



ICFFTS
2022

**3rd International Conference On Fluid
Flow And Thermal Science (ICFFTS'22)**

October 27 - 29, 2022 | ~~Seoul, South Korea~~ 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 3rd International Conference on Fluid Flow and Thermal Science (ICFFTS'22).

The goal of ICFFTS'22 is to provide an online space for scholars from all over the world to present advances in the relevant fields and to foster a virtual environment conducive to exchanging ideas and information. This conference will also provide an ideal environment to develop new collaborations and meet experts on the fundamentals, applications, and products of the mentioned fields.

In the third meeting of this conference, 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 13 papers will be presented from professors, students, and researchers across the world.

We thank you for your participation and contribution to the 3rd International Conference on Fluid Flow and Thermal Science (ICFFTS'22). We wish you a very successful and enjoyable experience.

Dr. Boguslaw Kruczek
University of Ottawa, Canada
Conference Chair
ICFFTS'22

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ABOUT ICFFTS'22

The 3rd International Conference on Fluid Flow and Thermal Science (ICFFTS'22) aims to become the leading virtual conference in fields related to fluid flow and heat transfer. The goal of ICFFTS'22 is to gather scholars from all over the world to present advances in the relevant fields and to foster an environment conducive to exchanging ideas and information. This conference will also provide an ideal environment to develop new collaborations and meet experts on the fundamentals, applications, and products of the mentioned fields.

ICFFTS'22 is an international conference will be held yearly. This conference focus on all aspects Fluid Flow and Thermal Science. ICFFTS'22 Will be held this year as a virtual conference

ICFFTS'22 is an acronym for **I**nternational **C**onference, on **F**luid **F**low and **H**eat **T**ransfer.

The proceedings are published in Ottawa, Canada.

All papers were peer-reviewed

The conference 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)



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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 ICFFTS'22 Conference:



Dr. Boguslaw Kruczek

University of Ottawa, Canada
Conference Chair

Scientific Committee Members

- **Dr. Chamil Abeykoon**, The University of Manchester, UK
- **Dr. Hafiz Ali**, King Fahd University of Petroleum & Minerals, KSA
- **Dr. Jalel Azaiez**, University of Calgary, Canada
- **Dr. Anirban Bhattacharya**, IIT Bhubaneswar, India
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- **Dr. Mostafa Shadloo**, INSA Rouen Normandie - CORIA, France
- **Dr. Sunmi Shin**, National University of Singapore, Singapore

KEYNOTE SPEAKERS

The keynote information for the 3rd International Conference on Fluid Flow and Thermal Science (ICFFTS'22) is as follows:



Dr. Chang-Hwan Choi
Stevens Institute of Technology, USA



Dr. Hector Gomez
Purdue University, USA



Dr. Youngsuk Nam
National University of Singapore, Singapore



Dr. Subrata Roy
**Southern University of Science and Technology,
China**

KEYNOTE LECTURE



Title: Superhydrophobic Drag Reduction: From Droplet Movement to Boundary Layer Flows
Dr. Chang-Hwan Choi, Stevens Institute of Technology, USA

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Dr. Chang-Hwan Choi is a Full Professor in the Department of Mechanical Engineering at the Stevens Institute of Technology in US. Dr. Choi received his PhD in Mechanical Engineering from the University of California at Los Angeles (UCLA) in 2006, specializing in MEMS/Nanotechnology and minoring in Fluid Mechanics and Biomedical Engineering. He earned his MS in Fluids, Thermal, and Chemical Processes from Brown University in 2002. Before he moved to US, he acquired his BS (1995) and MS (1997) in Aerospace Engineering from Seoul National University in Korea. He was a visiting professor at the Max Planck Institute for Polymer Research, Ecole Polytechnique Fédérale de Lausanne (EPFL), and Technische Universität Darmstadt for 2016-2017. He worked as a researcher at Korea Aerospace Research Institute for 1997-2000. He is a recipient of the 2010 Young Investigator Program (YIP) award by the US Office of Naval Research (ONR). In 2015, he was awarded the Humboldt Research Fellowship for Experienced Researchers by the Alexander von Humboldt Foundation. He is a founder and organizer of the International Conference of Nature-Inspired Surface Engineering (NISE). He has served as an Editorial Board member for several journals including Droplet, International Journal of Wettability Science and Technology, Micromachines, and Scientific Reports. He is also currently serving as an Advisory Board member for the Journal of Colloid and Interface Science.

KEYNOTE LECTURE



Title: Stabilized Isogeometric Discretization of the Navier-Stokes-Korteweg Equations: Toward Predictive Cavitation

Dr. Hector Gomez, Purdue University, USA

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Dr. Hector Gomez is a Professor in the School of Mechanical Engineering at Purdue University. Prof. Gomez specializes in computational mechanics with particular emphasis in isogeometric modeling and analysis, interfacial mechanics of multiphysics systems and simulation at the interface of engineering and medicine. Prof. Gomez's research has been recognized with multiple awards including the Juan C. Simo Award from the Spanish Society of Computational Mechanics, the MIT Innovators Under 35, the Young Investigator Award from the Royal Academy of Engineering of Spain, the Gallagher Young Investigator Award from the US Association for Computational Mechanics and the Princess of Girona Scientific Research Award (presented by the King of Spain to the best young researcher in all fields of science, engineering and humanities). Prof. Gomez has published over 90 journal papers and made over 140 contributions to conferences, including multiple plenary and keynote presentations.

