, and Tung-Han Chuang

Low Temperature Die Bonding of Ge (111) Chips with DBC Alumina Substrates through High-Density (111) Textured Ag Nanotwinned Films

Authors: Tung-Han Chuang, Yen-Ting Chen, Zi-Hong Yang, Yin-Hsuan Chen, and Ang-Ying Lin

Sputtering of Ultra-thin Ag Nano-twinned Films on Si Wafers for the Applications in TSV Interconnection of 3D-IC Advanced Packages Copper Solvent Extraction

Authors: Yin-Hsuan Chen, Zi-Hong Yang, Yen-Ting Chen, Po-Ching Wu, and Tung-Han Chuang

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