ASCHT2025

The 10th Asian Symposium on Computational Heat Transfer and Fluid Flow-2025

CONFERENCE BROCHURE

October 9-13, 2025, Wuhan, China

CONTENT

Welcome

Dear Sir/Madam,

Under the dedicated guidance of Professor Mamoru Tanahashi (Institute of Science Tokyo, Japan), Professor Gui-Hua Tang (Xi'an Jiaotong University, China), and Professor Gihun Son (Sogang University, Korea), with the help of Professor Li Chen (Xi'an Jiaotong University, China), I have been honored to host the 10th Asian Symposium on Computational Heat Transfer and Fluid Flow (ASCHT2025). It is my great pleasure in welcoming you to attend this important event in Wuhan (October 9-13, 2025). We would like to thank all the special guests, invited speakers and sponsors for their generous support.

This conference aims to provide a common forum to exchange new ideas and creations in recent advances on heat transfer and fluid flow theories, analyses, and applications of computational methods. The attendees are prestigious scientists and engineers from Asia as well as other parts of the globe, who work closely on algorithms and applications in theoretical and engineering thermo-fluid science. It is anticipated that ASCHT2025 will provide an opportunity to stimulate further research and collaborations among the investigators in the field of thermo-fluid science and engineering.

There are 16 sessions in the ASCHT2025, containing 4 plenary lectures, 14 keynote lectures, 33 invited talks, 140 oral presentations and 21 posters. These sessions cover extensive themes, including computational multi-component and multiphase flow, flow and heat transfer control, heat and mass transfer in porous media, inverse problem, modelling and optimization, heat exchanger and industrial heat transfer, computational heat transfer and fluid dynamics, micro and nanoscale heat and mass transfer, energy and environment, computer simulations of reacting flows, multi-scale simulation of heat transfer and mass transfer, numerical methods in multi-physics modeling, supercritical CO2 and its applications, energy storage and saving, thermal management on electronic device, transport phenomenon in porous media, and AI in computational heat transfer and fluid dynamics. Special issues of selected articles presented in the ASCHT2025 will be published in three international journals: International Journal of Heat and Fluid Flow, Advances in Applied Mathematics and Mechanics, and International Journal of Computational Fluid Dynamics.

On behalf of the ASCHT2025 committee, I sincerely appreciate your participation in the Conference. We will devote every effort to making ASCHT2025 an outstanding platform for academic exchange.

I wish you all a successful and beneficial meeting!

Sincerely yours,

Zhaoli Guo, Professor

Chair, Local Organizing Committee

Huazhong University of Science and Technology

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Registration:

Zhang, Yue	134 2989 6530
Liu, Xi	138 7157 3271

Conference Venue:

Zhou, Xiafeng	158 2715 8769
Liu, Xiuliang	176 1277 1006

Traffic:

Meng, Xuhui	150 7249 8631

Banquet and Accommodation:

Chai, Zhenhua	138 7122 3404
Xie, Mingliang	132 7704 0393

Important Information

On-site Registration

October 09	Thursday	8:00-22:00 (Beijing Time)	Optics Valley Kingdom Plaza Hotel Wuhan
October 10	Friday	8:00-22:00 (Beijing Time)	Optics Valley Kingdom Plaza Hotel Wuhan

Conference Venue

Optics Valley Kingdom Plaza Hotel Wuhan	No.1 Wujiawan, Hongshan, Wuhan, Hubei, China 430074

Schedule

October 09	Thursday	08:00-22:00	Registration
		17:30-20:00	Dinner
October 10	Friday	08:00-08:30	Opening Ceremony
		08:30-12:00	Plenary Lecture Session
		12:00-13:30	Lunch
		13:30-18:00	Parallel Session Report (Session 1, 3-1, 4-1, 6-1)
		18:30-20:30	Dinner
October 11	Saturday	08:00-12:00	Parallel Session Report (Session 2-1, 9, 10)
		12:00-13:30	Lunch
		13:30-18:00	Parallel Session Report (Session 2-2, 3-2, 7)
		18:00-20:30	Dinner
October 12	Sunday	08:00-12:00	Parallel Session Report (Session 4-2, 5, 8-1)
		12:00-13:30	Lunch
		13:30-18:00	Parallel Session Report (Session 3-3, 6-2, 8-2)
		18:00-20:30	Award & Closing Ceremony

Award

The best papers and best posters will be selected for recognition in **Award & Closing Ceremony** session.

QR Code

Quick registration

Online Conference Program

Agenda Overview

Day2: October 10, 2025 (Beijing Time)

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<tr><th>Time</th><th colspan="4">Schedule</th></tr>
<tr><td>08:00 – 08:30</td><td colspan="4">Opening Ceremony, Kingdom Ballroom, 3F</td></tr>
<tr><td colspan="5">Plenary Lecture Session, Kingdom Ballroom, 3F
Chairs: Gihun Son & Mamoru Tanahashi</td></tr>
<tr><td>08:30 – 09:15</td><td colspan="4">Ultimate heat transfer in convective and sheared turbulence
Genta Kawahara (University of Osaka, Japan)</td></tr>
<tr><td>09:15 – 10:00</td><td colspan="4">Direct simulation of drop impact phenomena including complex interfacial multi-physics
Seungwon Shin (Hongik University, Korea)</td></tr>
<tr><td>10:00 – 10:30</td><td colspan="4">Coffee Break</td></tr>
<tr><td>10:30 – 11:15</td><td colspan="4">Modeling and Computation of Multiscale Transport: From Rarefied Flow to Turbulence
Kun Xu (Hong Kong University of Science and Technology, China)</td></tr>
<tr><td>11:15 – 12:00</td><td colspan="4">Two independent theories to explain coloration in supercritical fluids
Jinliang Xu (North China Electric Power University, China)</td></tr>
<tr><td>12:00 – 13:30</td><td colspan="4">Buffet Lunch</td></tr>
<tr><td rowspan="4">13:30 – 18:00</td><td>Yellow Crane Room</td><td>Kingdom Ballroom 1#, 3F</td><td>Kingdom Ballroom 2#, 3F</td><td>Kingdom Ballroom 3#, 3F</td></tr>
<tr><td>Session 1: Computer simulations for reducing CO2 emission</td><td>Session 3-1: Computational heat transfer and fluid dynamics</td><td>Session 4-1: Computational multi-component and multiphase flows</td><td>Session 6-1: Numerical methods in multiscale and multi-physics modeling</td></tr>
<tr><td colspan="4">Coffee Break</td></tr>
<tr><td>Session 1: Computer simulations for reducing CO2 emission</td><td>Session 3-1: Computational heat transfer and fluid dynamics</td><td>Session 4-1: Computational multi-component and multiphase flows</td><td>Session 6-1: Numerical methods in multiscale and multi-physics modeling</td></tr>
</table>

Day3: October 11, 2025 (Beijing Time)

Time	Schedule		
	Kingdom Ballroom 1#, 3F	**Kingdom Ballroom 2#, 3F**	**Kingdom Ballroom 3#, 3F**
08:00 –12:00	Session 2-1: Numerical micro/nanofluid dynamics and heat transfer	Session 9: Turbulence	Session 10: Fuel cells and other application
	Coffee Break		
	Session 2-1: Numerical micro/nanofluid dynamics and heat transfer	Session 9: Turbulence	Session 10: Fuel cells and other application
12:00 – 13:30	Buffet Lunch		
13:30 –18:00	Session 2-2: Numerical micro/nanofluid dynamics and heat transfer	Session 3-2: Computational heat transfer and fluid dynamics	Session 7: Heat and mass transfer in porous media
	Coffee Break		
	Session 2-2: Numerical micro/nanofluid dynamics and heat transfer	Session 3-2: Computational heat transfer and fluid dynamics	Session 7: Heat and mass transfer in porous media

Day4: October 12, 2025 (Beijing Time)

Time	Schedule		
	Kingdom Ballroom 1#, 3F	**Kingdom Ballroom 2#, 3F**	**Kingdom Ballroom 3#, 3F**
08:00 –12:00	Session 4-2: Computational multi-component and multiphase flows	Session 5: Heat exchangers	Session 8-1: AI, surrogate modeling and optimization
	Coffee Break		
	Session 4-2: Computational multi-component and multiphase flows	Session 5: Heat exchangers	Session 8-1: AI, surrogate modeling and optimization
12:00 – 13:30	Buffet Lunch		
13:30 – 18:00	Session 3-3: Computational heat transfer and fluid dynamics	Session 6-2: Numerical methods in multiscale and multi-physics modeling	Session 8-2: AI, surrogate modeling and optimization
	Coffee Break		
	Session 3-3: Computational heat transfer and fluid dynamics	Session 6-2: Numerical methods in multiscale and multi-physics modeling	Session 8-2: AI, surrogate modeling and optimization

Plenary Lectures

Ultimate heat transfer in convective and sheared turbulence

Professor Genta Kawahara

University of Osaka, Japan

Abstract

If there is a difference in temperature between bulk fluid and a wall surface in wall-bounded turbulent flows, heat will be transferred between the fluid and the wall. Such heat transfer is dominated by thermal conduction on the wall where turbulent heat flux is null, although it highly depends on turbulence characteristics. In this talk, turbulent heat transfer in wall-bounded thermal convection and shear flow is discussed with emphasis on the so-called ultimate state in which a wall heat flux is independent of thermal diffusivity, i.e. conduction anomaly (or anomalous scalar dissipation), while energy dissipation is independent of kinematic viscosity, i.e. the Taylor dissipation law implying inertial energy dissipation or anomalous energy dissipation. The classical scaling widely observed in turbulent Rayleigh-Bénard convection is first reviewed to differentiate the ultimate state from the classical state. Feasibility of the ultimate heat transfer is then explored numerically. Wall permeability, which can be implemented on a porous wall, is introduced in Rayleigh-Bénard convection. It is found that in thermal convection between the horizontal permeable walls, the ultimate heat transfer can be achieved at high Rayleigh numbers. We discuss the reason why wall permeability can lead to the ultimate scaling in wall-bounded convective turbulence. We further pursue the ultimate heat transfer numerically in turbulent channel flow by introducing the wall permeability. The ultimate heat transfer can be accomplished even in shear flow between the parallel permeable walls at high Reynolds numbers. It is also demonstrated that the ultimate heat transfer can be achieved in realistic configurations by numerical simulation and experiment of turbulent thermal convection between horizontal porous walls. At low Rayleigh numbers, vertical (wall-normal) fluid motion is not excited in the near-wall region despite wall permeability, so that the classical state can be observed. At high Rayleigh numbers, however, large-scale thermal plumes appear even near the walls from convective instabilities of near-wall thermal conduction layers to intensify the vertical heat flux, leading to the ultimate state. In between these two distinct scaling ranges of the Rayleigh number, we have found super-ultimate behaviour represented by the higher value of the scaling exponent of the heat flux than that in the ultimate state. This super-ultimate scaling is considered to be a consequence of full excitation of

large-scale thermal plumes comparable with those in the ultimate state and of less energy dissipation in the flow through porous walls than in the ultimate state at the high Rayleigh numbers.

Biography

Prof. Genta Kawahara received his B.S., M.S., and Ph.D. degrees from University of Osaka. He was appointed as an associate professor at Kyoto University in 2001 and a full professor at University of Osaka in 2005. He was a visiting scholar at Center for Turbulence Research, NASA Ames Research Center/Stanford University in 1998-1999, 2003, a visiting scientist at Kavli Institute of Theoretical Physics, University of California, Santa Barbara in 2017, and a visiting professor at Lille Fluid Mechanics Laboratory, University of Lille in 2024. Currently, he is an associate editor of Journal of Fluid Mechanics and an editor-in-chief of Fluid Dynamics Research. His research interests are in turbulence, transition to turbulence, turbulent heat transfer, and dynamical systems approach to these issues. He has worked on the theoretical characterisation of turbulent flows in terms of simple invariant solutions to the Navier-Stokes equation. He has also described the process of subcritical transition to turbulence using dynamical systems theory. He is recently tackling ultimate heat transfer in wall-bounded thermal convection and shear flow, where not only energy dissipation but also a wall heat flux (scalar dissipation) is independent of kinematic viscosity or thermal diffusivity.

