



**MHMT**  
CONGRESS

**PROCEEDINGS OF THE 5TH WORLD  
CONGRESS ON MOMENTUM, HEAT AND  
MASS TRANSFER (MHMT'20)**

**October 14 - 16, 2020 | ~~Lisbon, Portugal~~ - Virtual Conference**

**© COPYRIGHT 2020, INTERNATIONAL ASET INC. – ALL  
RIGHTS RESERVED.**

**ISBN: 978-1-927877-75-3 | ISSN: 2371-5316**

# TABLE OF CONTENTS

<b>Welcome Message from the Conference Chair.....</b>	<b>3</b>
<b>About MHMT'20.....</b>	<b>4</b>
<b>Scientific Committee.....</b>	<b>5</b>
<b>Keynote Speakers.....</b>	<b>7</b>
<b>List of Papers .....</b>	<b>17</b>
<b>Sponsors .....</b>	<b>28</b>
<b>Journal Special Issue.....</b>	<b>29</b>
<b>MHMT'21.....</b>	<b>30</b>
<b>Ethics &amp; Malpractice .....</b>	<b>31</b>
<b>Contact Us .....</b>	<b>36</b>

# 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 5th World Congress on Momentum, Heat and Mass Transfer (MHMT'20).**

Due to COVID-19 the 5th World Congress on Momentum, Heat and Mass Transfer (MHMT'20) which was supposed to be held in Lisbon, Portugal will be held virtually instead on October 14 - 16, 2020.

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 5th World Congress on Momentum, Heat and Mass Transfer (MHMT'20). We wish you a very successful and enjoyable experience.

**Dr. Lixin Cheng**

Congress Chair and Proceedings Editor  
MHMT'20

**Dr. Tassos G. Karayiannis**

Congress Co-Chair and Proceedings Editor  
MHMT'20

[Return to Top](#)

# ABOUT MHMT'20

**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'20](#) - 5<sup>th</sup> International Conference on Experimental and Numerical Flow and Heat Transfer

[ICMFHT'20](#) - 5<sup>th</sup> International Conference on Multiphase Flow and Heat Transfer

[CSP'20](#) - 5<sup>th</sup> 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 **T**ransfer

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)



[Return to Top](#)

# SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the MHMT'20 Congress:

## Scientific Committee Members for ENFHT'20

- **Dr. Prashant Agrawal**, Northumbria University, UK
- **Dr. Rayhaneh Akhavan**, University of Michigan, USA
- **Dr. Alberto Aliseda**, University of Washington, USA
- **Dr. Jalel Azaiez**, University of Calgary, Canada
- **Dr. Marcelo Buffoni**, ABB Switzerland Ltd. Corporate Research, Switzerland
- **Dr. Selva Çavus**, Istanbul University, Turkey
- **Dr. Martin Désilets**, University of Sherbrooke, Canada
- **Dr. Arend Dubbelboer**, Danone Nutricia Research, Netherlands
- **Dr. Yanping Du**, Shanghai Jiao Tong University, China
- **Dr. Mohammad Hamdan**, American University of Sharjah, United Arab Emirates
- **Dr. Mohammad Hojjat**, University of Isfahan, Iran
- **Dr. Gamze Gediz Ilis**, Istanbul Okan University, Turkey
- **Dr. Jer-Huan Jang**, Ming Chi University of Technology, Taiwan
- **Dr. Zdeněk Jegla**, Brno University of Technology, Czech Republic
- **Dr. Boo Cheong Khoo**, National University of Singapore, Singapore
- **Dr. Pamela M. Norris**, University of Virginia, USA
- **Dr. Hakan Oztop**, Firat University, Turkey
- **Dr. Sébastien Poncet**, Sherbrooke University, Canada
- **Dr. Ziad Saghir**, Ryerson University, Canada
- **Dr. Yufeng Yao**, University of the West of England, UK

[Return to Top](#)

# SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the MHMT'20 Congress:

## Scientific Committee Members for ICMFHT'20

- **Dr. Nabeel Al-Rawahi**, Sultan Qaboos University, Oman
- **Dr. Mohammed Azhar**, ANSYS Inc., UK
- **Dr. Vasilis Bontozoglu**, University of Thessaly, Greece
- **Dr. Gail Duursma**, The University of Edinburgh, UK
- **Dr. Kamiel Gabriel**, University of Ontario Institute of Technology, Canada
- **Dr. Afshin J. Ghajar**, Oklahoma State University, USA
- **Dr. Dana Grecov**, University of British Columbia, Canada
- **Dr. Faik Hamad**, Teesside University, UK
- **Dr. Tassos Karayiannis**, Brunel University London, UK
- **Dr. Christos Markides**, Imperial College London, UK
- **Dr. Carlos Martínez Bazán**, Universidad de Jaen, Spain
- **Dr. Eckart Meiburg**, University of California at Santa Barbara, USA
- **Dr. João Miranda**, Faculdade de Engenharia da Universidade do Porto, Portugal
- **Dr. Vladan Prodanovic**, University of British Columbia, Canada
- **Dr. Huihe Qiu**, Hong Kong University of Science & Technology, Hong Kong
- **Dr. Mostafa Safdari Shadloo**, National Institute of Applied Science (INSA), France
- **Dr. Gretar Tryggvason**, John Hopkins University, USA
- **Dr. Berend Van Wachem**, Otto-von-Guericke-University of Magdeburg, Germany
- **Dr. Guodong Xia**, Beijing University of Technology, China
- **Dr. Fu-Ling Yang**, NTU, Taiwan
- **Dr. Jiyun Zhao**, City University of Hong Kong, Hong Kong