KEYNOTE LECTURE



Title: Tailoring Vapor-Liquid Condensation Phenomena: Challenges and Opportunities
Dr. Youngsuk Nam, Korea Advanced Institute of Science and Technology, South Korea

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Dr. Nam is an associate professor in the mechanical engineering department at the KAIST (Korea Advanced Institute of Science and Technology). Before joining the KAIST, he worked as an associate and assistant professor at the Kyung Hee University after finishing his postdoctoral research at the Massachusetts Institute of Technology. He received his Ph.D. in Mechanical Engineering from the University of California at Los Angeles in 2010, and M.S. and B.S. from the Seoul National University. His research interests include understanding micro/nanoscale heat and mass transport phenomena, developing novel nanosurfaces, and combining them together to introduce advanced solutions in heat transfer enhancement, thermal conversion, and thermal management. He is the recipient of the LG Yonam Foundation international scholar award (2018), Kyung Hee outstanding research award (2017), and KSME Young thermal scientist award (2015).

KEYNOTE LECTURE



Title: Control of Local Surface Heat Flux using Dielectric Barrier Discharge Actuator
[Dr. Subrata Roy, University of Florida, USA](#)

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Dr. Subrata Roy received a Bachelor's degree in Mechanics from Zhejiang University, Hangzhou, China in 1984, and a PhD in Mechanical Engineering from Washington State University, USA in 1990. He was then a Visiting Research Associate at Brown University from 1990 to 1992, after which he was a Research Associate at Pennsylvania State University from 1992 to 1994 and an Assistant Professor of Mechanical Engineering at the University of Delaware from 1994 to 2001. He became an Associate Professor in 2001 and a Professor in 2010 at the University of Delaware. In 2017, he was appointed a Chaired Professor at Southern University of Science and Technology, China. Dr. Wang's areas of expertise include turbulent multiphase flows, computational fluid dynamics (CFD) in particular mesoscopic CFD methods, and modeling of complex flows. He has published around 142 refereed journal papers and has given over 100 invited talks. Dr. Wang became an elected Fellow of American Physical Society in 2011 and an elected Fellow of American Society of Mechanical Engineers in 2016, and an Invitation Fellow of Japan Society for the Promotion of Science (9/2016 – 3/2017).

LIST OF PAPERS

The following papers were presented at the 3rd International Conference on Fluid Flow and Thermal Science (ICFFTS'22)

CFD

Convection of Low-Energy Fluid by Secondary Flow in a Low Speed Centrifugal Compressor Impeller

Authors: Huiqi Ruan, Huanxin Lai

Internal Flow and Aerodynamic Optimization of a Multi-Blade Centrifugal Fan

Authors: Ronghui Shao, Huanxin Lai

Numerical Simulation of Bubble Jet Based on Compressible Multiphase Flows

Authors: Zitong Zhao, Jili Rong, Shixiong Zhang

Flow Separation behind an Axisymmetric After-body and Impact of Grooves at Trailing Edge

Authors: Xinhui Lu, Huanxin Lai

Asymptotic Modeling of Capillary Drawing Process with and Without Preform Rotation

Authors: Giovanni Luzi, SeungHyeon Lee, Bernhard Gattermig, Antonio Delgado

Investigation of Nano Thin Film Evaporation on Hot Spot with Nanopillar Array Based on Molecular Dynamics Simulation

Authors: Xianghui Huang, Runkeng Liu, Zhenyu Liue

Control of Flow Separation Based on Karman Vortex Generator for a Planar Diffuser

Authors: Sikai Li and Huanxin Lai

Noise Prediction of OSRVM Based on Steady-state Broadband Model

Authors: MinGyun Park, Ji-Hun Song, Youn-Jea Kim

LIST OF PAPERS

Heat Transfer Enhancement

CNT Suspension in Thermally Conductive Photocurable Resin via Supercritical Fluid Technology

Authors: Yi-Chen Weng, Ling-Hsuan Chen, Ying-Chih Liao

Cascade Puffing and Micro-Explosion in Composite Droplets

Authors: Dmitrii Antonov, Pavel Strizhak, Sergei Sazhin

Heat Transfer Enhancement for better Cooling System of Electronic Components

Authors: S. Aal Khlaifin, A. Al-Janabi, N. Al-Rawahi, N. Al-Azri

Comparative Assessment of Safety Margin Using Two CHF Correlations considering Core Flow Asymmetry

Authors: Ilsuk Lee

SPONSORS

International ASET Inc. would like to thank the following sponsors for their support of ICFFTS'22:



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ICFFTS'23

The 4th International Conference on Fluid Flow and Thermal Science (ICFFTS'23) will be held on December 7, 2023 - December 9, 2023 | Dubai, United Arab Emirates.



For inquiries and to obtain further information on the congress, please visit the [website](https://2023.icffts.com)

You can also email info@icffts.com or call us at:

+1-613-834-9999

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ETHICS & MALPRACTICE

At International ASET Inc., we take matters that relate to ethics in publishing very seriously. We believe that the peer-review publication process is a vital building block of academia, and its integrity must be maintained at all costs, which is why every article will be peer-reviewed by several experts in the field. Under peer-review, experts in the related fields are required to provide opinions and comments on the improvements of the submissions.

We are pleased to announce that Avestia Publishing (a publisher of International ASET Inc.) has been approved by the [Committee on Publication Ethics \(COPE\)](#). We are proud of our efforts towards abiding by the guidelines of ethics, integrity, and high standards in publishing.

Following are the ethics guidelines set by the organizers for the authors and the reviewers of the conference:

Scientific Committees

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: [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, originally, 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.

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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.

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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.

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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.

Acknowledgment of Source

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Authors

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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.

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Acknowledgement to other's work being used in the paper must be given at all times. Authors of the paper should give comprehensive credit where it is necessary, by citing the work, they use for supporting their own research.

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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.

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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

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Schedule:

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

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