Direct simulation of drop impact phenomena including complex interfacial multi-physics

Professor Seungwon Shin

Hongik University, Korea

Abstract

The dynamics of droplet impact, such as the bouncing of raindrops, are frequently encountered in nature. From an engineering standpoint, while traditionally relevant to applications such as spray coating and painting, their importance has significantly expanded in recent years to encompass high-precision processes in semiconductor manufacturing—such as etching, coating, and cleaning—as well as advanced additive manufacturing technologies like 3D printing, where precise fluid delivery is critical. Droplet-wall interactions are fundamentally governed by density and viscosity contrasts, as well as complex interfacial phenomena including surface tension and contact angle dynamics. These processes occur over extremely small spatial and temporal scales, making it experimentally challenging to capture the underlying physics with experiment. As a result, numerical simulations have become an alternative tool for investigating these phenomena in detail.

Accurate interface tracking is a crucial component of accurate numerical simulations. Both direct interface Front Tracking and indirect interface-capturing methods including Volume-of-Fluid (VOF), Level Set, and Lattice Boltzmann methods have been widely employed. Initial studies on droplet impact primarily focused on simplified scenarios such as droplets impact on flat surfaces, with particular attention to the maximum spreading diameter and the associated time scale. More recently, the scope of research has expanded to include curved and textured surfaces, requiring more sophisticated modeling of interfacial phenomena such as contact angle hysteresis. The consideration of surfactant effects has made the problem significantly more complex. In parallel, there has been growing interest in non-Newtonian and viscoelastic fluids, extending the applicability of these models to a broader range of industrial and biological contexts.

This presentation focuses on the development of accurate interface-tracking techniques tailored to simulate droplet impact on complex solid geometries. Special emphasis is given to advanced contact models capable of robustly capturing surface interactions. In addition, the incorporation of various auxiliary models is discussed to account for intricate interfacial behaviors such as Marangoni, surfactant, non-

Newtonian, viscoelastic, phase change effect, etc., with the ultimate goal of enhancing the predictive capability of direct numerical simulations in realistic multiphase flow scenarios.

Biography

Prof. Seungwon Shin received his B.S. and M.S. degrees in Mechanical Engineering from Seoul National University, Korea, in 1995 and 1998, respectively. He then received his Ph.D. from Georgia Tech in 2002. Dr. Shin is currently a Professor at the School of Mechanical and System Design Engineering at Hongik University in Seoul, Korea. He currently serves as Senior Vice President of the Korean Society for Computational Fluid Engineering and Vice Chair of the Fluid Engineering Division of the Korean Society of Mechanical Engineers. His research interests include computational fluid dynamics, multiphase flow especially interface tracking, surface tension effect, contact behavior.

Modeling and Computation of Multiscale Transport: From Rarefied Flow to Turbulence

Professor Kun Xu

Hong Kong University of Science and Technology, China

Abstract

Gas dynamics modeling encompasses multiple scales, from the Navier-Stokes equations governing continuum flow to the Boltzmann equation describing rarefied flow. While these equations operate at fundamentally different physical scales, their numerical implementation requires discretization in computational space with finite cell resolution. This multiscale challenge is exemplified by hypersonic vehicle flow in near-space environments, where conditions range from highly compressible continuum flow at the leading edge to free molecular flow at the trailing edge, with the cell Knudsen number varying across several orders of magnitude. Analogous multiscale phenomena arise in radiative and neutron transfer, where variations in optical thickness induce sharp transitions between free particle transport and diffusive regimes. To address these multiscale transport challenges, we have developed the unified gas-kinetic scheme (UGKS) and the unified gas-kinetic wave-particle (UGKWP) method. These approaches provide a comprehensive framework for simulating transport phenomena across all flow regimes, including rarefied gas dynamics, radiative transfer, neutron transport, and plasma physics. This presentation will also discuss the extension of our multiscale methodology to the modeling and simulation of turbulent flows.

Biography

Prof Xu graduated from Peking University in 1987. In 1988, he entered Columbia University and obtained a Doctoral degree in 1993. After PhD, he served as a post-doctoral researcher at Princeton University. He joined Hong Kong University of Science and Technology (HKUST) in 1996 and is currently chair professor of Mathematics Departments and Mechanical and Aerospace Engineering Department.

Two independent theories to explain coloration in supercritical fluids

Professor Jinliang Xu

North China Electric Power University, China

Abstract

Classically, a supercritical fluid (SF) is treated as a single-phase fluid without bubbles, droplets and related interfacial effect, thus it is difficult to generate coloration. Here, we assume the pseudo-boiling-induced coloration in supercritical fluids. A smart experimental setup is established, consisting of a well-controlled pressure and temperature chamber integrated with a suspended pulse-voltage-driven microheater, thus a localized pseudo-boiling region can be achieved. Blue light is demonstrated on a millisecond timescale, and the Rayleigh scattering mechanism is concluded. Two independent theories, i.e., the multiphase-percolation theory and the molecular dynamics, are developed for quantitative analysis, both of which show the existence of self-sustained nanoscale voids and/or clusters acting as effective scatterers, where the light scattering intensities in the pseudo-boiling region are 4-5 orders of magnitude larger than the bulk fluid region. Our theoretical work extends the coloration to general fluids. The multidisciplinary crossover investigation helps to understand the complicated supercritical interface phenomena.

Biography

Dr Jinliang Xu is professor in School of Energy Power and Mechanical Engineering at North China Electric Power University, and has been the Director of Key Laboratory of Power Station Energy Transfer Conversion and System, China. He has over thirty years of experience in the field of multiphase flow and heat transfer. He has had visiting positions in Hongkong (China), USA, Singapore. He led the National Key R&D Program of China and the National Basic Research Program of China for 10 years. Dr Jinliang Xu is active in the field of multiphase flow. He was the chair or co-chair for a set of academic conferences such as 4th Micro and Nano Flows Conference (University College London, UK, 2014), IHTS 2014 (International Heat Transfer Symposium 2014, Beijing) and first Int. Conference on supercritical CO2 power system (2018, Being) etc. He is the editor of the journals of Thermal Science and Engineering Progress, Frontiers in Heat pipe, Water, Energies. He is the guest editor for the special issues of Energy and Applied Thermal Engineering. He presented 40 plenary/keynote speeches in international conferences, and has been the reviewer for more than 40 journals. As the corresponding author, he published more than 300 scientific papers and co-authored two books.

Keynote Lectures

Topology optimization of heat and mass transfer processes: models and applications

Professor Li Chen

Xi'an Jiaotong University, China

Abstract

Optimizing structures to heat and mass processes is a hot research topic. Compared with conventional structural optimization method, the topology optimization method with highest freedom can design structures that go beyond human intuition. During the past ten years, we have developed topology optimization method for convective heat and mass transfer processes based on the adjoint method. The topology optimization method is then adopted to enhance heat and/or mass transfer processes related to chip cooling, PEM fuel cell, energy storage, etc. Structures with lower flow and heat resistance are designed and validated.

Biography

Li Chen is a full Professor at Xi'an Jiaotong University (XJTU) China. He obtained his PH. D in Engineering Thermophysics at XJTU in 2013, followed by a Director Postdoc at Loa Alamos National Lab from 2013 to 2016. He was the winner of Young Scientist Award of Asian Union of Thermal Science and Engineering. His research focuses on transport phenomena in porous media with background of fuel cell, flow battery, CO2 storage and hydrocarbon resource exploitation. Particularly, he has developed an advanced pore-scale model based on the Lattice Boltzmann Method for coupled multiphase flow, heat and mass transfer, chemical reaction, solid precipitation-dissolution (melting-solidification) processes in porous media. Up to now, he has published 138 SCI papers in a variety of top journals, including Progress in Energy and Combustion Science, Small, Chemical Engineering Journal, Journal of Power Sources, Applied Energy, Electrochemica Acta, Energy, Chemical Engineering Journal, International Journal of Heat and Mass Transfer, Journal of Computational Physics, Physical Review E, Langmuir, Nano Energy, International Journal of Hydrogen Energy, Fuel, Water Resources Research, etc. Furthermore, his research has also resulted in over 40 conference presentations (including 24 keynote or invited talks), 10 patents and 8 software copyrights. He is in the editor board of two international journals (Frontiers in Heat and Mass Transfer, Energies). He is also in the young editor board of Advances in Applied Energy. He is the associate editor of Frontiers in Thermal Engineering.

On the Mechanism of heat transfer modulation by finite-size particles in Rayleigh-Bénard convection

Professor Lian-Ping Wang

Southern University of Science and Technology, China

Abstract

In thermal multiphase flows, the modulation in the heat transfer rate due to the presence of finite-size solid particles attract growing interest in recent years. This study focuses on developing a robust and efficient simulation method for particle-laden Rayleigh-Bénard convection. We utilize the double distribution function-based thermal lattice-Boltzmann method (TLBM), which enables successful simulations of multiphase fluid-thermal interactions. The no-slip boundary of the moving solid particles is handled by the interpolated bounce-back scheme. Additionally, Galilean invariant momentum exchange and heat exchange approaches are employed for hydrodynamic force and heat transfer calculation at the solid boundaries. The accuracy of the current method is verified first with several benchmark cases. Then, we explore the modulation of Rayleigh-Bénard flows due to the presence of freely moving finite-size particles. The effects of finite-size solid particles on the overall heat transfer efficiency and modulation to the flow field in three-dimensional particle-laden turbulent Rayleigh-Bénard convection are discussed. The results show that addition of solid particles causes a moderate increase in the overall Nusselt number, and this enhancement is mainly due to the increased heat flux transported by the particles, associated with the large-scale and vertical transport modes of particle motion and particle-induced thermal plumes. This enhancement is seen at low to moderate Rayleigh numbers, and disappears at high Rayleigh numbers.

Biography

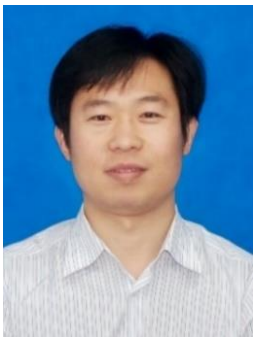
Dr. Lian-Ping Wang is currently a Chair Professor and Director of Center for Computational Science and Engineering at Southern University of Science and Technology, China. He received a Batchelor's degree in Mechanics from Zhejiang University in 1984, and a PhD in Mechanical Engineering from Washington State University 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. He joined Mechanical Engineering at the University of Delaware in 1994 as an Associate Professor and become a Professor in 2009. Dr. Wang's areas of expertise include multiphase flows, turbulent flows, computational fluid dynamics, and

high-performance computing, with applications to environmental fluid mechanics such as cloud microphysics, sediment transport and flows through soil porous media. He is a Fellow of American Physical Society and a Fellow of American Society of Mechanical Engineers, and has been awarded NSFC Distinguished Overseas Young Investigator, Yangtze River Scholar Distinguished Professor, Elsevier Most Cited Chinese Researcher, Stanford World's Top 2% Scientist and ScholarGPS Top 0.5% of All Scholars Worldwide. In May 2022, he became an Associate Editor of JFM, and currently he handles JFM Rapids papers.

A diffuse-interface lattice Boltzmann method for multiphase reactive flows

Professor Zhenhua Chai

Huazhong University of Science and Technology, China



Abstract

In this talk, we will first present a diffuse-interface model for gas-liquid-solid multiphase flows with chemical reaction where a novel free energy is proposed for the gas-liquid-solid three-phase system. In this model, a smooth indicator function for the solid phase is also introduced into the Navier-Stokes equations and convection-diffusion equation for flow and concentration fields to preserve the velocity and reactive boundary conditions on the solid surface. Based on the developed diffuse-interface model, the fluid interface dynamics, the fluid-structure interaction, the wetting property of the solid surface and heterogeneous reaction can be described simply and efficiently. To test the present diffuse-interface model, we then develop a lattice Boltzmann method and conduct some simulations of benchmark problems, and the numerical results show that the diffuse-interface lattice Boltzmann method has a good performance in the study of multiphase reactive flows.