# KEYNOTE SPEAKERS

The keynote information for the 5th World Congress on Recent Advances in Nanotechnology (MHMT'20) is as follows:



**Dr. Gretar Tryggvason**  
Johns Hopkins University, USA  
ICMFHT'20 Plenary Speaker



**Dr. Ziad Saghir**  
Ryerson University, Canada  
ENFHT'20 Keynote Speaker



**Dr. Sauro Succi**  
Center for Life Nanosciences  
at La Sapienza, Italy  
ENFHT'20 Keynote Speaker



**Dr. Vahid Motevalli**  
Johns Hopkins University, USA  
ICMFHT'20 Plenary Speaker



**Dr. BoFeng Bai**  
Xi'an Jiaotong University,  
China  
ICMFHT'20 Keynote Speaker



**Dr. Lin Ma**  
The University of Sheffield,  
UK  
CSP'20 Keynote Speaker



**Dr. Yannis Hardalupas**  
Imperial College London,  
UK  
CSP'20 Keynote Speaker



**Dr. Jinliang Xu**  
North China Electric  
Power University, China  
ENFHT'20 Invited Speaker

# PLENARY LECTURE



**Titles:** Numerical Simulations of Complex Multiphase Flows: Opportunities and Challenges

Dr. Gretar Tryggvason, Johns Hopkins University, USA

[View Abstract](#)

[Return to Top](#)

Gretar Tryggvason is the Charles A. Miller, Jr. Distinguished Professor at the Johns Hopkins University and the head of the Department of Mechanical Engineering. He received his PhD from Brown University in 1985 and was on the faculty of the University of Michigan in Ann Arbor until 2000, when he moved to Worcester Polytechnic Institute as the head of the Department of Mechanical Engineering. Between 2010 and 2017, he was the Viola D. Hank professor at the University of Notre Dame and the chair of the Department of Aerospace and Mechanical Engineering.

Professor Tryggvason is well known for his contributions to computational fluid dynamics; particularly the development of methods for computations of multiphase flows and for pioneering direct numerical simulations of such flows. He served as the editor-in-chief of the Journal of Computational Physics 2002-2015, is a fellow of APS, ASME and AAAS, and the recipient of several awards, including the 2012 ASME Fluids Engineering Award and the 2019 ASTFE Award.



## KEYNOTE LECTURE



**Titles:** Thermal Management and System Optimization of Heat Transfer Performance using Nanotechnology: A Hybrid Thermal and Environmental Application

Dr. Ziad Saghir, Ryerson University, Canada

[View Abstract](#)

[Return to Top](#)

Prof M. Ziad Saghir is a Professor at Ryerson University and Canada's most experienced reduced-gravity researcher. He is Canada's top performer at leveraging departmental and provincial research funds with national (NSERC, CSA) and international funding agencies to pursue Canadian space science objectives onboard the International Space Station (ISS). His talent as a space scientist and university educator is consistently requested by the international space physical science mission community. He leads a group of very strong graduate students and post-docs that come from academia and industry, with interest in and application to deep hydrocarbon reservoirs. His innovation is recognized internationally through consistent invitations from European researchers that identify him as applying the maximum knowledge gained from long-duration gravity-driven phenomena in fluid physics to industrial processes. He has been PI or Co-I of Foton-M2 and M3 SCCO recoverable satellite missions (2007), the ISS SODI-IVIDIL (2009) and DSC (2010) missions, the ISS SODI-DCMIX mission (2011-15), and was the national coordinator of the CSA discipline working group on the role of gravity in metals and alloys. Canada's contribution to the SODI-DCMIX mission is to clarify the role of gravity on the movement of hydrocarbons across temperature gradients-important knowledge for Canada's deep oil reservoir sector (Hybernia Oil field and Northern exploration of oil reservoir deposits). Over the past decade, Prof. Saghir has been working in collaboration with TOTAL and researchers in France to apply innovation to benefit Canada's competitiveness in hydrocarbon extraction from oil reservoirs, a top priority of the Federal Government. He has published over 200 scientific journal paper related to energy. He is currently the chair of the International conference on Thermal Engineering ([www.ictea.ca](http://www.ictea.ca)).

