



MHMT
CONGRESS

PROCEEDINGS OF THE 7TH WORLD CONGRESS ON MOMENTUM, HEAT AND MASS TRANSFER (MHMT'22)

April 07 - 09, 2022 | ~~Lisbon, Portugal~~ - Virtual Conference

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WELCOME MESSAGE FROM THE CONFERENCE CHAIR

On behalf of the International Academy of Science, Engineering and Technology (International ASET Inc.), the organizing committee would like to welcome you to the 7th World Congress on Momentum, Heat and Mass Transfer (MHMT'22).

MHMT is aimed to become one of the leading international annual congresses in the fields of momentum, heat and mass transfer. This congress will provide excellent opportunities to scientists, researchers, industrial experts, 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 3 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.

We thank you for your participation and contribution to the 7th World Congress on Momentum, Heat and Mass Transfer (MHMT'22). We wish you a very successful and enjoyable experience.

Dr. Lixin Cheng

*Congress Chair and Proceedings Editor
MHMT'22*

Dr. Tassos G. Karayiannis

*Congress Co-Chair and Proceedings Editor
MHMT'22*

Dr. Sohel Murshed

*Congress Local Chair
MHMT'22*

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ABOUT MHMT'22

MHMT is aimed to become one of the leading international annual congresses in the fields of momentum, heat and mass transfer. 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 3 conferences included in the CSEE Congress:

ENFHT'22 - 7th International Conference on Experimental and Numerical Flow and Heat Transfer

ICMFHT'22 - 7th International Conference on Multiphase Flow and Heat Transfer

CSP'22 - 7th International Conference on Combustion Science and Process

While each conference consists of an individual and separate theme, the 3 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.

MHMT is an acronym for **M**omentum, **H**eat, and **M**ass Transfer

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

 Google Scholar

 Crossref

 PORTICO

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SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the MHMT'22 Congress:

Scientific Committee Members for ENFHT'22

- **Dr. Jalel Azaiez**, University of Calgary, Canada
- **Dr. Hafiz Muhammad Ali**, KFUPM, KSA
- **Dr. Raya Al-Dadah**, University of Birmingham, UK
- **Dr. Rayhaneh Akhavan**, University of Michigan, USA
- **Dr. Marcelo Buffoni**, ABB Switzerland Ltd. Corporate Research, Switzerland
- **Dr. Longfei Chen**, Beihang University, China
- **Dr. Arend Dubbelboer**, Danone Nutricia Research, Netherlands
- **Dr. Yanping Du**, Shanghai Jiao Tong University, China
- **Dr. Gamze Gediz Ilis**, Istanbul Okan University, Turkey
- **Dr. Zhixiong Guo**, Rutgers University, USA
- **Dr. Marjan Goodarzi**, Lamar University, USA
- **Dr. Mohammad Hojjat**, University of Isfahan, Iran
- **Dr. Mohammad Hamdan**, American University of Sharjah, United Arab Emirates, UAE
- **Dr. Zdeněk Jegla**, Brno University of Technology, Czech Republic
- **Dr. Konstantinos Kontis**, University of Glasgow, UK
- **Dr. Sébastien Poncet**, Sherbrooke University, Canada
- **Dr. Mohamed Pourkashanian**, The University of Sheffield, UK
- **Dr. Muhammad Bilal Riaz**, Lodz University of Technology, Poland
- **Dr. Ziad Saghir**, Ryerson University, Canada
- **Dr. Zafar Said**, University of Sharjah, UAE
- **Dr. Harvey Thomson**, Leeds University, UK
- **Dr. Yufeng Yao**, University of the West of England, UK
- **Dr. Xiaowei Zhu**, Eindhoven University of Technology, Netherlands