Biography

Dr. Zhenhua Chai received his B.S. and Ph.D. from the Zhengzhou University and Huazhong University of Science and Technology in 2004 and 2009, respectively. Then he joined the Huazhong University of Science and Technology in 2009, and has been a Professor and Associate Dean of School of Mathematics and Statistics at the Huazhong University of Science and Technology, China. His research covers the lattice Boltzmann method, modeling and simulation of multiphase flow problems and fluid flows in porous media. He has published over 150 international peer reviewed papers.

Flame-wall interaction for gas turbine applications

Professor Dongh-yuk Shin

Korea Advanced Institute of Science and Technology, South Korea

Abstract

The climate change has forced many combustion systems move away from hydrocarbon fuels. The strongest alternative fuel is hydrogen whose exhaust only emits water vapor. Therefore, many gas turbine manufacturers are developing 100% hydrogen-powered gas turbines. In switching the fuel, one of the major technical issues is flame flashback – the reactivity of hydrogen is so fast so that the flame propagates upstream of the fuel nozzle. Once the flame flashback happens that the fuel nozzle which is weak for high temperature can be burnt and the nozzle has to be replaced. The flame flashback would incur interruption of the operation as well as the huge replacing cost. To prevent flame flashback, gas turbine manufacturers are now switching nozzle types from swirlers to micro-mixers which is relatively more robust to flame flashback. Still, fundamental understanding on flame flashback is necessary to rule out the onset of flame flashback and optimize the nozzle to reduce the pressure drop. The current talk presents the recent findings on the dynamics on flame flashback on hydrogen flames. Premixed flame propagation in a turbulent boundary layer reveals the interaction between the flame propagation and the modification of approaching turbulent flows. Furthermore, the quenching distance of the flame can change by wall thermal characteristics of walls.

Biography

Professor Dong-hyuk Shin is an Associate Professor in the Department of Aerospace Engineering at the Korea Advanced Institute of Science and Technology (KAIST). He received his Ph.D. in Aerospace Engineering from the Georgia Institute of Technology in 2012, following his graduation from KAIST in 2006 with a B.S. in Aerospace Engineering and a minor in Mathematics. Prior to joining KAIST, Prof. Shin built an international research and teaching career. From 2015 to 2019, he served as a Lecturer (equivalent to Assistant Professor) at the University of Edinburgh. He also held research fellow positions at the University of Southampton (2014–2015) and as a Marie Curie Fellow at CERFACS in France (2013–2014). His post-doctoral work began at Georgia Tech in early 2013. His research centers around mathematical modeling and high-fidelity simulations of turbulent combustion. His research work is applied to various combustion systems, such as gas turbines and rocket propulsions.

Effects of flow blockage on convective flow through a vertical channel

Professor Chengwang Lei

The University of Sydney, Australia

Abstract

Convective flow through a vertical channel is relevant to many industrial and domestic applications. Examples include thermal flows between panel radiators and through wall-integrated solar chimney for building ventilation. In this work, we examine the effects of flow blockage on heat and mass transfer of convective flow through a vertical channel under various configurations including isothermal and isoflux heating, one-wall and two-wall heating, and with different bluff bodies (a circular cylinder or a louvre) placed in the channel. Numerical simulations are carried out over a range of Rayleigh numbers, blockage ratios, and blockage locations.

It is found that the presence of a bluff body in the convective flow channel significantly enhances mixing and turbulence and in turn enhances the convective flow through the channel. In the case with a rigidly mounted circular cylinder in the channel, three distinct wake flow regimes are observed for both isothermal and isoflux heating at different Rayleigh numbers and blockage ratios, including steady symmetric, unsteady periodic, and unsteady asymmetric flow regimes. For the two-wall isothermal heating case, greater than 60% heat transfer enhancement relative to an unblocked channel may be achieved in the unsteady periodic flow regime at certain configuration. For the two-wall isoflux heating case, up to 40% enhancement of the mass flow rate and up to 31% drop of the averaged wall temperature may be achieved. And for the one-wall isoflux heating case, the presence of a louvre in the channel may lead to more than double the ventilation rate of an unblocked channel.

The present investigation has demonstrated an effective passive strategy using flow blockage to enhance thermal and ventilation performance of convective flow through vertical channels.

Biography

Chengwang Lei is a full professor and Deputy Head of School in the School of Civil Engineering at The University of Sydney, Australia. Professor Lei received his bachelor's degree (1988) and master's degree (1992) in Mechanical Engineering at Huazhong University of Science & Technology and PhD degree (2000) in Civil Engineering at The University of Western Australia. His main research focus is on fundamental fluid mechanics and heat transfer processes associated with buoyancy driven flows. The

research spans multiple disciplines with environmental, industrial, and domestic applications and involves concurrent experimental, numerical, and analytical modelling. Professor Lei is a Founding Fellow of Asian Union of Thermal Science and Engineering (AUTSE), a member of the AUTSE Executive Board, and a member of the Executive Committee of Australasian Fluid and Thermal Engineering Society. He serves as an Associate Editor of Journal of Enhanced Heat Transfer (Begell House) and an Editorial Board Member of multiple international journals including Energy and Buildings (Elsevier), Heat Transfer (Wiley), and Discover Mechanical Engineering (Springer).

Combustion Simulation: For Carbon Neutrality in 2050

Professor Hiroaki Watanabe

Kyushu University, Japan

Abstract

Many countries and industries all over the world announced the Carbon Neutrality in 2050. For achieving this target, a high-fidelity innovative combustion simulation should contribute to R&D in both fundamental and industrial applications. In this presentation, a multi-dimensional flamelet modeling and applications of large-eddy simulation (LES) to combustors in novel zero-emission power plants in addition to a coal-ammonia co-combustion boiler in a conventional power plant are presented. Moreover, for a development of a digital twins of real world's clean energy system, the V&V of the super-simulation in which a combustion simulation is coupled with a structure simulation by the unsteady two-way coupling method is reported. The super-simulation is expected as a promised tool to assess combustion performance of designed realistic combustors and reactors with their thermal durability.

Biography

Prof. Hiroaki Watanabe received his Ph.D. (2008) in Department of Mechanical Engineering and Science from Kyoto University. He worked as a Senior Research Scientist at the Central Research Institute of Electric Power Industry (1998–2014), a Visiting Senior Research Fellow at the Center for Turbulence Research, Stanford University (2010–2011), and a Visiting Associate Professor at The University of Tokyo (2011–2014). He joined Kyushu University in 2014 as an Associate Professor and has been a Professor since 2020.

His research focuses on modeling and simulation of turbulent combustion, especially large-eddy simulation (LES) of hydrogen/ammonia, spray, and coal combustion/gasification. He is also investigating the applicability of LES to practical-scale facilities such as gas turbine combustors, coal combustion boilers and gasifiers including the combustion and the structure interaction multiphysics simulations.

He has received several awards, including the JSME Young Engineers Award (2008), the JSME Medal for Outstanding Paper (2011, 2018), the CSJ Young Scientists Award (2011), the CSJ Award for Outstanding Paper (2013, 2022), the APT Distinguished Paper Award (2019) and the JIE Best Paper Award (2022, 2025).

Computational Analysis of Phase Change based Heat Sink coupled with Heat Pipe as Thermal Conductivity Enhancer

Professor Jyotirmay Banerjee

Sardar Vallabhbhai National Institute of Technology, India

Abstract

Comprehensive numerical analysis is reported for phase change material (PCM) based heat sink coupled with a model heat pipe as thermal conductivity enhancer (TCE). The heat pipe is modeled considering a fixed liquid–vapor interface and solving the Navier–Stokes equations in domain-specific formulations applied to the solid wall, the porous wick, and the vapor core. The porous wick is modelled using the extended Darcy–Brinkman–Forchheimer formulation, accounting for both viscous and inertial effects in the saturated porous structure. The estimated effective thermal conductivity of the heat pipe is used when coupled with the phase change based heat sink where the phase change process of PCM is modeled using an enthalpy–porosity approach. An in-house test facility is developed for validating the numerical results. The results demonstrate that the PCM-embedded heatsink coupled with a heat pipe (as TCE) maintains the base temperature below the set point for an extended period. Additionally, with the coupled heat pipe configuration full utilization of the PCMs latent heat storage capacity is ensured which in turn promotes the charging cycle. For applicability to real life electronic devices, the simulation results are analyzed in terms of non-dimensional numbers including Fourier number, and modified Nusselt number.

Biography

Professor Jyotirmay Banerjee obtained his Doctorate of Philosophy (PhD) from Indian Institute of Technology, Kanpur in India. He has more than 28 years of teaching and research experience. His research interests include Computational Fluid Dynamics, Multiphase Flow and Heat Transfer and Phase Change Applications. He has more than 100 peer reviewed journal papers, 4 books and 23 book chapters to his credit. He is presently an Associate Editor of SÃDHANÃ published by the Indian Academy of Science. He has completed several research projects funded by Science and Engineering Research Board (SERB), Board of Research Nuclear Studies (BRNS), Aeronautical Research and Development Board (ARDB) and Consultancy Assisted Research Services (CARS) sanctioned by Defence Research and Development Organization (DRDO) of India. He has rendered major consultancy services to industries including Tehri Hydro Development Corporation (THDC) Limited, Uttaranchal Jal Vidyut Nigam Limited

(UJVNL) and Koteshwar Hydroelectric Project. Earlier he has served as Dean of Academics and Head of Department of Mechanical Engineering at SVNIT Surat. As a Professor In-charge, Research Park and Director of Association for Harnessing Innovation and Entrepreneurship (ASHINE), a not-for-profit company, he was instrumental in promoting entrepreneurial activities at SVNIT Surat.

Micropillar-patterned electrodes to enhance mass transfer in low Pt-loaded fuel cells

Professor Meng Ni

The Hong Kong Polytechnic University, Hong Kong, China

Abstract

The practical application of fuel cell vehicles is hindered by the poor performance and durability of proton exchange membrane fuel cells, especially with a low Pt loading and at a low relative humidity, due to limited proton transport properties and limited electrochemical reaction surface areas of conventional electrode design. Here, we propose a patterned design with ordered ionomer micropillars as an alternative electrode structure, which enhances the performance and durability of proton exchange membrane fuel cells with a low Pt loading (0.1 mg cm-2) across a wide range of humidities. Compared to conventional electrodes, patterned electrodes achieve up to 29% peak power density improvement under low-humidity (50%) conditions. Pore-scale multiphysics modeling demonstrates that the ionomer micropillars inside patterned electrodes facilitate efficient proton transport within the electrode, enabling a higher oxygen reduction reaction rate at these sites and thus enhancing the homogeneity of reaction rates. Moreover, patterned electrodes exhibit improved durability, showing less performance loss after accelerated stress testing across a wide range of humidities compared to conventional electrodes. Strategic redesign of ionomer micropillars demonstrates that the electrode of H1.8W0.38, with its increased penetration depth and appropriately adjusted width, achieves optimal performance by minimizing oxygen and proton transport resistances by 6% and 14% respectively, compared to the pre-optimization (H1.5W0.38) under low-humidity (50%) conditions. The proposed patterned design strategy offers a promising approach for advancing the development of high-performance, cost-effective, and durable fuel cells.

Biography

Prof. Meng Ni received his PhD from The University of Hong Kong in 2007. He joined The Hong Kong Polytechnic University as an Assistant Professor in 2009. He is now a Chair Professor of Energy Science and Technology, Head of Department of Building Environment and Energy Engineering, and Associate Dean (Research) of Faculty of Construction and Environment. Prof. Meng Ni is a Humboldt Fellow, RGC Senior Research Fellow, and a Fellow of Hong Kong Institution of Engineers (HKIE). His research focuses on fuel cells, hydrogen energy, rechargeable batteries and low-grade

heat utilization. He is a co-editor-in-chief of Energy Reviews (Elsevier) and an Associate Editor for 3 journals. He served as an Associate Editor for Science Bulletin in 2015-2017 and received Best Associate Editor Award twice. He is an active reviewer for over 80 journals, including Science, Nature Energy, Nature Communications, Joule, Advanced Materials, etc.