## KEYNOTE LECTURE



**Titles:** Mesoscale Simulation of Complex Transport Phenomena Far From Equilibrium

Dr. Sauro Succi, Center for Life Nanosciences at La Sapienza, Italy

[View Abstract](#)

[Return to Top](#)

Dr. Sauro Succi holds a degree in Nuclear Engineering from the University of Bologna and a PhD in Plasma Physics from the EPFL, Lausanne, Switzerland. He has held a research staff position at the IBM European Center for Scientific and Engineering Computing, Rome. Till 2018 he served as a Director of Research at the Istituto Applicazioni Calcolo of the Italian National Research Council in Rome and he is also a Research Associate of the Physics Department of Harvard University and a regular Visiting Professor at the Institute of Applied Computational Science at the School of Engineering and Applied Sciences of Harvard University. Since 2019 he is a senior research executive and principal investigator at the Center for Life Nanosciences of the Italian Institute of Technology at La Sapienza, Rome.

He has published extensively on a broad range of topics in computational statistical physics, including thermonuclear plasmas, fluid turbulence and combustion, micro and nano-biofluidics, as well as quantum-relativistic flows.

He is the author of the highly cited monograph "The lattice Boltzmann equation for fluid dynamics and beyond", (Oxford Univ. Press, 2001) and "The Lattice Boltzmann Equation for Complex States of Flowing Matter" (OUP, 2018).

Dr. Succi is an elected Fellow of the American Physical Society (1998), a member of the European Physical Society and an elected member of the Accademia Europaea (2015). He has received the Humboldt Prize in physics (2002), the Killam Award of the the University of Calgary (2005) and the Raman Chair of the Indian Academy of Sciences (2011). In 2017, he has been awarded a European Research Council Advanced Grant on computational design of mesoscale porous materials. He is the recipient of the 2017 APS Aneesur Rahman Prize for Computational Physics for seminal contributions to the development and application of the Lattice Boltzmann method and the 2019 Bernie J. Alder CECAM prize for exceptional contributions to the microscopic simulation of matter.

## KEYNOTE LECTURE



**Titles:** Effects of Supercritical Airfoil Upper Section Thickness Modification on Airfoil Lift Characteristic

Dr. Vahid Motevalli, Tennessee Technological University, USA

[View Abstract](#)

[Return to Top](#)

Vahid Motevalli is the Associate Dean for Research and Innovation in the College of Engineering since 2013 and Professor of Mechanical Engineering. He is responsible for the growth of externally funded research, research strategies and infrastructure, oversight of three research centers, and the college graduate program. Dr. Motevalli has more than 30 years of teaching, research and administrative experience in academia, government and industry with diverse research expertise in combustion, fire safety, hybrid-electric vehicles, aviation safety and security and transportation safety. These diverse research activities, thus far, have been supported by more than \$17 million in external funding. He has over 100 technical publications in addition to reports, presentations and invited talks and has directed over 35 graduate students. His professional experience outside academia includes working at national and government laboratories (NIST, NRL), government (US Congress as ASME Congressional Fellow) and consulting.

## KEYNOTE LECTURE



**Titles:** Two-Mode Eddy-Viscosity  
Compressible Turbulence Model for  
Supercritical Fluid  
Dr. BoFeng Bai, Xi'an Jiaotong University,  
China

[View Abstract](#)

[Return to Top](#)

Dr. BoFeng Bai is a Professor in the State Key Laboratory of Multiphase Flow in Power Engineering at Xi'an Jiaotong University. He received his BE, and Ph.D in Power Engineering & Engineering Thermophysics at Xi'an Jiaotong University in 1993 and 1999, respectively. His research area covers multiphase flow fundamentals and applications in thermal engineering, power engineering as well as petroleum engineering. He has published over 200 journal papers including Journal of Fluid Mechanics, International of Multiphase Flow, Physics of Fluids, et al, given over 20 invited lectures at technical conferences and institutions. He is the member of editorial board of Case Studies in Thermal Engineering (Elsevier) and Interfacial Phenomena and Heat Transfer (Begell House), the recipient of several awards, including China National Ten Thousand Talent Program and China National Funds for Distinguished Young Scientists.

## KEYNOTE LECTURE



**Titles:** Challenges and Opportunities of Bioenergy with CCS (BECCS) Technologies  
Dr. Lin Ma, The University of Sheffield, UK

[View Abstract](#)

[Return to Top](#)

Professor Ma completed his PhD at the University of Leeds, then took a series of posts at the University before he took up the post of Professor of Fluid Dynamics in the Department of Mechanical Engineering at the University of Sheffield in 2015 as a member of the University Energy 2050 initiative. He has been working for many years on sustainable energy technologies and in particular on computational fluid dynamics (CFD) modelling of various energy processes and a wide range of industrial fluid flow, heat and mass transfer problems. His active research areas include carbon capture from power generation and industrial processes, clean coal/biomass/gas combustion technologies and pollutants formation prediction, fuel related ash deposition, slagging and fouling, future power plant multi-scale and dynamic simulation, etc.