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SCIENTIFIC COMMITTEE

Scientific Committee Members for ICMFHT'22

- **Dr. Christos Markides**, Imperial College London, UK
- **Dr. Eckart Meiburg**, University of California at Santa Barbara, USA
- **Dr. Faik Hamad**, Teesside University, UK
- **Dr. Gail Duursma**, The University of Edinburgh, UK
- **Dr. Gretar Tryggvason**, Johns Hopkins University, USA
- **Dr. Huihe Qiu**, Hong Kong University of Science & Technology, Hong Kong
- **Dr. Jiyun Zhao**, City University of Hong Kong, Hong Kong
- **Dr. João Miranda**, Faculdade de Engenharia da Universidade do Porto, Portugal
- **Dr. Mostafa Safdari Shadloo**, National Institute of Applied Science (INSA), France
- **Dr. Tassos Karayiannis**, Brunel University London, UK
- **Dr. Kamiel Gabriel**, University of Ontario Institute of Technology, Canada
- **Dr. Cem Sarica**, University Tulsa, USA
- **Dr. Peter Minev**, University of Alberta, Canada
- **Dr. Sadegh Dabiri**, Purdue University, USA
- **Dr. Jinliang Xu**, North China Electric Power University, China
- **Dr. Gioia Falcone**, University of Glasgow, UK
- **Dr. Habil Günter H. Schnerr**, Technical University of Munich, Germany
- **Dr. Berend van Wachem**, University of Magdeburg, Germany
- **Dr. Ali Ozel**, Heriot-Watt University, UK
- **Dr. Gerardo Maria Mauro**, Università degli studi del Sannio, Italy
- **Dr. Marcello Iasiello**, Università degli Studi di Napoli Federico II, Italy
- **Dr. Vasilis Bontozoglu**, University of Thessaly, Greece
- **Dr. Qinlong Ren**, Xi'an Jiaotong University, China

SCIENTIFIC COMMITTEE

Scientific Committee Members for CSP'22

- **Dr. Sergei Sazhin**, University of Brighton, UK
- **Dr. Pedro Jorge Martins Coelho**, National Technical University of Athens, Greece
- **Dr. Constantine D. Rakopoulos**, National Technical University of Athens, Greece
- **Dr. Guido Saccone**, CIRA – Italian Aerospace Research Centre, Italy
- **Dr. Dimitrios C. Rakopoulos**, Center for Energy Research and Technology Hellas, Greece
- **Dr. Young Choi**, Korea Institute of Machinery and Materials, Korea
- **Dr. Lin Ma**, The University of Sheffield, UK
- **Dr. Vahid Motevalli**, Tennessee Tech University, USA
- **Dr. Yannis Hardalupas**, Imperial College of London, UK
- **Dr. Yang wenming**, National University of Singapore (NUS), Singapore
- **Dr. Byungchul Choi**, Chonnam National University, Korea
- **Dr. Ming Zheng**, The University of Windsor, Canada
- **Dr. Qinling Li**, The Sheffield Hallam University, UK

KEYNOTE SPEAKERS

The keynote information for the 7th World Congress on Recent Advances in Nanotechnology (MHMT'22) is as follows:



Dr. Zhixiong Guo

The State University of
New Jersey, USA
ENFHT'22 Keynote Speaker



Dr. Poh Seng Lee

National University of
Singapore (NUS), Singapore
ENFHT'22 Keynote Speaker



Dr. Qiuwang Wang

Xi'an Jiaotong University,
China
ENFHT'22 Keynote Speaker



Dr. Andrea Cioncolini

The University of Manchester,
UK
ICMFHT'22 Keynote Speaker



Dr. Simone Mancin

University of Padova,
Italy
ICMFHT'22 Keynote
Speaker



Dr. Omar K. Matar

Imperial College, UK
ICMFHT'22 Keynote Speaker



Dr. Cem Sarica

University Tulsa, USA
ICMFHT'22 Keynote
Speaker



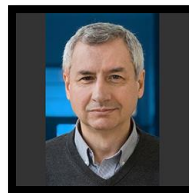
Dr. Xinrong Zhang

Peking University, China
ICMFHT'22 Keynote Speaker



Dr. Alasdair Cairns

University of Nottingham,
UK
CSP'22 Keynote Speaker



Dr. Pedro Coelho

Universidade de Lisboa,
Portugal
CSP'22 Keynote Speaker

ENFHT'22 KEYNOTE SPEAKER



Topic of Keynote: Spectral Tuning Of Solar Irradiation with Water-Based Nanofluid for Energy Collection and Natural Illumination
Dr. Zhixiong Guo, The State University of New Jersey, USA