A study on energy consumption and energy savings potential of cooling solutions for commercial buildings in Viet Nam

Professor Quoc Dung Trinh

Hanoi University of Science and Technology, Viet Nam

Abstract

This paper examines sustainable cooling to achieve net zero buildings in Vietnam, focusing on primary energy consumption in commercial buildings. The main objective is to analyze and evaluate energy use, identify potential savings, and propose effective solutions by means of numerical simulation. The study considers factors that affect energy consumption, including HVAC systems, lighting, and equipment. Data is collected from office buildings, hotels, and shopping malls in major cities to model and estimate energy consumption. Finally, the paper proposes energy reduction scenarios, such as the use of renewable energy, high-efficiency cooling systems and passive cooling to achieve the net zero goal.

Biography

Graduating with a doctorate from Technical University of Berlin (Germany) and having more than 20 years of experience in refrigeration and air conditioning, Mr. Trinh Quoc Dung is currently a lecturer with the focus on refrigeration and air conditioning at the Department of Thermal Energy Engineering, School of Mechanical Engineering, Hanoi University of Science and Technology.

With his experience and knowledge and published 20 papers on conferences and journals and 02 book chapters, he is currently engaged in teaching and research on refrigeration and air-conditioning technology in the engineer training program at Hanoi University of Science and Technology. At the same time, he is also an expert and technical consultant for projects on urban cooling (UNEP), Nationally Determined Contribution (NDC) updated in 2022, Strategy on Climate Change. climate change to 2050 (2022), Decree on reducing greenhouse gas emissions and protecting the ozone layer (2022), National Cooling Action Plan (2024), building-up standards and technical regulations related to economical use of energy and efficiency, refrigerants management and environmental protection in the refrigeration and air-conditioning sector.

Physics-Informed Flow Simulations via Operator Learnings

Professor Sanghun Choi

Kyungpook National University, South Korea

Abstract

This study presents a machine learning-based surrogate modeling framework for optimizing ventilation efficiency in complex industrial environments, with a focus on ship engine rooms and coffer dams. Traditional computational fluid dynamics (CFD) approaches are computationally intensive, particularly for large-scale parametric studies. To address this challenge, we employ a physics-aware recurrent convolutional (PARC) neural network, trained on 60 unsteady 3D CFD simulations with varying fan placements and orientations. The model predicts the Age of Air (AoA) distribution, a key indicator of ventilation performance, with high accuracy and drastically reduced computation time. The framework integrates geometric and operational parameters, such as fan location, orientation, and type, using a specialized shape descriptor. To identify optimal fan configurations that minimize AoA, Bayesian optimization is employed. The surrogate model achieves prediction times reduced from several hours to seconds, demonstrating its capability to replace high-fidelity CFD simulations in real-time optimization scenarios. Furthermore, the PARC model was evaluated on a different geometry, i.e., a coffer dam scenario, and showed successful generalization across different domains. In this case, we also implemented and compared two advanced operator learning models: the deep operator network (DeepONet) and the Fourier neural operator (FNO). These comparisons highlight the advantages and limitations of different operator-based approaches. Overall, this research demonstrates the potential of operator learning-based AI to accelerate fluid simulation workflows and support real-time digital twin applications in engineering design.

Biography

His research centers on high-performance computational simulations and population-based lung imaging analyses, aiming to develop effective interventions for respiratory diseases and to uncover their structural and functional mechanisms. He employs core techniques such as computational fluid dynamics, artificial intelligence, and medical image analysis. To date, he has published around 60 SCIE-indexed papers, with approximately 1,300 citations (Google Scholar).

He received academic training in both mechanical and biomedical engineering. He earned his Ph.D. in mechanical engineering and an M.S. in biomedical engineering from

the University of Iowa, where he studied structural and functional changes in asthma patients using computational approaches. He also holds an M.S. in mechanical engineering from Seoul National University, where he developed finite element methods for two-phase flow with strong surface tension effects.

Since 2017, he has led the Machine Learning and Fluid Mechanics Laboratory (MLFM) and served as director of the Research Institute of Engineering Design & Technology (IEDT) at Kyungpook National University. He is also an associate editor for the Journal of Mechanical Science and Technology.

Stripes, bands, and rings: exploring localized turbulence and directed percolation

Professor Takahiro Tsukahara

Tokyo University of Science, Japan

Abstract

The subcritical transition of wall-bounded shear flows is a long-standing but evolving problem in fluid dynamics. Linear stability theory predicts the growth of infinitesimal disturbances, but the actual threshold for finite disturbances that sustains turbulence, even in localized or intermittent forms, is less clear. Pipe flow is a classical case, where localized turbulence appears as puffs that repeatedly split and decay. The balance of these processes defines the global critical Reynolds number. In planar flows such as Couette and/or Poiseuille flows, turbulence often organizes into oblique bands or stripes, resembling spiral turbulence in Taylor–Couette flow and demonstrating the coexistence of laminar and turbulent phases. In three-dimensional wall-bounded shear flows, i.e., Taylor–Couette–Poiseuille flow, ring-shaped turbulence can also emerge, adding further variety to transitional structures. A key feature of these striped/banded/ring-shaped states is the secondary large-scale flow that develops alongside localized turbulence. This flow should play a stabilizing role for turbulence localization and sustenance, but when disrupted by surface roughness, confinement, or other effects, the characteristic patterns fail to form, and the transition follows alternative routes with higher critical Reynolds numbers. Such sensitivity emphasizes the importance of secondary flows in the organization of subcritical turbulence.

The engineering relevance is evident in systems requiring reliable turbulent heat transfer. High-temperature gas-cooled reactors, for instance, employ helium coolant in an annular channel between coaxial cylinders. This annular Poiseuille flow lies between pipe and planar geometries, and depending on the radius ratio, localized turbulence may resemble puffs or bands. Intermediate regimes are more complex: the inner cylinder can alter puff splitting, while curvature and azimuthal confinement affect band persistence. These features raise fundamental questions regarding the structural characteristics of localized turbulence, its impact on heat transfer, and the dependence of secondary large-scale flows on geometry. Furthermore, laminar–turbulence coexistence near the global critical Reynolds number raises broader issues of non-equilibrium critical phenomena. In particular, the transition dynamics may exhibit properties analogous to directed percolation in absorbing state systems.

This work summarizes recent efforts to investigate these challenges through direct numerical simulations (and some experiments) across canonical planar shear flows and annular geometries. By clarifying similarities and differences, new insights are gained into the physics of subcritical transition, its critical dynamics, and its engineering implications for turbulence control and thermal management.

Biography

Takahiro Tsukahara is a professor in the Department of Mechanical and Aerospace Engineering at Tokyo University of Science (TUS). He received his PhD in Engineering from TUS in 2007, after which he served as a visiting researcher at KTH in Sweden. He joined TUS as faculty in 2008 and has been a professor since 2022. In 2011, he was also a visiting researcher at the TU Darmstadt in Germany. His research employs DNS to study subcritical transition and turbulent heat transfer in wall-bounded shear flows of Newtonian and viscoelastic fluids. His interests include flow instability, wall turbulence, drag reduction, elasto-inertial turbulence, scalar transport, interfacial and multiphase flows, and machine-learning-based approaches to turbulence modeling. He has authored more than 70 peer-reviewed journal papers. He serves as an Associate Editor of the International Journal of Heat and Fluid Flow and as an Editor of the Journal of Fluid Science and Technology. He has received multiple awards, including the JACM Fellows Award (2024), Outstanding Reviewer recognition from the Journal of Fluid Mechanics (2024), and the Frontier Award of JSME (2024).

Investigation on the major factors affecting heat transfer and surface temperature distribution in micro combustor for micro-TPV applications

Professor Wenming Yang

National University of Singapore, Singapore

Abstract

Micro-thermophotovoltaic power generator was initiated by our group in 2022. Compared to other micro power generators being developed around the world, it does not include any moving part, as a result, it is easier to fabricate and more reliable. As one of the key components of micro-TPV system, the microcombustor which also serves as the radiator significantly determines the performance of the micro-TPV system. To achieve a higher power output, it is very important to achieve a high and uniform temperature distribution along the surface of the microcombustor. In this work, an extensive investigation has been conducted on the major factors affecting the combustion process such as porous media, block insert, combustion chamber design and blend fuel etc, subsequently on the temperature distribution, radiation energy and output power of the micro-TPV system.

Biography

Dr Wenming Yang is currently the Dean's Chair Professor in the department of Mechanical Engineering at National University of Singapore. He is the editor-in-chief of Energy Engineering and Associate Editor for the ASME Journal of Engineering for Gas Turbine and Power, Alexandria Engineering Journal etc. His research interests include: microscale combustion and micro power generators, sustainable marine transportation, fuel design and its application in IC engines etc. He has authored/co-authored over 420 papers in peer-reviewed reputable journals (such as Joule, Nature Communication, Applied Energy etc) and international conferences, of which, over 350 papers are SCI index. His papers have been cited by over 20800 times with a H-index of 76. He has won a series of prestigious awards including the Dean's Chair professor, Fellow of international association of advanced materials, 4 times of scientific progress award (2nd prize) by the Ministry of Education of China and the Society of Mechanical Engineering of China. He is also a regular reviewer for a lot of peer-reviewed reputable journals such as Nature, Nature Energy, Joule, Nano Energy, Progress in Energy and Combustion Sciences, Combustion and Flame etc.

Physics Informed Neural Networks for Nanofluid Flow and Heat Transfer with Dynamic Inverse Parameters

Professor Yan Su

University of Macau, Macao, China

Abstract

A physics informed neural network (PINN) framework for efficient prediction of nanofluid flow and heat transfer is built including a new inverse dynamic prediction scheme of governing parameter sets. Two PINN models based on physics-guided loss functions formulated by governing equation residuals, the Navier-Stokes equations informed neural network (NS-NN) and the Reynolds averaged Navier-Stokes equations informed neural network (RANS-NN), are presented. A standard four-module computational code is developed in C++ for comparative studies. Code validations for theoretical vortex flow fields show that the prediction errors are less than 1%, 1%, and 5% for outputs, first and second gradients, respectively. Inverse parameter sets are obtained automatically and dynamically with a root means square control mechanics for various physics governing parameters simultaneously. Both transient flow and temperature fields for natural convective nanolfuid flow in a magnetic field are predicted with high accuracy. Moreover, enhancement of the instability is observed with the help of the PINN compared to some special cases of ground truth data. Results show that the PINN with inverse dynamical parameters can achieve faster convergence speed and higher accuracy compared to conventional NNs.

Biography

Dr. Su is currently an associate Professor of Electromechanical Engineering in University of Macau. She received his PhD degree from the Department of Mechanical Engineering from University of Minnesota in 2006. In year 2000 and 2003, she obtained her Bachelor of Thermal Engineering from Tsinghua University, and Master of Mechanical Engineering from Hong Kong University of Science and Technology, respectively. Dr. Su's research interests include Thermal Dispersion in Porous Medium, Renewable Energy Systems, Oscillating Flows, Indoor Air Quality and lattice Boltzmann Methods. She also has been served as the director of the solar energy laboratory of University of Macau and associate editors of Journal of Heat Transfer (ASME), Case Studies in Thermal Engineering (Elsevier) and npj Thermal Science and Engineering (Springer Nature).