## KEYNOTE LECTURE



**Titles:** Combustion for Net Zero Carbon Society

Dr. Yannis Hardalupas, Tennessee Technological University, USA

[View Abstract](#)

[Return to Top](#)

Dr. Yannis Hardalupas received his Mechanical Engineering degree from National Technical University of Athens, Greece, followed by a PhD at Imperial College London. He was awarded an EPSRC Advanced Research Fellowship for experimental research on combustion of liquid and solid fuels before joining the academic staff at Mechanical Engineering Department of Imperial College, where he was promoted to Professor in 2009. In 2000, he spent a year at Ricardo Consulting Engineers working on computational models for liquid atomization through a Royal Academy of Engineering industrial secondment award.

His research covers combustion, heat and mass transfer, liquid atomisation and sprays and the development and application of novel optical and laser diagnostics. The latter led to patents for instruments on powder sizing, planar droplet sizing, nanoparticle sizing and novel imaging devices. His research contributed to gas- and liquid- fuelled land-based gas turbines, coal burners, aeroengines, gasoline and Diesel engines and liquid propellant rocket engines. He also researched spray drying and Cleaning-In-Place processes for the chemical and food industry and 'nanofluids' as improved coolants for fusion and fission reactors.

He is a Fellow of the Institute of Physics and Associate Fellow and member of the technical committee of Propellants and Combustion of the American Institute of Aeronautics and Astronautics. He chairs the Combustion Physics Group of the Institute of Physics, is an Editor of Experimental Thermal and Fluid Science and serves at the advisory and editorial boards of Experiments in Fluids and Int. J. of Spray and Combustion Dynamics.

## KEYNOTE LECTURE



**Titles:** Dropwise Condensation On Nanostructured Surface  
Dr. Jinliang Xu, North China Electric Power University, China

[View Abstract](#)

[Return to Top](#)

Prof. Jinliang Xu is the Dean of School of Energy Power and Mechanical Engineering, North China Electric Power University. He got PhD in 1995 at Xian Jiaotong University, and was a postdoctor in Tsinghua University from 1995 to 1997. Then, he worked in University of Notre Dame in the period of 1997-2002. He joined Guangzhou Institute of Energy Conversion from 2002, and setup the Micro Energy System Laboratory there. He joined North China Electric Power University in 2009 and founded the Beijing Key Laboratory of Multiphase Flow and Heat Transfer for Low Grade Energy Utilizations. His research interest includes multiphase flow and heat transfer in micro/nano systems, advanced power generation system, low grade energy and renewable energy utilization. He published more than 200 international journal papers as the corresponding author and co-authored two books. He has been the highly cited author in recent four years in Energy field. He has been the chair or co-chair for a set of academic conferences such as 4th Micro and Nano Flows Conference (University College London, UK, 7-10 September 2014), IHTS 2014 (International Heat Transfer Symposium 2014, Beijing) and first Int. Conference on supercritical CO<sub>2</sub> power system (2018 Beijing) etc. He is the editor of the journals of Energies, Thermal Science and Engineering Progress, Frontiers in Heat pipe, Alternative Energy. He is the guest editor for the special issue of Applied Thermal Engineering and Energy. He presented 40 keynote speeches in international conferences, and has been the reviewer for more than 50 journals. He was the best reviewer of the Journal of Heat Transfer, ASME in the fiscal year of 2012. He received the Natural Science Award of the Ministry of Education, China (first grade). He has been the “973” project chief scientist, Ministry of Science since 2011 and was named as the “Yangtze River Scholar” Professor by the National Ministry of education, China in 2013.

# LIST OF PAPERS

The following papers were presented at the 5th World Congress on Momentum, Heat and Mass Transfer.

## CDF

**Title:** Modelling Of Shear-induced Lift For Non-spherical Point Particles In Arbitrary Flows

**Authors:** Jure Ravnik, Yan Cui, Matjaz Hribersek, Paul Steinmann

[View Paper](#)

**Title:** Influence of Capillary Number on Pressure Profile Evolution in Microfluidic T-Junction

**Authors:** Piyush Kumar, Manabendra Pathak

[View Paper](#)

**Title:** Numerical Study of Single Iron(III) Nitrate Nonahydrate/Ethanol Droplet Evaporation in Humid Air

**Authors:** Praveen Narasu, Alexander Keller, Maximilian Kohns, Hans Hasse, Eva Guthei

[View Paper](#)

**Title:** A BEM Model For Heat Flux Exchange Between Particles And Fluid

**Authors:** Ožbej Verhnjak, Matjaž Hriberšek, Jure Ravnik

[View Paper](#)

**Title:** Hydrodynamics and Heat Transfer Characteristics of Free Surface Liquid Jet Impingement on a Convex Cylindrical Surface

**Authors:** Kuldeep Baghel, Arunkumar Sridharan, Janani Sree Muralidharan

[View Paper](#)

[Return to Top](#)



# LIST OF PAPERS

The following papers were presented at the 5th World Congress on Momentum, Heat and Mass Transfer.