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Dr. Zhixiong “James” Guo is a Professor of Mechanical and Aerospace Engineering at Rutgers University-New Brunswick, NJ, USA. He received his B.S., M.S., and Doctorate, all in Engineering Physics, from Tsinghua University, Beijing in 1989, 1991, and 1995, respectively. Then he left China and worked as a Research Fellow in KAIST, South Korea, and a Research Associate in Tohoku University, Japan. From 1999 to 2001, he worked as a research staff member in NYU-Tandon School of Engineering, where he completed his Ph.D. in Mechanical Engineering in the same time period. He joined the faculty at Rutgers in July 2001. He is a recognized expert in heat transfer, with notable expertise in radiation transport, heat transfer enhancement, and nanoscale heat transfer. His discovery and solution for conserving scattered energy and scattering angle in radiation transfer modeling is of significant contribution to the advancement of radiative transfer computation. He is a pioneer in ultrafast laser radiation transport modeling and applications. He explored plasma-mediated ablation and developed it successfully to tissue grafting and decontamination. He conducted leading research on near-field radiation, addressing emerging technological applications such as MEMS/NEMS sensors, ultrafine measurement, and biological sensing at the molecular level. Nowadays he explores innovative utilization of renewable solar energy and investigates fundamentals in interfacial heat transfer and boiling mechanisms at the molecular level. He has supervised 17 PhD and 20 Master students and mentored 14 postdoctoral/visiting scholars. He received research funds from the NSF, NASA/NJSGC, USDA, ASEE/DOD, MTF, NIH, NJ Nanotechnology Consortium, Charles and Johanna Busch Memorial Funds, NNSFC, JSPS, and other sources. He also received a teaching award from Rutgers Vice President Office for Undergraduate Education in 2002.

ENFHT'22 KEYNOTE SPEAKER



Topic of Keynote: Chillerless High Performance Liquid Cooling for Sustainable Data Centres
Dr. Poh Seng Lee, National University of Singapore (NUS), Singapore

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Dr Poh Seng Lee is an Associate Professor with the Department of Mechanical Engineering at the National University of Singapore (NUS). Prof Lee's research interests include high performance cooling techniques (in particular single and two-phase microchannel cooling), energy efficient air conditioning and low grade waste heat recovery. He is the recipient of numerous research and innovation awards including 2013 NUS Faculty of Engineering's Young Faculty Research Award, 2011 Institution of Engineers Singapore (IES) Prestigious Engineering Achievement Award, 2011 Asia Pacific Clean Energy Summit Top 10 Defense Energy Technology Solutions Award and 2009 Tan Kah Kee Young Inventors Award (TKKYIA) – Defense Science. Dr Lee also serves as the Program Director of Cooling Energy Science & Technology Singapore (CoolestSG) consortium, Deputy Director of the Centre for Energy Research & Technology (CERT) and Assistant Dean of Research & Technology, Faculty of Engineering.