Study on the Mechanism of Leakage, Ignition, and Explosion in High-Pressure Hydrogen-Blended Natural Gas Pipelines

Professor Jingfa Li

Yangtze University, China

Abstract

Hydrogen is recognized as a clean and efficient energy, and the transportation of hydrogen energy is a key factor constraining its industrial development. Blending hydrogen into existing high-pressure natural gas pipelines is regarded as the most economical transitional solution. However, due to hydrogen's high diffusivity, strong flammability, and low ignition energy, the risks of leakage, auto-ignition, and explosion are significantly increased, while the underlying mechanisms remain complex and insufficiently studied. This study investigates the entire process of "leakage–auto-ignition–explosion" through multi-scale numerical simulations and mechanistic analysis. First, a leakage model is established to reveal flow evolution and flammable cloud formation under different hydrogen blending ratios, pressures, and orifice sizes. Second, a reduced chemical mechanism and ignition criteria are applied to analyze critical conditions for auto-ignition, clarifying the inhibitory effect of methane and the possibility of wall-induced ignition under high hydrogen concentration scenarios. Finally, a thickened flame model is employed to simulate ignition and explosion of typical leakage clouds, yielding overpressure propagation, temperature evolution, and damage mechanisms on station facilities. The findings provide theoretical support for safety risk assessment and prevention strategies in high-pressure hydrogen-blended natural gas pipelines.

Biography

Jingfa Li is a full professor and Doctoral Supervisor in the Department of Oil & Gas Storage and Transportation Engineering at Yangtze University. His research interest focuses on the hydrogen pipeline transportation. He served as a member of the Second Youth Committee of the Heat and Mass Transfer Branch of the Chinese Society of Engineering Thermophysics and served as the youth editorial board member or guest editor for 9 academic journals. Prof. Li chaired 6 national/provincial-level projects, published over 80 SCI-indexed papers. He published the China's first textbook on hydrogen pipeline transportation. He has been awarded two provincial-level Science and Technology Progress Awards, and three Best Paper Awards and Top Influential Paper Awards. He received honors including the Outstanding Young Scholar Award

(ICCS2025) and the CMES 2023 Young Researcher Award. The high-precision hydrogen-blending equipment he developed was successfully applied in the China's first comprehensive urban gas hydrogen-blending platform, and was reported by the CCTV1, CCTV13 and other media.

Invited Talks

Fan Bai, Xi'an Jiaotong University, China

Yu-jie Chen, Beijing Institute of Petrochemical Technology, China

Zhuo Li, Tongji University, China

Hiromichi Kobayashi, Keio University, Japan

Satoshi Ii, Institute of Science Tokyo, Japan

Hiroya Mamori, The University of Electro-Communications, Japan

Yutaka Oda, Kansai University, Japan

Yuusuke Kuwata, Osaka Metropolitan University, Japan

Dongke Sun, Southeast University, China

Chengzhen Sun, Xi'an Jiaotong University, China

Lei Chen, Xi'an Jiaotong University, China

Ting Hu, China University of Petroleum, China

Hua Bao, Shanghai Jiaotong University, China

Mu Du, Shandong University, China

Wenzhen Fang, Xi'an Jiaotong University, China

Shuai Gong, Shanghai Jiaotong University, China

Chao-zhong Qin, Chongqing University, China

Linlin Fei, Xi'an Jiaotong University, China

Xiuliang Liu, Huazhong University of Science and Technology, China

Mingliang Xie, Huazhong University of Science and Technology, China

Xiafeng Zhou, Huazhong University of Science and Technology, China

Yong Shi, University of Nottingham Ningbo China, China

Changwoo Kang, Jeonbuk National University, South Korea

Hojun You, Sejong University, South Korea

Yong Wang, Southeast University, China

Chaoling Han, Nanjing Tech University, China

Zhi-Min Lin, Lanzhou Jiaotong University, China

Qixing Wu, Shenzhen University, China

Jiang Bian, Yangtze University, China

Haochun Zhang, Harbin Institute of Technology, China

Chunyang Wang, Institute of Engineering Thermophysics, Chinese Academy of Sciences, China

Yue Zhang, Wuhan Institute of Technology, China

Conference Program

P Open ceremony and Plenary lectures

Oct. 10 - 10, 2025

P Open ceremony and Plenary lectures

2025-10-10 08:00~12:00 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom, 3F

Start	End	ID	Title
Chair: Zhaoli Guo			
08:00	08:30		**Opening Ceremony**
Chair: Gihun Son			
08:30	09:15	168	Keynote speech **Ultimate heat transfer in convective and sheared turbulence** Genta Kawahara/University of Osaka, Japan
09:15	10:00	169	Keynote speech **Direct simulation of drop impact phenomena including complex interfacial multi-physics** Seungwon Shin/Hongik University, Korea
10:00	10:30		**Coffee Break**
Chair: Mamoru Tanahashi			
10:30	11:15	182	Keynote speech **Modeling and Computation of Multiscale Transport: From Rarefied Flow to Turbulence** Kun Xu/Hong Kong University of Science and Technology, China
11:15	12:00	170	Keynote speech **Two independent theories to explain coloration in supercritical fluids** Jinliang Xu/North China Electric Power University, China

S1 Computer simulations for reducing CO2 emission

Oct. 10 - 10, 2025

S1 Session 1

2025-10-10 13:30~17:15 Wuhan Opties Valley Kingdom Plaza Yellow Crane Room, 3F

Start	End	ID	Title
Chair: Jinliang Xu			
13:30	14:00	174	Keynote speech **Combustion Simulation: For Carbon Neutrality in 2050** Hiroaki Watanabe/Kyushu University, Japan
Chair: Hiroaki Watanabe			
14:00	14:20	186	Invited speech **Application of Reaction Solute Transport Simulation in CO2 Enhanced Oil Recovery** Ting Hu/China University of Petroleum, China
14:20	14:40	187	Invited speech **Membrane-Based Technologies for Post-Combustion CO2 Capture from Flue Gases: Research on CO_2 Separation Membrane Materials and Processes** Zhuo Li/Tongji University, China
14:40	14:55	95	Oral. **A Computational Study on the Mechanism of CO2 Transportation in MOF-based Mixed Matrix Membrane** Xiaohui Liu/Tongji University, China
14:55	15:10	21	Oral. **The influence mechanism of thermal boundary conditions on heat transfer inside helically coiled tubes** Jinlong Zhang/Lanzhou Jiaotong University, China
15:10	15:25	181	Oral. **Optimization of Combustor Geometry for Outlet Temperature Uniformity in a Micro Jet Engine** Patryk Golab/Korea Advanced Institute of Science and Technology (KAIST), South Korea
15:25	15:40	27	Oral. **Numerical Investigation of Three-Phase Displacement in Large-Scale 2D Pore Structures** Song Sheng/Xi'an Jiaotong University, China
15:40	16:10	**Coffee Break**	

Start	End	ID	Title
Chair: Ting Hu			
16:10	16:30	188	Invited speech **Treatment of natural gas with varying CO2 concentration using supersonic flows** Jiang Bian/Yangtze University, China
16:30	16:45	71	Oral. **A Comparative Study of Brayton Cycle and Rankine Cycle in CO_2 Carnot Batteries** Yuxi Ji/Beijing Institute of Petrochemical Technology, China
16:45	17:00	74	Oral. **Local Heat Transfer Analysis of Supercritical CO2 in a Rayleigh-Bénard Convection cell** Rui Zhang/Institute of Engineering Thermophysics, Chinese Academy of Sciences, China
17:00	17:15	158	Oral. **Thermal Energy Storage Characteristics of CaCO3/CaO in a sCO2 Heated Calciner with Non-Uniform Heat Flux and Variable Porosity Model** Jiheng Li/Hebei University of Technology, China

S2 Numerical micro/nanofluid dynamics and heat transfer

Oct. 11 - 11, 2025

S2-1 Session 2-1

2025-10-11 08:00~12:00 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 1#, 3F

Start	End	ID	Title
Chair: Wenming Yang			
08:00	08:30	180	Keynote speech **Physics Informed Neural Networks for Nanofluid Flow and Heat Transfer with Dynamic Inverse Parameters** Yan Su/University of Macau, China
Chair: Yong Shi			
08:30	08:50	189	Invited speech **GiftBTE: An Efficient and Parameter-Free Simulation Tool for Micro/Nanoscale Heat Conduction** Hua Bao/Shanghai Jiao Tong University, China
08:50	09:05	162	Oral. **Solving 3D Inverse Heat Transfer Problems in Living Insects Using Small Sample Data** Mingming Huang/Southern Marine Science and Engineering Guangdong Laboratory (Zhuhai), China
09:05	09:20	153	Oral. **Interfacial Phonon Transport Model in DSMC Framework Based on the Scattering Matrix Method** Yifei Li K.C. Wong Foundation/Institute for Multiscale Thermofluids, School of Engineering, University of Edinburgh, United Kingdom
09:20	09:35	39	Oral. **The Enhancement of Heat Transfer Performance of Corrugated Fin-and-Circle Tube Heat Exchanger with Ellipsoidal Protrusions** An-Ning Guo/Lanzhou Jiaotong University, China
09:35	09:50	160	Oral. **Cu Doping Enhances the Thermoelectric Performance of WS2 Polycrystalline Thin Films** Yilong Zhang/Xi'an Jiaotong University, China
09:50	10:10	**Coffee Break**	

Start	End	ID	Title
Chair: Hua Bao			
10:10	10:30	190	Invited speech **Lattice Boltzmann Simulation of Oscillatory Flows at the Micro and Nanoscale** Yong Shi/University of Nottingham Ningbo China
10:30	10:45	1	Oral. **An asymptotic preserving discrete unified gas kinetic scheme for nonlinear gray radiative transfer equations** Xinliang Song/Institute of Applied Physics and Computational Mathematics, China
10:45	11:00	143	Oral. **Effect of Gradient Porous Heterogeneous Electrode on the Electrochemical-Thermal Coupling Behavior of Lithium-ion Batteries** Hui Xu/China university of petroleum (East China), China
11:00	11:15	33	Oral. **Morphological Evolution and Evaporation Dynamics of Compound Droplets in Droplet-Borne Disease Transmission** Dong Liu/North China Electric Power University, China
11:15	11:30	55	Oral. **Enhanced PEMFC performance through gradient catalyst layer design with an improved agglomerate model** Zhengyan Li/Xi'an Jiaotong University, China
11:30	11:45	11	Oral. **Numerical Simulation of Icing: From Macroscale to Microscale** Yichong Wang/Dalian Maritime University, China
11:45	12:00	24	Oral. **Molecular Dynamics Study of the Condensation Behavior in Grafted PNIPAM Systems with Non-Condensable Gas** Jiaxing Luo/Dalian Maritime University, China

S2-2 Session 2-2

2025-10-11 13:30~17:35 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 1#, 3F

Start	End	ID	Title
Chair: Yan Su			
13:30	14:00	179	Keynote speech **Investigation on the major factors affecting heat transfer and surface temperature distribution in micro combustor for micro-TPV applications** Wenming Yang/National University of Singapore, Singapore
Chair: Heng Yi			
14:00	14:20	132	Invited speech **Effects of Axial Heat Conduction and Viscous Dissipation on Convective Heat Transfer Characteristics of Fluids at the Nanoscale** Chengzhen Sun/Xi'an Jiaotong University, China
14:20	14:35	22	Oral. **An Enthalpy-Based Lattice Boltzmann Flux Solver for Liquid Solidification** Jinxiang Zhou/Nanjing University of Aeronautics and Astronautics, China
14:35	14:50	26	Oral. **Microchannel Flow Modulation by Flexible Magnetic Micropillars under Magnetic-Fluid Coupling** Feng Jiao/Kunming University of Science and Technology, China
14:50	15:05	45	Oral. **Microscopic mechanisms of thermal transport in semiconductor chip materials by inhomogeneous strain engineering** Dian Huang/Xi'an Jiaotong University, China
15:05	15:20	120	Oral. **Molecular Dynamics Simulation of Nanogroove Geometry Effects on Pool Boiling** Siqi Wang/Xi'an University of Architecture and Technology, China
15:20	15:50	**Coffee Break**	
Chair: Chengzhen Sun			
15:50	16:05	59	Oral. **Dynamic Thermal Management of 3D Integrated Circuits via Two-Phase Flow Boiling: Effects of Pulsed Heat Sources on Bubble Dynamics and Heat Transfer in Three-dimensional Integrated Circuit** Bingcheng Li/Xi'an Jiaotong University, China