## CDF

**Title:** Detailed CFD Modelling and Simulation for Optimising Gas Flows in a Complex Duct Arrangement

**Authors:** Anupam, V Ramachandrarao Maddali, Prateek Sharma, Anil K popuri, Ashutosh Saxena, B.N.Mohapatra

[View Paper](#)

**Title:** CFD-based Characterization of the Single-use Bioreactor Xcellerex™ XDR-10 for Cell Culture Process Optimization

**Authors:** Diana Kreitmayer, Srikanth Gopireddy, Tomomi Matsuura, Shizuka Kondo, Hirofumi Kakihara, Koichi Nonaka, Nora Urbanetz, Eva Gutheil

[View Paper](#)

**Title:** Steady State Modeling of Highly Rotating and Viscous Flow using VOF Method for Rotary Glass Fiberization Process

**Authors:** ROHIT.S, VINAY.G, ALOK.K, PREM.A

[View Paper](#)

**Title:** Numerical Study on the Interface Evolution of the Unsteady Supercavity Flows with a Strong Gas Jet

**Authors:** Min Xiang, Xiaoyu Zhao, Zeyang Xie

[View Paper](#)

# LIST OF PAPERS

The following papers were presented at the 5th World Congress on Momentum, Heat and Mass Transfer.

## CDF

**Title:** Experimental and Computational Modelling of Flow Distribution

**Authors:** Dominika Babička Fialová, Zdeněk Jegla

[View Paper](#)

**Title:** Generation of Green Energy Using Wastewater

**Authors:** Ghaleb Ibrahim, Salem Haggag, Abdalrahman Abd El Wahab, Mahmoud El-Sharkay, Marwan Ghafouri, Youssef El-Kamash

[View Paper](#)

**Title:** Laminar and Turbulent Boundary Layers on a Shark Fin

**Authors:** Husein Noble, Shrey Kulkarni, Kartik Sunil, Prasad Pokkunuri

[View Paper](#)

**Title:** Numerical Solution of Laminar Flow over Symmetric NACA Airfoils

**Authors:** Prasanna M.S.S, Shashank Sadineni, Rahul Kotikalapudi, Dr. Prasad Pokkunuri

[View Paper](#)

**Title:** Numerical Study on the Effects of the Wick Structure of an Annular Heat Pipe on the Isothermal Performance

**Authors:** Hongzhe Zhang, Fang Ye, Hang Guo, Xiaoke Yan, Chongfang Ma

[View Paper](#)

# LIST OF PAPERS

The following papers were presented at the 5th World Congress on Momentum, Heat and Mass Transfer.

## CDF

**Title:** Nitrogen-Galinstan Two Phase Pumping for MHD Power Generation Systems

**Authors:** Josh Rosettani, Philip Geddis, Lijun Wu, Bruce Clements, Wael Ahmed

[View Paper](#)

**Title:** Numerical Study of a Novel Variable Diameter Cavitator Structure

**Authors:** Zeyang Xie, Min Xiang, Bo Liu, Weihua Zhang

[View Paper](#)

**Title:** Numerical Simulation of A Radial Free Surface Liquid Jet Impinging on A Heated Surface

**Authors:** LIKITHA.S, PATRICK.S, ALOK.K, AMINE.B, VINAY.G

[View Paper](#)

**Title:** Numerical Simulation of Taylor Flow in the Entrance Region of Microchannels

**Authors:** Amin Etminan, Yuri S. Muzychka, Kevin Pope

[View Paper](#)

**Title:** CFD Study Of An Electrical Submersible Pump (ESP) Handling Twophase Liquid-liquid Flow

**Authors:** Deisy Becerra, Miguel Asuaje, Nicolás Ratkovich

[View Paper](#)

# LIST OF PAPERS

## Experimental Measurements

**Title:** Theoretical analysis of the lifetime of sessile evaporating droplet with surface cooling effect

**Authors:** Yang Shen, Yongpan Cheng, Jinliang Xu, Kai Zhang

[View Paper](#)

**Title:** Phase Separation Characteristics through Vertical Y Junction preceded by Elbow Tube

**Authors:** Kosuke Miyawaki, Yoji Onaka

[View Paper](#)

**Title:** Spray Structure of an Elliptical Effervescent Atomizer

**Authors:** Sana Shaghaghian, Mehdi Jadidi, Ali Dolatabad

[View Paper](#)

**Title:** Experimental Study on Evaporation properties during Spray Flash of Aqueous NaCl Solution

**Authors:** Huihui Wang, Dan Zhang, Shuran Zhao, Jiping Liu

[View Paper](#)

**Title:** Real-time Monitoring of Multiphase Flow within Rock Miniplugs using 2D X-ray Imaging

**Authors:** Vera Pletneva, Dmitry Korobkov, Ivan Yakimchuk

[View Paper](#)

**Title:** Experimental Study of Gas-Liquid Flow Through Vertical Curves: A Parallel with Gas Locking Phenomenon in Centrifugal Pumps

**Authors:** Renan Marçal, Valdir Estevam, Marcelo Souza de Castro

[View Paper](#)

# LIST OF PAPERS

## Heat Transfer Enhancement

**Title:** Investigation of Sequential and Simultaneous Crossflow Heat Exchangers for Automotive Application

**Authors:** Mohammed Ismail, Mesbah G. Khan, Amir Fartaj

[View Paper](#)