ENFHT'22 KEYNOTE SPEAKER



Topic of Keynote: Study on Mechanism and Performance Enhancement of Thermal Energy Storage with Composite Phase Change Material
Dr. Qiuwang Wang, Xi'an Jiaotong University, China

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Dr. Qiuwang Wang, Professor of School of Energy & Power Engineering, Dean of Department for Undergraduate Education, Executive Director of International Joint Research Laboratory of Thermal Science and Engineering, Xi'an Jiaotong University, China. He was a visiting scholar at City University of Hong Kong from May 1998 to March 1999, a guest professor at Kyushu University of Japan from September to December 2003, and a senior visiting scholar at Rutgers, The State University of New Jersey, USA from December 2012 to June 2013. His research interests include heat transfer enhancement and its applications, high-temperature/high-pressure heat transfer and fluid flow, transport phenomena in porous media, numerical simulation, prediction & optimization, etc. He is a Fellow of ASME, a China Delegate of Assembly for Intl Heat Transfer Conference (AIHTC), a member of Scientific Council of Intl Centre for Heat & Mass Transfer (ICHMT), a Vice President of Chinese Society of Engineering Thermophysics in Heat & Mass Transfer. He is the founding Editor-in-Chief of Energy Storage and Saving, an Associate Editor of Heat Transfer Engineering, and Editorial Board Members for several international journals such as Renewable and Sustainable Energy Reviews, Energy Conversion and Management, Energy, Applied Thermal Engineering, etc. He is founding chair of International Workshop on Heat Transfer Advances for Energy Conservation and Pollution Control (IWHT) (every two years since 2011, 2011-Xi'an, 2013-Xi'an, 2015-Taipei, 2017-Las Vegas, 2019- Novosibirsk, 2021-Harbin). He has also delivered more than 50 Invited/Keynote lectures in international conferences or foreign Universities. He has also been authors or co-authors of 4 books and more than 200 international journal papers. He has obtained more than 40 China Invent Patents and 4 US Patents.

ENFHT KEYNOTE SPEAKER



Topic of Keynote: Entrained Liquid Fraction in Annular Two-Phase Flow

Dr. Andrea Cioncolini, The University of Manchester, UK

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I am Reader in Thermal-Hydraulics at the Department of Mechanical, Aerospace and Civil Engineering of the University of Manchester, UK.

My background is Nuclear Engineering (BSc, MSc, PhD) and Mathematics (MSc), with specialty in nuclear thermal-hydraulics and computational fluid dynamics. My research includes experiments, physical modelling and numerical simulations in thermo-fluids and fluid-structure interactions (flow boiling and multi-phase flow; thermal-hydraulics and corrosion; micro-fluidics; fluid systems transient analysis; flow induced vibration and flexible fluid-structure interaction), and is motivated by demanding cooling applications (nuclear fission reactors, microelectronics, high-energy particle detectors), flow control and small-scale energy harvesting.

After graduating, I worked as Senior Engineer/Scientist for the nuclear vendor Westinghouse Electric in Pittsburgh-PA, USA, on transient/safety analysis of water-cooled nuclear power plants and on design/testing of small-modular water-cooled nuclear reactor systems. I successively moved to the Laboratory of Heat and Mass Transfer at EPFL (The Swiss Federal Institute of Technology in Lausanne, Switzerland), where I worked as post-doctoral researcher on macro-micro-scale two-phase flow modelling for demanding cooling applications. I joined the University of Manchester in 2013. I am Associate Editor of the Journal of Mechanical Engineering Science (Proc. IMechE), and a member of the Editorial Board of the Journal of Nuclear Engineering.

ICMFHT'22 KEYNOTE SPEAKER



Topic of Keynote: Optimizing the Next Generation of Heat Sinks for Immersion Cooling: Think, Print and Test

Dr. Simone Mancin, University of Padova, Italy

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Simone Mancin graduated with distinction in Mechanical Engineering at the University of Padova (2005) where he also gained the PhD on Industrial Engineering (Applied Thermodynamics and Heat Transfer) (2009). He is Associate Professor at the Dept. of Management and Engineering of the University of Padova, where he teaches Applied Physics, Thermo-Fluid Dynamics, and Thermal Management of Electronic Devices. He is also Visiting Prof. at Brunel University London (UK) and Associate scientist at the National Institute of Nuclear Physics (IT).