Start	End	ID	Title
16:05	16:20	101	Oral. **Non-equilibrium molecular dynamics simulation study on the influence of inorganic salts on the viscosity of partially hydrolyzed polyacrylamide solutions** Bingxiu Wu/Beijing Institute of Petrochemical Technology, China
16:20	16:35	214	Oral. **Electrochemical-mechanical coupled phase-field modeling for lithium dendrite growth in all-solid-state lithium metal batteries** Guoqing Qi/University of Science and Technology Beijing, China
16:35	16:50	37	Oral. **An improved lattice Boltzmann method with a novel conservative boundary scheme for viscoelastic fluid flows** Yuan Yu/Xiangtan University, China
16:50	17:05	51	Oral. **Thermodynamic performance analysis of a cascade heat pump for industrial blower exhaust heat recovery** Zelin Chen/North China Electric Power University, China
17:05	17:20	135	Oral. **Thermo-Hydraulic Performance Enhancement in Microchannel Heat Sinks Using a Novel Front-Single/Rear-Double Layer Wavy Configuration: A Multi-Objective Optimization Study** Sheng Zhong/Huazhong University of Science and Technology, China
17:20	17:35	85	Oral. **Enhanced Heat Transfer in Microchannel Heat Exchangers Leveraging Plug Flow Characteristics** Xiao Zhang/Xi'an Jiaotong University, China

S3 Computational heat transfer and fluid dynamics

Oct. 10 - 12, 2025

S3-1 Session 3-1

2025-10-10 13:30~17:20 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 1#, 3F

Start	End	ID	Title
Chair: Chengwang Lei			
13:30	14:00	178	Keynote speech **Stripes, bands, and rings: exploring localized turbulence and directed percolation** Takahiro Tsukahara/Tokyo University of Science, Japan
Chair: Hojun You			
14:00	14:20	191	Invited speech **Adjoint-based Reaction Sensitivity Analysis in Weakly Ionized Hypersonic Flow** Hojun You/Sejong University, South Korea
14:20	14:35	42	Oral. **Equilibrium-distribution-function based mesoscopic finite-difference methods for fractional convection-diffusion equation in Caputo sense** Rui Du/Southeast University, China
14:35	14:50	192	Oral. **A Unified Enthalpy Based Lattice Boltzmann Model for Phase Change in Composite Phase Change Materials with Variable Interfacial Thermal Resistance** MAZHAR HUSSAIN/Pakistan Institute of Engineering and Applied Sciences, Pakistan
14:50	15:05	31	Oral. **The width of rectangular sinusoidal wavy channels determines the contributions of longitudinal and transverse vortices to flow stability** Fengjiao Pang/Lanzhou Jiaotong University, China
15:05	15:20	90	Oral. **Numerical analysis of internal thermal response and melt-front evolution characteristics of phase change thermal buffers in aerospace vibration environments** Junjie He/Xi'an Jiaotong University, China
15:20	15:50	**Coffee Break**	

Start	End	ID	Title
Chair: Rui Du			
15:50	16:05	96	Oral. **Investigation of Thermal Response and Ablation Mechanisms in Composite Nozzles for Long-Burn Solid Rocket Motors** Zhenyuan Guo/Xi'an Jiaotong University, China
16:05	16:20	84	Oral. **Numerical Study on Thermally Induced Degradation and Particle Size Evolution of Temporary Plugging Agents in Hot Dry Rock Fractures** Zongze Li/Xi'an Jiaotong University, China
16:20	16:35	105	Oral. **Numerical Investigation on the Effect of Phase Change on Bubble Growth and Detachment** Hongchi Yao/Sichuan University, China
16:35	16:50	109	Oral. **A pointer-based adaptive mesh refinement method for DUGKS-BGK model** Yanchen Xia/Xi'an Jiaotong University, China
16:50	17:05	134	Oral. **Development an upwind rotating lattice Boltzmann flux solver for compressible flows** Yunhao Wang/Nanjing University of Aeronautics and Astronautics, China
17:05	17:20	8	Oral. **Study on Flow Characteristics of Atmospheric-Pressure Air Plasma Free Jet Based on Magnetohydrodynamics** Xianpin Sun/Xi'an Jiaotong University, China

S3-2 Session 3-2

2025-10-11 13:30~17:30 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 2#, 3F

Start	End	ID	Title
Chair: Takahiro Tsukahara			
13:30	14:00	173	Keynote speech **Effects of flow blockage on convective flow through a vertical channel** Chengwang Lei/School of Civil Engineering The University of Sydney, Australia
Chair: Hong Liang/ Liang Gong			
14:00	14:15	19	Oral. **Flow and Heat Transfer in Single- and Multi-Hole Impinging Jets Studied Using a New Hybrid Very Large Eddy Simulation** Gaoqian Lu/Nanjing University of Aeronautics and Astronautics, China
14:15	14:30	28	Oral. **Investigation of Heat Transfer and Hydrodynamic Forces in Cylindrical Particle Arrays with Varied Distributions Under Poiseuille Flow** Qinghua Li/Zhejiang University, China
14:30	14:45	41	Oral. **Design and multi-parameter optimization of a meso-scale channel cold plate with non-uniform fins for high heat flux cooling** Zhengdao Li/Xi'an Jiaotong University, China
14:45	15:00	49	Oral. **Pore scale study of gravity-driven non-isothermal fluid displacement in disordered porous media** Juanyong Wang/China University of Geosciences, China
15:00	15:15	97	Oral. **Predicting Effective Thermal Conductivity in Carbon Fibrous Media: Stochastic Modeling and Multi-Physics Simulation** Chenglin Zhou/Lanzhou University of Technology, China
15:15	15:30	142	Oral. **A Pseudo-transient continuation time-scale adaptive method within the Boussinesq buoyancy approximation** Haipeng Cai/Xi'an Jiaotong University, China
15:30	16:00	**Coffee Break**	

Start	End	ID	Title
Chair: Shi Tao/ Weiwei Yang			
16:00	16:15	150	Oral. **Thermal Propagation Suppression in 5*5 Battery module Under Immersion Cooling** Pengpai Liu/Huazhong University of Science and Technology, China
16:15	16:30	89	Oral. **Numerical investigation on a liquid-cooling and free-cooling combined data center - a comprehensive case study** Zixing Wang/Xi'an Jiaotong University, China
16:30	16:45	92	Oral. **Numerical simulation study on thermal stress distribution of three-dimensional porous calcium-based particle under high-throughput concentrated solar irradiation conditions** Yiming Zhao/Beijing Institute of Petrochemical Technology, China
16:45	17:00	93	Oral. **Thermal Performance Analysis of a Liquid Cooling System with Bidirectional Parallel Flow Channel for Lithium-Ion Batteries** Rumeng Zhao/Beijing Institute of Petrochemical Technology, China
17:00	17:15	121	Oral. **A New Interpolation Scheme and Application in Iterative Green–Gauss Gradient Reconstruction** Zhaoren Li/Xi'an Jiaotong University, China
17:15	17:30	144	Oral. **Mesoscopic Insights into the Reactive Transport Processes in Catalyst layers of PEMFCs** Yutong Mu/Xi'an Jiaotong University, China

S3-3 Session 3-3

2025-10-12 13:30~17:10 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 1#, 3F

Start	End	ID	Title
Chair: Xiafeng Zhou			
13:30	13:50	16	Invited speech **Numerical simulation study on heat dissipation characteristics under laminar flow conditions in subsea data centers** Chaoling Han/Nanjing Tech University, China
13:50	14:05	131	Oral. **Analysis of manifold-driven cooling walls with non-uniform flow and heat flux distribution** Kexin Meng/North China Electric Power University, China
14:05	14:20	5	Oral. **Research on the Physical Properties Parameters of Lubricating Oil and Their Variation Rules under High Temperature and High Pressure** Tianyi Yu/Naval University of Engineering, China
14:20	14:35	6	Oral. **Effect of Fly Ash Recirculation Port and Secondary Air Optimization on the Flow Characteristics and Secondary Combustion of Fly Ash in Biomass Boilers** Yixue Zhang/Qingdao University of Science and Technology, China
14:35	14:50	30	Oral. **Numerical Investigation and Parametric Optimization of Intermittent Spray Cooling Heat Transfer** Yifeng Liu/Xi'an Jiaotong University, China
14:50	15:05	58	Oral. **Further discussion on the stability and boundedness of convective discretization schemes: a four-node normalized variable analysis method** Xiangyou Feng/Xi'an Jiaotong University, China
15:05	15:35	**Coffee Break**	
Chair: Chaoling Han			
15:35	15:55	157	Invited speech **Parallel discrete unified gas kinetic scheme based on compact method for particle transport models** Xiafeng Zhou/Huazhong University of Science and Technology, China

Start	End	ID	Title
15:55	16:10	75	Oral. **Numerical study on the flow and combustion characteristics of black liquor via a computational fluid dynamic (CFD) approach modified by the user defined functions (UDFs)** Junwei Luo/Huazhong University of Science and Technology, China
16:10	16:25	151	Oral. **Numerical study on performance optimization of two-phase closed thermosyphon with vortex generator** Yuxuan Bo/University of Shanghai for Science and Technology, China
16:25	16:40	156	Oral. **An Investigation and Analysis of Thermal Attributes in Oil-Immersed Transformer windings Under Canonical Operating Conditions** Hongye Yan/Xi'an Jiaotong University, China
16:40	16:55	34	Oral. **Impact of Three-Dimensional Asperities with Varying Sizes on Brake Interface Temperature and Thermal Effects of Elasto-Plastic Deformation** Pengfei Cui/Lanzhou Jiaotong University, China
16:55	17:10	167	Oral. **Coarse-Grained Molecular Dynamics Study on the Evaporation of Droplet Containing Nanobubble** Yuhang Du/University of Science and Technology Beijing, China

S4 Computational multi-component and multiphase flows

Oct. 10 - 12, 2025

S4-1 Session 4-1

2025-10-10 13:30~17:45 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 2#, 3F

Start	End	ID	Title
			Chair: Li Chen
13:30	14:00	94	Keynote speech **A diffuse-interface lattice Boltzmann method for multiphase reactive flows** Zhenhua Chai/Huazhong University of Science and Technology, China
			Chair: Dongke Sun
14:00	14:20	193	Invited speech **On the effects of Kelvin-Helmholtz instability over non-smooth wall turbulent flows** Yusuke Kuwata/Osaka Metropolitan University, Japan
14:20	14:40	76	Invited speech **Settling behavior of sub-millimetric non-spherical atmospheric particles** Yong Wang/School of Mechanical Engineering, Southeast University, China
14:40	14:55	99	Oral. **Pore-Scale Investigation of Transport Phenomena in Compressed Electrodes of Vanadium Redox Flow Batteries** Kangjun Duan/Institute of Energy Technologies, IET-3: Theory and Computation of Energy Materials, Forschungszentrum Jü lich GmbH, Germany
14:55	15:10	125	Oral. **A thermodynamically consistent and conservative diffuse-interface model for surfactant-laden two-phase dynamics** Hong Liang/Hangzhou Dianzi University, China
15:10	15:25	127	Oral. **Thermodynamic-kinetic coupling during the evaporation of binary solvents** Qiyun Tang/Southeast University, China
15:25	15:40	137	Oral. **A Multiphase-Multicomponent Lattice Boltzmann Approach for Dendritic Frosting on Supercooled Surfaces** Chaoyang Zhang/Shanghai Jiao Tong University, China