**Title:** Experimental Investigation of the Influences of Fluid Properties on Heat Transfer for Spray Cooling

**Authors:** Jessica Kansy, Thomas Kalmbach, André Loges, Thomas Wetzel, Achim Wiebelt

[View Paper](#)

**Title:** An Experimental Study with Condenser Embedded Adsorber

**Authors:** Gamze Gediz Ilis, Hasan Demir

[View Paper](#)

**Title:** Investigating The Influence Of Macroscopic Surface Structures On The Thermal Contact Conductance Using Infrared Thermography

**Authors:** Thorsten Helmig, Michael Burghold, Faruk Al-Sibai, Reinhold Kneer

[View Paper](#)

**Title:** A Novel Wavy Channel Heat Exchanger: The Sine-helical Mixer

**Authors:** Abbas Aldor, Yann Moguen, Kamal El Omari, Charbel Habchi, Pierre-Henri Cocquet, Yves Le Guer

[View Paper](#)

# LIST OF PAPERS

## Heat Transfer Enhancement

**Title:** Effect of Angular Velocity on Mass Fraction Distribution for Jets Impinging on Airfoil Leading-Edge Cavity

**Authors:** Amin Safi, Mohammad O. Hamdan, Emad Elnajjar

[View Paper](#)

**Title:** Heat Transfer in a Torus Electromagnetic Coupler Subjected to Cooling

**Authors:** F.Z. Boudara, H. Bouzekri, Y. Benhammadi, P.-H. Cocquet, M. Rivaletto, L. Pécastaing, A. Silvestre de Ferron, S. Paquet, J-P. Brasile, Y. Le Guer

[View Paper](#)

**Title:** Theoretical Analysis of the Effect of Properties on the Solar Still Performance

**Authors:** Ghaleb Ibrahim, Husham M. Ahmed

[View Paper](#)

# LIST OF PAPERS

## Boiling and Condensation Fundamentals and Processes

**Title:** Experimental Study of Solid/Liquid Thermal Shock in Carbon Dioxide

**Authors:** Jean Muller, Romuald Rullière, Pierre Ruyer, Marc Clause

[View Paper](#)

**Title:** Enhancement of Pool Boiling Heat Transfer Performance by an EcoFriendly Surfactant

**Authors:** Rinku Kumar Gouda, Manabendra Pathak, Mohd. Kaleem Khan

[View Paper](#)

**Title:** Effect of Outlet Plenum Volume During Flow Boiling Inside Plain Parallel Microchannel

**Authors:** Gaurav Hedau, Rishi Raj, Sandip K. Saha

[View Paper](#)

**Title:** Saturated Nucleate Boiling with HFE-7100 on a Plain Smooth Copper Surface

**Authors:** Xiaoguang Fan, Mohamed M. Mahmoud, Atanas Ivanov, Tassos G. Karayiannis

[View Paper](#)

**Title:** Flow Boiling Heat Transfer in Coated and Uncoated Plate Heat Exchangers

**Authors:** Angela Mutumba, Tassos Karayiannis, Francesco Coletti, Alex Reip

[View Paper](#)

# LIST OF PAPERS

## Boiling and Condensation Fundamentals and Processes

**Title:** Numerical Study of the Effect Surface Properties in Boiling

**Authors:** E. Freitas, D. Bento, R. Lima, J. M. Miranda, A.S. Moita, A.L.N. Moreira

[View Paper](#)

**Title:** Experimental investigation of subcooled flow boiling of R245fa in a narrow horizontal annular duct

**Authors:** B. Zajec, B. Končar, M. Matkovič, L. Cizelj

[View Paper](#)

**Title:** Flow Boiling of HFE-7100 in Multi-Microchannels: Effect of Surface Material

**Authors:** Ali H. Al-Zaidi, Mohamed M. Mahmoud, Tassos G. Karayiannis

[View Paper](#)

**Title:** Numerical Simulation Of Steam Bubble Condensation Using Thermal Phase Change Model

**Authors:** LIKITHA.S, ALOK.K, VINAY.G, HEMANT.P, AMINE.B, VISHESH.A

[View Paper](#)

**Title:** Flow Boiling of Water in Square Cross Section Microchannel at Different Inlet Subcooling Conditions

**Authors:** S. Korniliou, T. G. Karayiannis

[View Paper](#)



# LIST OF PAPERS

## Boiling and Condensation Fundamentals and Processes

**Title:** Wettability Effect On Flow Boiling Characteristics Within Micro-passages

**Authors:** Konstantinos Vontas, Manolia Andredaki, Anastasios Georgoulas, Nico Miché<sup>1</sup> and Marco Marengo

[View Paper](#)

**Title:** Effect Of Channel Aspect Ratio On Flow Boiling Characteristics Within Rectangular Micro-passages

**Authors:** Manolia Andredaki, Konstantinos Vontas, Anastasios Georgoulas, Nico Miché, Marco Marengo

[View Paper](#)

# LIST OF PAPERS

## Combustion

**Title:** Optimization of Coal/biomass Blend Combustion in Circulating Fluidized Bed Reactor Using Novel Aspen Plus Models