In 2015, he founded the Nano Heat Transfer lab (NHT-lab), which is mainly focused on experimental and numerical analyses on nano-PCMs and nano-dispersions, optimized LTES, single and two-phase heat transfer in micro and nano structures, thermal management of CERN experiments and ITER, AI and additive manufacturing applied to thermal problems. At NHT, he developed a novel coating technique for surface functionalization that can be used for, among those, anti-fouling, anti-icing, enhanced heat transfer, and for medical applications. Recently, at in collaboration with Purdue University, we are exploring the next generation of optimized heat sinks for electronics thermal management via immersion cooling.

ICMFHT'22 KEYNOTE SPEAKER



Topic of Keynote: Numerical Simulations of
Complex Two-Phase Flows
Dr. Omar K. Matar, Imperial College, UK

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Omar Matar, FEng, is a Professor of Fluid Mechanics and Head of Department of Chemical Engineering at Imperial College London. His research interests include the use of multi-scale, physics-informed, data-driven methods for the solution of complex non-isothermal multiphase flows with phase change. He is a Fellow of the Royal Academy of Engineering, the Institution of Chemical Engineers, and the American Physical Society, and a RAEng/PETRONAS Research Chair in Multiphase Fluid Dynamics. He has co-authored over 300 refereed papers and given over 70 invited talks. He is co-Editor-in-Chief of the Journal of Engineering Mathematics, and has received >£50M in funding from Research Councils UK and industry.

ICMFHT'22 KEYNOTE SPEAKER



Topic of Keynote: A Comprehensive Review of Pseudo-Slug Flow

Dr. Cem Sarica, University Tulsa, USA

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Dr. Cem Sarica, F.H. “Mick” Merelli/Cimarex Energy Professor of Petroleum Engineering at the University of Tulsa (TU), is currently serving as the director of three industry-supported consortia at the TU: Fluid Flow, Paraffin Deposition, and Horizontal Well Artificial Lift Projects. His research interests are production engineering, multiphase flow in pipes, flow assurance, and horizontal wells. He holds BS and MS degrees in petroleum engineering from Istanbul Technical University and a Ph.D. degree in petroleum engineering from TU. He has previously served in various SPE Committees, and he is currently serving as a member of the SPE Production and Facilities Advisory Committee. He was a member of the SPE Journal Editorial Board between 1999 and 2007. He also served as Associate Editor of JERT of ASME between 1998 and 2003. He is a member of the Technical Advisory Committee of British Hydrodynamics Research Group (BHRg) Multiphase Production Conferences. He served as the Technical Program Chair of BHRg 2008 and 2012 Conferences. He is the recipient of the 2010 SPE International Production and Operations Award. He is recognized as a Distinguished Member of SPE in 2012. Cem received SPE John Franklin Carll Award and SPE Cedric K. Ferguson Certificate in 2015.

ICMFHT'22 KEYNOTE SPEAKER



Topic of Keynote: Thermal-Mechanical flow and Heat Transfer of Supercritical Carbon Dioxide
[Dr. Xinrong Zhang, Peking University, China](#)

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Dr. Xin-Rong (Ron.) Zhang has been a professor at Peking University since January 2013. Dr. Zhang's research interests focused on supercritical and near-critical flow dynamics and heat transfer. He has made significant contributions to the supercritical heat transfer area through numerous innovation, experimental methodology and technical inventions spanning from sub to super-critical fluids. Particularly, he proposed the concepts of low temperature solar (or waste heat) powered trans-critical power generation cycle and supercritical power. Through 20 years' continuous efforts, his invention on the low and medium temperature trans- critical Power generation and CO₂ vapor compression cycle have been translated into real applications. In 2014-2020, Dr. Zhang was selected as a most cited Chinese researcher by Elsevier. Now he is Chairman of Beijing Energy Society. He created five research institutes for recent years and was selected for Beijing Science Honor and also awarded the first prize for the excellent research by Beijing Institute of Energy. He published 2 monographs and more than 160 International Journal papers and was authorized more than 60 patents.