Start	End	ID	Title
15:40	16:10		**Coffee Break**
			Chair: Yusuke Kuwata
16:10	16:30	46	Invited speech **Modeling of dendritic growth and sedimentation in non-equilibrium solidification of alloys by using the lattice Boltzmann – phase field method** Dongke Sun/Southeast University, China
16:30	16:45	194	Oral. **Fouling Heat Transfer of a Curved Oscillating Plate** Yit Fatt Yap/Khalifa University, United Arab Emirates
16:45	17:00	69	Oral. **Molecular-Level Understanding of the Enhanced Stability of Single Bulk Nanobubbles** Dezhao Huang/Wuhan University, China
17:00	17:15	17	Oral. **Lift force prediction for inertial focusing of a finite-size particle in non-Newtonian fluids** Xinghui Wu/South China University of Technology, China
17:15	17:30	114	Oral. **Numerical Study on Liquid Reorientation Induced by Gravity Reduction** Hyosang Yoon/Korea Advanced Institute of Science and Technology, South Korea
17:30	17:45	115	Oral. **A CLSVOF Method for Compressible Two-Phase Flow in Ultrasonic Fields** Jaesung Park/Sogang University, South Korea

S4-2 Session 4-2

2025-10-12 08:00~11:45 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 1#, 3F

Start	End	ID	Title
Chair: Shuai Gong			
08:00	08:20	61	Invited speech **Brownian coagulation in the spatial mixing layer with AK-iDNS** Mingliang Xie/Huazhong University of Science and Technology, China
08:20	08:40	184	Invited speech **Mesoscopic modeling of liquid-vapor phase change phenomena: from single droplet to complex materials** Linlin Fei/Xi'an Jiaotong University, China
08:40	08:55	165	Oral. **A unified variational approach and mesoscopic lattice Boltzmann method for simulating non-isothermal two phase flows** Xuguang Yang/Hunan First Normal University, China
08:55	09:10	161	Oral. **Improved extrapolation-based curved boundary schemes in pseudopotential multiple-relaxation-time lattice Boltzmann method for multiphase simulations** Wenqiang Guo/China Aerodynamics Research and Development Center, China
09:10	09:25	18	Oral. **A Mixture Porous Media Model Augmented by Full-Flow-Regime-Based Closure Models for Water Boiling in Parallel Rectangular Microchannels** Zicheng Tang/Xi'an Jiaotong University, China
09:25	09:40	32	Oral. **A Simple Flux-Limiting Method for Volume Fraction Transport on Unstructured Meshes with Arbitrary Velocity Fields** Zihan Wang/Xi'an Jiaotong University, China
09:40	10:10	**Coffee Break**	
Chair: Mingliang Xie			
10:10	10:30	185	Invited speech **Modeling Liquid-Vapor Phase Change Heat Transfer: From Nanoscale to Macroscale** Shuai Gong/Shanghai Jiao Tong University, China

Start	End	ID	Title
10:30	10:45	4	Oral. **Large-Eddy Simulation Based Comparative Study of Cavitation Dynamics in Fuel Injector Control Ball Valves** Xingyu Qu/Naval University of Engineering, China
10:45	11:00	40	Oral. **Mixing Zone Prediction for Long-Distance Product Oil Pipeline via Sliding Mapping Technique Using the UDF for FLUENT** YuZhu Liu/Yangtze University, China
11:00	11:15	68	Oral. **A phase-field lattice Boltzmann model with tensorial mobility to suppress spontaneous shrinkage of droplets** Qipo Dong/Harbin Institute of Technology, China
11:15	11:30	155	Oral. **Molecular Simulation Study on the Miscibility of Methanol–Refined Oil–Water Three-Phase System** Zhidong Gong/Beijing Institute of Petrochemical Technology, China

S5 Heat exchangers

Oct. 12 - 12, 2025

S5 Session 5

2025-10-12 08:00~11:20 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 2#, 3F

Start	End	ID	Title
Chair: Jingfa Li			
08:00	08:30	175	Keynote speech **Computational Analysis of Phase Change based Heat Sink coupled with Heat Pipe as Thermal Conductivity Enhancer** Jyotirmay Banerjee/Sardar Vallabhbhai National Institute of Technology (SVNIT), India
Chair: Zhi-Min Lin			
08:30	08:45	36	Oral. **Optimization of selective laser melting process parameters and experimental validation for hybrid mini-channel heat exchangers based on deep neural networks and reinforcement learning** Dechao Liu/Xi'an Jiaotong University, China
08:45	09:00	54	Oral. **A novel S-CO2 solar receiver based on triply periodic minimal surfaces: Thermal-hydraulic performance and structural feasibility** Shuangyun Li/Hebei University of Technology, China
09:00	09:15	48	Oral. **Mechanism of Convective Heat Transfer Enhancement by Vortex Generators in the Fin Side of Flat Tube bank fin Heat Exchanger Viewed from the other View** He Jing/Lanzhou Jiaotong University, China
09:15	09:30	108	Oral. **Topology optimization of turbulent convective heat transfer processes in regenerative cooling channel** Sitong Li/Xi'an Jiaotong University, China
09:30	10:00	**Coffee Break**	

Start	End	ID	Title
Chair: Chao-Zhong Qin			
10:00	10:20	20	Invited speech **Thermal-Hydraulic Performance Optimization of Louver-Finned Circular Tube Heat Exchangers with Rear-Punched Curved Delta-Winglet Generators Using Taguchi and Response Surface Methods** Zhi-Min Lin/Lanzhou Jiaotong University, China
10:20	10:35	123	Oral. **Three-Dimensional Spatiotemporal Evolution of Thermal Fields in Horizontal Submerged Thermal Jets** Shufan Xiao/Huazhong University of Science and Technology, China
10:35	10:50	12	Oral. **Numerical Study on Heat Transfer and Flow Characteristics of Nanofluids in Twisted Elliptical Tubes at Low Reynolds Numbers** Haitao Luo/Lanzhou University of Technology, China
10:50	11:05	38	Oral. **The Uncertainty Quantification of Thermal Conductivities for Braided Composites Based on Minimum-size Unit Cells** Yueer Sun/Northwestern Polytechnical University, China
11:05	11:20	139	Oral. **Genetic-AlgorithmBased Topology Optimization for Efficient Cooling of HVDC Equipment** Zongdao Piao/Changwon National University, South Korea

S6 Numerical methods in multiscale and multi-physics modeling

Oct. 10 - 12, 2025

S6-1 Session 6-1

2025-10-10 13:30~17:05 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 3#, 3F

Start	End	ID	Title
Chair: Seungwon Shin			
13:30	14:00	172	Keynote speech **Flame-wall interaction for gas turbine applications** Donghyuk Shin/Korea Advanced Institute of Science and Technology Department of Aerospace Engineering, South Korea
Chair: Kun Xu			
14:00	14:30	171	Keynote speech **On the Mechanism of heat transfer modulation by finite-size particles in Rayleigh-Bénard convection** Lianping Wang/Southern University of Science and Technology, College of Engineering, China
Chair: Lianping Wang			
14:30	14:45	91	Oral. **Multi-scale numerical method assisted by machine learning to study reactive transport processes of redox flow battery** Qiang Ma/Jiangsu university, China
14:45	15:00	35	Oral. **Electromagnetic Flow Control in Hypersonic Rarefied Environment** Zhigang Pu/Hong Kong University of Science and Technology, China
15:00	15:15	25	Oral. **Thermal-hydraulic-mechanical-chemical fully coupled modeling and simulation of hot dry rock reservoirs with embedded grids** Kaituo Jiao/Yangtze University, China
15:15	15:30	140	Oral. **Immersed-boundary discrete unified gas kinetic scheme for multi-scale gas-solid flows with heat trasfer** Shi Tao/Dongguan University of Technology, China

Start	End	ID	Title
15:30	16:00		**Coffee Break**
			Chair: Dong-hyuk Shin
16:00	16:20	195	Invited speech **Thermo-electro-hydrodynamic Convection in a Finite Cylindrical Annulus** Changwoo Kang/Jeonbuk National University, Korea
16:20	16:35	117	Oral. **A hybrid approach of Molecular Dynamics and S-Model Boltzmann Kinetic Equation simulation for evaporation modeling** Adnan Khan/Tsinghua University, China
16:35	16:50	63	Oral. **A discrete unified gas kinetic scheme with Monte Carlo sampling applied in velocity space** Shuyang Zhang/Huazhong University of Science and Technology, China
16:50	17:05	29	Oral. **Electro-Thermal Coupling Modeling for Accurate Junction Temperature Prediction in GaN HEMTs** Ye Song/Xi'an Jiaotong University, China

S6-2 Session 6-2

2025-10-12 13:30~16:55 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 2#, 3F

Start	End	ID	Title
			Chair: Xuguang Yang
13:30	13:50	164	Invited speech **Mesoscale modelling of dense emulsion flows: From short range repulsion to bulk rheology** Haihu Liu/Xi'an Jiaotong University, China
13:50	14:05	2	Oral. **Performance evaluation of flux-reconstruction schemes in the discrete unified gas-kinetic scheme for low-speed continuum flows** Ziyang Xin/Huazhong University of Science and Technology, China
14:05	14:20	7	Oral. **Resolving Spatiotemporal Thermal Dynamics in LiBs: A Coupled Electrochemical-Thermal Model with Python Implementation** Xiaorong Zhao/Xi'an Jiaotong University, China

Start	End	ID	Title
14:20	14:35	107	Oral. **Multi-scale modeling of PEMFC and performance optimization using STEM tomography and machine learning** Yikun Wang/Xi'an Jiaotong University, China
14:35	14:50	110	Oral. **Structural Optimization of the Ordered Catalyst Layer Based on a 1+1D PEMFC Model** Guangji Sun/Xi'an Jiaotong University, China
14:50	15:05	65	Oral. **An improved discrete unified gas kinetic scheme of kinetic equation forstrongly inhomogeneous fluids** Huipeng Liu/Huazhong University of Science and Technology, China
15:05	15:35	**Coffee Break**	
Chair: Haihu Liu			
15:35	15:55	196	Invited speech **Discrete unified gas kinetic scheme for flows of binary gas mixtures** Yue Zhang/Wuhan Institute of Technology, China
15:55	16:10	78	Oral. **Full-scale three-dimensional multi-physics simulation of proton exchange membrane electrolysis stack** Binxin Qiao/Xi'an Jiaotong University, China
16:10	16:25	209	Oral. **Butterfly flapping flow simulation based on the GPU accelerated lattice Boltzmann method** Ruizhen Huang/Harbin Engineering University, China
16:25	16:40	98	Oral. **A diffuse-interface model for reactive transport involving solid dissolution and precipitation** Xi Liu/Huazhong University of Science and Technology, China
16:40	16:55	3	Oral. **Numerical investigation on premixed NH3/H2/air flame stability of a microscale Swiss-roll combustor with a bluff-body** Wanhao Liu/Huazhong University of Science and Technology, China

S7 Heat and mass transfer in porous media

Oct. 11 - 11, 2025

S7 Session 7

2025-10-11 13:30~18:15 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 3#, 3F

Start	End	ID	Title
Chair: Jyotirmay Banerjee			
13:30	14:00	206	Keynote speech **Study on the Mechanism of Leakage, Ignition, and Explosion in High-Pressure Hydrogen-Blended Natural Gas Pipelines** Jingfa Li/Yangtze University, China
Chair: Chunyang Wang			
14:00	14:20	130	Invited speech **Modeling of Flow and Transport in Multiscale Digital Rocks** Chao-Zhong Qin/Chongqing University, China
14:20	14:40	197	Invited speech **High-fidelity modeling of liquid film boiling on micro-structured surfaces** Xiuliang Liu/Huazhong University of Science and Technology, China
14:40	14:55	210	Oral. **Heat transfer in a PCM-based finned heat sink enhanced with metal foam** Nadezhda Bondareva/Tomsk State University, Russian Federation
14:55	15:10	126	Oral. **Effects of Suspended Particles on Multiphase Displacement in Porous Media Using a Diffuse-Interface Lattice Boltzmann Method** Changsheng Huang/China University of Geosciences (Wuhan), China
15:10	15:25	141	Oral. **How local gas-solid interactions affect thermal conduction in silica nanoparticle materials** Mingyang Yang/Xi'an University of Architecture and Technology, China
15:25	15:40	149	Oral. **Study of transport properties of the PEMFC porous electrode based on compressed microstructure** Zhuo Zhang/Xi'an Jiaotong University, China