**Authors:** Lyazzat Kulmukanova, Dhawal Shah, Yerbol Sarbassov

[View Paper](#)

**Title:** The Effect of Air Throttle on Combustion Process and Emission Formation in Marine Lean-Burn Gas Engines

**Authors:** Sadi Tavakoli, Jesper Schramm, Eilif Pedersen

[View Paper](#)

**Title:** Reduced Order Chemical Kinetic Modeling for a Hydrogen Fueled Radical Farming Scramjet

**Authors:** Raoul Mazumdar, Hideaki Ogawa, Adrian Pudsey

[View Paper](#)

**Title:** LES-CMC Simulations of Strong Swirling Confined Flames in a Model Gas Turbine Combustor

**Authors:** Pranit Gaikwad, S. Sreedhara

[View Paper](#)

**Title:** Some Specific Aspects Related To The Use Of The Artificial Compressibility Methods To Simulate Unsteady Flows

**Authors:** Marios Donini, Fernando Fachini, Cesar Cristaldo, Pascal Buel

[View Paper](#)

# SPONSORS

International ASET Inc. would like to thank the following sponsors for their support of MHMT'20:



INTERNATIONAL  
**ASET**



WHERE  SUBMIT

[Return to Top](#)

# JOURNAL SPECIAL ISSUES

**Selected articles from the congress will be published in the following journal after a secondary review process:**

**[JFFHMT - Journal of Fluid Flow, Heat and Mass Transfer](#)**

These journals have adopted to the open-access model, meaning all free access to the journal's articles and content with no need for subscription. This ensures larger audience and therefore higher citations.

Users are allowed to read, download, copy, distribute, print, search, or link to the full texts of the articles in this journal without asking prior permission from the publisher or the author. This is in accordance with the BOAI definition of open access.

All published papers of JFFHMT will be submitted to Google Scholar, Microsoft Academic Search, Open J-Gate, Mendeley, Index Copernicus International, Academic Index, Mendeley, Primo Central, and Genomics JournalSeek for possible indexing. Additionally, they will be permanently archived in Portico (one of the largest community-supported digital archives in the world) and will be assigned unique DOIs.

# MHMT'21

The 6th World Congress on Momentum, Heat and Mass Transfer (MHMT'2021) will be held on June 17-19, 2021 in Lisbon, Portugal.



For inquiries and to obtain further information on the congress, please visit the [website](https://lisbon2021.mhmtcongress.com) or call us at:

+1-613-834-9999

[Return to Top](#)

# ETHICS & MALPRACTICE

## Publication Ethics and Publication Malpractice Statement

The following statement is mainly based on the [Code of Conduct and Best-Practice Guidelines for Journal Editors](#) (Committee on Publication Ethics, 2011).

### Scientific Committee

#### ***Scientific Committee***

Scientific committees consisting of experts in the fields are established. The committees oversee the peer-review and publication process. To see the scientific committee members, please follow the link below.

#### **[Scientific Committee](#)**

#### ***Equality and Decisions***

One or more reviewer, scientific committee member, or chair, (internal or external), are responsible for evaluating the relevance of the submitted manuscripts to the proceedings, technical and scientific merit, originality, and impact. These evaluations are to be carried out regardless of ethnicity, religion, gender, sexual orientation, political beliefs, and institutions. Successive to peer-review, the Chair has full authority and is solely responsible for the published content and the process thereof.

#### ***Confidentiality***

Scientific committee member(s) and publishing staff may not disclose manuscripts or their content, directly or indirectly, to anyone other than individuals invited to review the manuscript (whether they accept or not), other reviewers of the same publications, and publishing staff.

#### ***Conflicts of Interest***

Scientific committee member(s) and publishing staff may not utilize the contents of submitted manuscripts whether accepted or rejected, directly or indirectly for their own research purposes without prior written consent by the authors.

# ETHICS & MALPRACTICE

## Reviewers

### ***Contribution to Decisions***

In order for final decisions to be made regarding acceptance or rejection of papers, we rely on peer-review. Peer-review is the process of experts in the field reading, understanding, and objectively commenting on submitted papers. Through peer-review, scholars give back to the academic and scientific community by helping the chair(s) make decisions regarding manuscripts.

### ***Promptness***

Reviewers should promptly notify the chair(s) if they are unable or unqualified to carry out their reviewing duties. Reviewers should do their best to provide the reviews to the chair(s) as promptly as possible, and within the designated time-frame.

### ***Confidentiality***

Reviewers must not share the contents of the manuscripts they receive for review, regardless of their decision to review or contents of the review, directly or indirectly, with anyone other than the person who has assigned the review.

### ***Fairness***

Reviewers should review manuscripts fairly and objectively, with supporting evidence or arguments, regardless of personal feelings or biases.

### ***Thoroughness***

Reviewers should thoroughly read, understand, and provide constructive feedback with the aim of improving the manuscript. Reviewers should aim to identify and report technical issues, irregularities, mistakes, missing citations, and similarity to other published work.