CSP'22 KEYNOTE SPEAKER



Topic of Keynote: Decarbonising Heavy Duty Internal Combustion Engines - Challenges and Opportunities

Dr. Alasdair Cairns, University of Nottingham, UK

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Professor Alasdair Cairns is Director of the Powertrain Research Centre at the University of Nottingham, UK, with 22 years' experience in light and heavy duty engines and fuels. His early career involved 10 years with engineering consultancy MAHLE Powertrain, managing large collaborative R&D programmes. He manages a large team and funding portfolio of £8M in current UK government funded projects across marine, construction and stationary power generation applications, with several current projects on ammonia and hydrogen fuels. He has previously received prizes for related research from both the UK Institution of Mechanical Engineers and SAE International.

CSP'22 KEYNOTE SPEAKER



Topic of Keynote: Computational and Experimental Investigation of Swirling and Bluff-Body Stabilized Ammonia/Hydrogen Flames
Dr. Pedro Coelho, Universidade de Lisboa, Portugal

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Professor Pedro Coelho graduated in Mechanical Engineering in 1984 and received his Ph.D. in 1992 from Instituto Superior Técnico (IST), University of Lisbon, Portugal. He is professor at the Department of Mechanical Engineering of IST, being currently the head of the Department. He has about 100 papers published in international journals, and more than 120 papers presented at international conferences. He is co-author of a book on Combustion (in Portuguese) for undergraduate and master students. His research is in the field of numerical simulation of heat transfer and combustion problems. Specific areas of interest are radiation models, turbulence-radiation interaction, computational heat transfer, turbulent diffusion flames, mild combustion and industrial combustion equipment. He is member of the Eurotherm Committee for the Advancement of Thermal Sciences and Heat Transfer, member of the Scientific Council, Assembly and Executive Committee of the International Centre of Heat and Mass Transfer, member of the Assembly for International Heat Transfer Conferences and member of the Assembly of the World Conference (AWC) on Experimental Heat Transfer, Fluid Mechanics, and Thermodynamics. He is associate editor of the J. Quantitative Spectroscopy and Radiative Transfer, Int. J. Thermal Sciences, and member of the advisory board of Computational Thermal Sciences, Heat Transfer Research and Energy for a Clean Environment.

LIST OF PAPERS

The following papers were presented at the 7th World Congress on Momentum, Heat and Mass Transfer (MHMT'22).

CFD

Title: Modelling of Effects of Process Inputs on Conditions in a BFB Furnace

Author: Sirpa Kallio, Elena Gorshkova, Marko Huttunen , Abhilash Menon , Alan R. Kerstein , Michael Oevermann

Title: Kinetic Analysis and CFD Modelling of Hydrogen-Air Combustion Applied to Scramjet Vehicles

Author: Guido Saccone, Pasquale Natale, Luigi Cutrone, Marco Marini

Title: Efficient CFD Methodology for Optimal Design of Oil Cooled Electric Motor Shaft

Author: Rohit Sharma, Vinay Kumar Gupta, Alok Khaware, Vinayak Kamat

Title: Lattice Boltzmann Modeling of Two-Phase Electrohydrodynamic (EHD) Flows

Author: A.D. Li, Y.Q. Zu, C. Zhou

Title: Electro-Dip Simulation of a Car BIW using Volume-of-Fluid Model with Hybrid Time Advancement Scheme

Author: Vishesh Aggarwal, Tushar Patil, Vivek Patil, Ian Lockley

Title: Experimental and Numerical Investigation of the Solid-Liquid Phase Change of a Low Temperature Paraffin for Refrigerated Transport Applications

Author: Calati M., Guarda D., Zilio C., Righetti G., Mancin S.