### ***Conflicts of Interest***

Invited reviewers should immediately inform the chair(s) in case of a conflict of interest based on competitive, collaborative, personal, family, and other relationships with the authors or people involved in the work.

# ETHICS & MALPRACTICE

## Authors

### ***Authorship***

Only persons who have significantly contributed to the work and the manuscript can be named authors on a paper. These contributions include the idea/concept, design, experiments, evaluation, analysis, drafting or revision of the manuscript, and others. Authors must all have agreed to be named as such and for the manuscript to be submitted. Anyone who has contributed based on the above, but the level of contribution is not significant, may appear in the acknowledgement section of the manuscript.

### ***Accuracy, Originality, and Plagiarism***

Authors should describe their work and the results of their work accurately and in full. The level of provided accuracy and detail should be such that a reader can replicate the work independently. Inaccurate, incomplete, fraudulent, and misleading statements are considered unacceptable and unethical. Direct or indirect use of other people's work is not allowed, unless properly cited. Previous works that have influenced the current work should also be cited. Presenting someone else's work as one's own is strictly prohibited and is considered plagiarism.

### ***Data and Material***

Authors are encouraged to share their data, software, or other sharable material online, provided copyright and ownership laws surrounding that particular project permit. Authors may also be asked to share such material with the chair(s), and/or reviewers, and must be willing to do so if asked.

### ***Dual Submissions***

Submitting a manuscript to more than one venue (conference, journal, etc) simultaneously is not allowed. Presenting previously published work to be considered as a new submission, without a significant new interpretation or analysis, is prohibited.



# ETHICS & MALPRACTICE

## ***Conflicts of Interest***

Authors must notify the chair(s) at the time of submission, if any factor outside the scope of the research has influenced any step of the work and manuscript writing. Examples of such factors include but are not limited to funding, grants, advisory and consultancy, stock ownership, current or past employment, and memberships, among others. All funding sources should be disclosed in the manuscript.

## ***Animal and Human Subjects***

Works involving human and/or animal subjects must ensure that the work has abided by institutional guidelines, and pre-approved by required bodies. Moreover, consent must be acquired from participants, and privacy of subjects must be ensured. All of the above must be specified with clear statements in the manuscript.

## ***Hazardous Material***

It should clearly be identified in the manuscripts if the works have involved hazardous chemicals and material, or devices that can be harmful.

## ***Reporting of Mistakes, Errata, and Retractions***

If an author identifies a major error in a published paper, he/she must immediately identify the publisher. Regardless of whether a significant error is reported by the authors of the work or other readers, authors are obligated to take the necessary steps to correct the issue. It is decided on a case-by-case basis whether an erratum will be submitted to notify future readers of the error and correction, or whether the paper will be retracted.

Unethical/plagiarism issues mostly result in a retraction, while unintended mistakes will mostly result in the publication of an erratum.

# ETHICS & MALPRACTICE

## **Publisher**

### ***Errata and Retractions***

The publisher takes the necessary steps to prevent mistakes, academic and scientific misconduct, and unethical behavior, both intended and unintended. When mistakes are reported, the publisher works with chair(s) and authors to publish an erratum clarifying the issue. In cases where the mistakes are severe and significant, the paper might be retracted. If unethical behavior, plagiarism, academic and scientific misconduct, or other such activities are proven to have taken place by an author or authors, the publisher will retract the paper.

### ***Content and Archiving***

The publisher preserves and stores all content digitally on their own servers, as well as through partnering with Portico (Digital Preservation and Electronic Archiving Service).

### ***Copyright and Access***

The proceedings and related papers are all based on the open-access model, which means interested individuals and institutions can access the material for free.

Users are allowed to read, download, copy, distribute, print, search, or link to the full texts of the articles in this proceedings without asking prior permission from the publisher or the author. This is in accordance with the BOAI definition of open access.

### ***Ownership and Management***

This conference-proceedings is managed and operated by the International ASET (International Academy of Science, Engineering, and Technology) and Avestia Publishing (the publishing arm of ASET).

### ***Schedule***

This conference proceeding accompanies the conference, meaning a new proceedings will be published every year for the corresponding annual conference of this series.

# CONTACT US

The 5th World Congress on Momentum, Heat and Mass Transfer (MHMT'20) consist of 3 conferences. You can contact each conference by the following information:

**ENFHT**  
2020

5<sup>th</sup> International Conference on Experimental and Numerical Flow and Heat Transfer

Email: [info@enfht.com](mailto:info@enfht.com) | Website: [www.enfht.com](http://www.enfht.com)

**ICMFHT**  
2020

5<sup>th</sup> International Conference on Multiphase Flow and Heat Transfer

Email: [info@icmfht.com](mailto:info@icmfht.com) | Website: [www.icmfht.com](http://www.icmfht.com)

**CSP**  
2020

5<sup>th</sup> International Conference on Combustion Science and Process

Email: [info@cspconference.org](mailto:info@cspconference.org) | Website: [www.cspconference.org](http://www.cspconference.org)

For inquiries and to obtain further information on the conferences, please visit our [website](#) or call us at: +1-613-834-9999

Return to Top