Title: CFD Simulation of Mixing Tank with Different Rushton Agitator Diameters and Constant Power Consumption

Author: Luiza B. Fernandes, José R. Nunhez

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The following papers were presented at the 7th World Congress on Momentum, Heat and Mass Transfer (MHMT'22).

CFD

Title: [Numerical Simulations of Microchannels with Functionalized Surfaces for Fluid Treatment with COVID-19](#)

Author: Harrson S. Santana, João L. Silva Jr, Bruna I. Bittelbrunn, Mariana G. M. Lopes, Osvaldir P. Taranto

Title: [A New One-equation Turbulence Model based on the Combined Standard k- \$\epsilon\$ and k- \$\omega\$ Turbulence Models for Benchmark Flow Configurations](#)

Author: Fei Wang, Tat Leung Chan

Title: [Assessment of Flame Structure of Turbulent Bluff-Body CH₄/H₂ Flame Using RANS-FPV Model](#)

Author: Hrishikesh Kotwal, Rudra N. Roy

Title: [Numerical Study of the Effects of Humidity on Natural Convective Flows in Building-Integrated Photovoltaic \(BIPV\) Systems](#)

Author: H. Ahmadi Moghaddam, S. Tkachenko, J. Reizes, R. Raja, C. Menezes, S. Giroux-Julien, V. Timchenko

Title: [Thermal Flow Analysis In Natural Gas Tubings In Relation To Downhole Applications](#)

Author: K.H. Al-Muhammadi, B.S. Yilbas, S.Z. Shuja, A. Al-Sharafi

Title: [Moving Grid Generation: An Unstructured FEM for Simulating Moving Body](#)

Author: Saeed Rafiei, Ebrahim Khajepour

Title: [Hydrothermal Performances of Liquid Cold Plates](#)

Author: Andoniaina M. Randriambololona, Mohammad Reza Shaeri

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The following papers were presented at the 7th World Congress on Momentum, Heat and Mass Transfer (MHMT'22).

CFD

Title: Portable PCM-Based Heat Exchanging Thermal Energy Storage System: Performance Testing Using Numerical Model

Author: Benoît Boulay, Syeda Tasnim, Shohel Mahmud

Title: Numerical Studies of Hydrogen and LPG Turbulent Premixed Flames

Author: Mohamed Elshimy, Salah Ibrahim, Weeratunge Malalasekera

Title: Improvements on a Direct-ALE Scheme for Multiphase Flows with Thermodynamic Consistency

Author: Vazquez-Gonzalez Thibaud

Title: Modeling the Carbon Black Production in Enclosed FSP Reactor

Author: Fabio Henrique Bastiani, Pedro Bianchi Neto, Lizoel Buss, Udo Fritsching, Dirceu Noriler

Title: Gas-Liquid Flow Regime Variation along a Pipeline Riser

Author: Alexander J Elliott, Graeme Hunt, Andrea Cammarano, Gioia Falcone

Title: The Effect of Locations of Inlet and Outlet Manifolds on Thermal Performance of a Lithium-Ion Battery Thermal Management System

Author: Kuuku-Dadzie Botchway, Mohammad Reza Shaeri

Title: Investigating the Effect of Particle Size on Erosive Wear in Industrial Coal Pneumatic Transport Using Computational Fluid Dynamics

Author: Paul T Ogunlela, Donald Giddings, Chris Bennett, Stefan Born, Margot Klaassen, Isaac Gennissen

Title: A Study on the Geometrical Parameter of a Mixing Chamber in an Air-Induction Nozzle

Author: Milad Khaleghi Kasbi, Reza Alidoost Dafsari, Jeekeun Lee

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Novel Methods for Numerical Simulation of Multiphase Flows and Heat Transfer

Title: [Diffuse Interface Method for Nucleate Boiling Simulations](#)

Author: G. Minozzi, A. D. Lavino, E. R. Smith, J. Liu, T. Karayiannis, K. Sefiane, O. K. Matar, D. Scott, T. Krüger and P. Valluri

Title: [Drop Impact Simulation on Heated Structured Surfaces](#)

Author: N. Samkhaniani, M. Toprak, A. Stroh

Title: [Microlayer Evaporation during Steam Bubble Growth, And the Evidence It Provides Regarding the Evaporative Process Itself](#)

Author: Giovanni Giustini

LIST OF PAPERS

Experimental Flow and Heat Transfer

Title: Matched Wetting Behaviour of Material Pairings for Optical In-Situ Measurements in PEM Fuel Cells

Author: Sebastian Blessing, Moritz Kippenberger, Alexander Stroh, Jochen Kriegseis

Title: Analysis of Gas-Liquid Intermittent Flow Sub-Regimes by Pressure Drop Signal Fluctuations

Author: Abderraouf Arabi, Yacine Salhi, Youcef Zenati, El-Khider Si-Ahmed, Jack Legrand

Title: Experimental Investigation Of the Thermal-Hydraulic Characteristics of Agglomerates in Gas-Solid Fluidized-Bed Reactors

Author: Matteo Errigo, Massimiliano Materazzi, Paola Lettieri

Title: Void Fraction Experimental Determination in Gas/Liquid Horizontal Pipe Flow by Mean of a Dual Optical Probe

Author: Aude Lecardonnel, Carlo De Servi, Piero Colonna, Delphine Laboureur

Title: Classic PIV and Stereo-PIV Techniques in the Analysis of Turbulent Flow in a Stirred Tank

Author: Aline G. De Mitri, Rodrigo de L. Amaral, Jenniffer S. Ayala, Helder L. de Moura, Guilherme J. de Castilho

Title: Flow Structures of a Pseudoplastic Fluid in a Stirred Tank Using Particle Image Velocimetry

Author: Jenniffer Ayala, Aline Gallo De Mitri , Helder L. de Moura, Rodrigo de L. Amaral, Grazielle Espina, Guilherme J. de Castilho

Title: Interaction of Cooling Lubricant Droplets with Hot Metal Surfaces

Author: Kaissar Nabbout, Martin Sommerfeld, Eckart Uhlmann, Enrico Barth, Jörg Kuhnert

Title: Developing Acoustic Emission Technique to Characterize Particles in Solid-Gas Flows

Author: Fria Hossein, Massimiliano Matterazzi, Matteo Errigo, Paola Lettieri, Panagiota Angeli

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Flow and Heat Transfer in Porous Media

Title: Experimental Study Onon Organic PCM Forfor High Temperature Applications

Author: Giulia Righetti, Claudio Zilio, Giovanni A. Longo, Simone Mancin

Title: Experimental Study on the Performance of Wet Thermoacoustic Engine with Modified Parallel Plate Stack Design

Author: Md. Imrul Kayes, Md. Ashiqur Rahman

Title: Flow Interaction Between Porous and Non-porous region in a Channel Partially Filled with a Porous Block: Pore-scale LES Study

Author: Mohammad Jadidi, Yasser Mahmoudi

Title: Experimental and Numerical Analyses of Pressure Drops In A 3D Printed Foam

Author: Giulia Righetti, Michele Calati, Claudio Zilio, Simone Mancin

Title: Porous Media Model Limit in Low Fin Packing Density Channel

Author: Yohanna HENROTEL, Damien SERRET, Joseph JABBOUR

Title: Effective Thermal Conductivity of Tetragonal Pin Array Stack

Author: Elio Di Giulio, Armando Di Meglio, Nicola Massarotti, Raffaele Dragonetti

Title: Establishing Suitable Conditions to Compare Multiphase Flow Laboratories with Different Line Pressures

Author: Alexander J. Elliott , Olusegun S. Osundare¹, Gioia Falcone, Dennis van Putten

Title: Rayleigh-Taylor Instability of Miscible Displacements in Heterogeneous Porous Media

Author: Youssef Elgahawy, Jalel Azaiez

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