Start	End	ID	Title
15:40	15:55	215	Oral. **A Numerical Investigation into the Influence of Porous Media Geometry on Transpiration Cooling Across Varying Blowing Ratios** Jisu Park/Jeonbuk National University, Republic of Korea
15:55	16:10	216	Oral. **The Effect of Manifold Inclination on Cooling Performance of U-type Air-cooled Battery Pack** Jeonghun Ko/Jeonbuk National University, Republic of Korea
Chair: Chaoyang Zhang			
16:10	16:30	198	Invited speech **Applicability of the volume average method for heat transfer in porous structure** Chunyang Wang/Institute of Engineering Thermophysics, Chinese Academy of Sciences, China
16:30	16:45	100	Oral. **Numerical simulation of transpiration cooling based on porous media reconstruction** Minghang Tan/Xi'an Jiaotong University, China
16:45	17:00	119	Oral. **Two-way coupled acceleration method for local thermal non-equilibrium model of convective heat transfer in porous media** Qi Guo/Xi'an Jiaotong University, China
17:00	17:15	133	Oral. **Atomic-level prediction of Palladium-Based Alloy Membranes for Hydrogen Separation from Hydrogen-Blended Natural Gas** Ziming Hu/Yangtze University, China
17:15	17:30	9	Oral. **A method for measuring the elastic modulus of aerogels based on thermal conductivity test** Cheng Bi/Xi'an Special Equipment Inspection Institute, China
17:30	17:45	23	Oral. **Analysis of the Influence of Air Chamber End Socket Eccentricity on Flow Distribution and Multiphysics Field Distribution in PEMFC Stacks** Hong-Bing Quan/Xi'an Jiaotong University, China
17:45	18:00	53	Oral. **Effects of mechanical Stress and Film Thickness on Oxygen Transport Resistance in PEMFCs** Kai-Bo An/Xi'an Jiaotong University, China

Start	End	ID	Title
18:00	18:15	66	Oral. **Characteristic Thickness of Thin-Film Region for Micropillar Evaporator** Bingyue Zhang/Huazhong University of Science and Technology, China

S8 AI, surrogate modeling and optimization

Oct. 12, 2025

S8-1 Session 8-1

2025-10-12 08:00~11:50 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 3#, 3F

Start	End	ID	Title
Chair: Sanghun Choi			
08:00	08:30	207	Keynote speech **Topology optimization of heat and mass transfer processes: models and applications** Li Chen/Xi' an Jiaotong University, China
Chair: Satoshi Ii			
08:30	08:50	60	Invited speech **Computational Design of Aerogel Windows: From Microstructure to Performance** Du Mu/Shandong University, China
08:50	09:05	211	Oral. **Urban Microclimate Simulation for UAM Operation Safety Assessment Using LES Data–Driven POD–Transformer Modeling** Kim Jungwoo/Yonsei University, South Korea
09:05	09:20	118	Oral. **Image recognition-based ultra-fast and accurate equivalent circuit model for metal hydride reactors** Wangxin Yang/Xi'an Jiaotong University, China
09:20	09:35	10	Oral. **High efficiency design and optimization framework of TPMS structures for additive manufacturing applications** Hanyu Ning/Xi'an Jiaotong University, China
09:35	09:50	52	Oral. **Active-Passive Synergistic Optimization of Building Cooling on Low-Latitude Islands Based on Deep Seawater Closed Cooling Air Conditioning System** Huimin Niu/North China Electric Power University, China
09:50	10:10	**Coffee Break**	
Chair: Du Mu			
10:10	10:30	199	Invited speech **Water and Thermal Management in Proton Exchange MembraneFuel Cells: Insights across Different Scales and AI-Driven Operating Condition Optimization** Lei Chen/Xi'an Jiaotong University, China

Start	End	ID	Title
10:30	10:50	200	Invited speech **Multi-objective intelligent optimization of waste heat removal process for space nuclear reactors** Haochun Zhang/Harbin Institute of Technology, China
10:50	11:05	103	Oral. **On-board Hydrogen Cylinder Filling Strategy Based on Stepwise Filling Mode** Daoting Wang/Beijing Institute of Petrochemical Technology, China
11:05	11:20	163	Oral. **Numerical study and performance evaluation of a SWaP-refined miniature Stirling cryocooler for high-operating-temperature infrared detectors** Muhammad Shad/Huazhong University of Science and Technology, China
11:20	11:35	104	Oral. **Performance of topology-optimized liquid flow channel for battery thermal management: preheating and cooling** Tianshuo Yang/Dalian Maritime University, China
11:35	11:50	113	Oral. **A Fast Prediction Method for Multi-Physical Fields of Chip Heat Exchangers Based on CFD and Convolutional Neural Network** Hang Yu/Xi'an Jiaotong University, China

S8-2 Session 8-2

2025-10-12 13:30~16:35 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 3#, 3F

Start	End	ID	Title
			Chair: Guang Feng
13:30	14:00	177	Keynote speech **Physics-Informed Flow Simulations via Operator Learnings** Sanghun Choi/Kyungpook National University, South Korea
			Chair: Xuhui Meng
14:00	14:15	15	Oral. **Solving Partial Differential Equations Based on Unstructured Neural Operators** Haobo Guo/Xi'an Jiaotong University, China

Start	End	ID	Title
14:15	14:30	159	Oral. **Monte Carlo physics-informed neural networks for multiscale heat conduction via phonon Boltzmann transport equation** Qingyi Lin/Huazhong University of Science and Technology, China
14:30	14:45	138	Oral. **Generalizable subgrid scale stress modeling using graph neural networks with multi-scale physics** Louis Hutin/Institute of Science Tokyo, China
14:45	15:00	212	Oral. **Reinforcement Learning-based Precision Temperature Control for Thermoelectric Heat Exchangers** SeokYong Lee/Kyungpook National University, South Korea
15:00	15:30	**Coffee Break**	
Chair: Lei Chen			
15:30	15:50	201	Invited speech **Prediction of patient-specific hemodynamics for cerebral aneurysms using computational fluid dynamics and deep learning techniques** Satoshi Ii/Institute of Science Tokyo, Japan
15:50	16:05	102	Oral. **Optimization of Key Transport Parameters of Temporary Plugging Agents in Deep Reservoirs Using TCN and NSGA-II** Yue Wu/China University of Petroleum, China
16:05	16:20	112	Oral. **Adaptive Flow Control Strategy for Power Lithium-Ion Batteries Based on LSTM-Encoder** Tianyi Zhang/Xi'an Jiaotong University, China
16:20	16:35	122	Oral. **An Interpretable Deep Learning model for Quantifying Catalyst Layer Structural and Operating Condition Impacts on Performance in PEM Fuel Cells** Zhao Liu/Xi'an Jiaotong University, China

S9 Turbulence

Oct. 11 - 11, 2025

S9 Session 9

2025-10-11 08:00~11:00 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 2#, 3F

Start	End	ID	Title
Chair: Hiroya Mamori			
08:00	08:20	124	Invited speech **Quantum turbulence coupled with normal fluid turbulence in superfluid helium-4** Hiromichi Kobayashi/Keio University, Japan
08:20	08:40	202	Invited speech **Numerical and experimental study of transient heat transfer in fully turbulent pulsating flows** Yutaka Oda/Kansai University, Japan
08:40	08:55	106	Oral. **Large-Scale Control using Buoyancy Force for Skin-Friction Drag Reduction in Turbulent Vertical Channel Flow** Menglei Wang/The University of Electro Communications, Japan
08:55	09:10	145	Oral. **DNS Investigation of Wall Heat Flux in Reacting Turbulent Channel Flow: Effects of Flame-wall Interaction and Near-wall Flame Quenching** Ye Wang/Institute of Science Tokyo, Japan
09:10	09:25	213	Oral. **Skin-friction drag reduction effect of turbulent channel flow by periodically varying wall temperature** Satsuki Aoyama/The University of Electro-Communications, Japan
09:25	09:55	**Coffee Break**	
Chair: Hiromichi Kobayashi			
09:55	10:15	203	Invited speech **Towards practical prediction and control of wall-bounded turbulence** Hiroya Mamori/The University of Electro-Communications, Japan
10:15	10:30	72	Oral. **Energy budget analysis on porous coating effects on unstable perturbations in high speed boundary layers** Peicheng Sun/Northwestern Polytechnical University, China

Start	End	ID	Title
10:30	10:45	73	Oral. **Evaluation and Prediction of Flow and Heat Transfer of Supercritical Water in a Vertical Loop Using Different Turbulence Models** Quanyu Gong/Institute of Engineering Thermophysics, Chinese Academy of Sciences, China
10:45	11:00	128	Oral. **Study on Turbulence/Transition and Heat Transfer Characte-ristics using Lattice Boltzmann Method on Multi-GPU Platforms** Xing Xiang/Institute of Process Engineering, Chinese Academy of Sciences, China

S10 Fuel cells and other application

Oct. 11 - 11, 2025

S10 Session 10

2025-10-11 08:00~11:55 Wuhan Opties Valley Kingdom Plaza Kingdom Ballroom 3#, 3F

Start	End	ID	Title
Chair: Meng Ni			
08:00	08:30	176	Keynote speech **A study on energy consumption and energy savings potentialof cooling solutions for commercial buildings in Viet Nam** Quoc Dung Trinh/Hanoi University of Science and Technology, Viet Nam
Chair: Quoc Dung Trinh			
08:30	09:00	208	Keynote speech **Micropillar-patterned electrodes to enhance mass transfer in low Pt-loaded fuel cells** Meng Ni/The Hong Kong Polytechnic University, China
Chair: Yujie Chen			
09:00	09:20	204	Invited speech **A fully self-developed multiphysics-integrated computational framework for 3D proton exchange membrane fuel cell modeling** Fan Bai/Xi'an Jiaotong University, China
09:20	09:40	205	Invited speech **Insights into the oxygen transport through thin films on platinum surfaces** Wenzhen Fang/Xi'an Jiaotong University, China
09:40	09:55	111	Oral. **Multi-parameter optimization of PEMFCs with gradient porosity metal foam rib flow fields** Shuangyu Lv/Xi'an Jiaotong University, China
09:55	10:15	**Coffee Break**	
Chair: Fan Bai/ Qixing Wu			
10:15	10:35	79	Invited speech **A three-dimensional curve interface reconstruction algorithm for the two-phase flow** Yujie Chen/Beijing Institute of Petrochemical Technology, China

Start	End	ID	Title
10:35	10:55	70	Invited speech **In-operando probing and simulating pore-level reactive transport in flow battery electrodes** Qixing Wu/Shenzhen University, China
10:55	11:10	116	Oral. **Influence of capillary resistance within GDL on water transport behavior and cell performance** Xutao Liu/Xi'an Jiaotong University, China
11:10	11:25	56	Oral. **Reconstruction of gas diffusion layer of proton exchange membrane fuel cell based on PTFE uneven distribution: structure and mass transfer performance** Shuchang Li/Xi'an Jiaotong University, China
11:25	11:40	77	Oral. **Numerical research and optimization of titanium metal bipolar plate air-cooled fuel cell** Ke Xue/Xi'an Jiaotong University, China
11:40	11:55	148	Oral. **Investigation on a Temperature Control Strategy for Air-cooled Proton Exchange Membrane Fuel Cells Based on NSGAIII Multi-Objective Optimized RBF-PID** Xinyu Xue/Xi'an Jiaotong University, China

PO Poster Presentation

Oct. 10 - 11, 2025

PO1 Poster Presentation 1

2025-10-10 13:30~17:00 Wuhan Opties Valley Kingdom Plaza The Public Area, 3F

ID	Title
166	Poster Presentation **Study on Application and Efficiency of Geothermal-Solar Coupled Heating System in Oil Pipelines** Daizong Shi/Beijing Institute of Petrochemical Technology, China
43	Poster Presentation **Energy-Saving Analysis of Water-Jacket Heating Furnace Based on Burner Modification** Mei Lu/Yangtze University, China
47	Poster Presentation **Krylov 子空间方法在子通道程序 comeSC 中的加速应用研究** Yanming Xu/Huazhong University of Science and Technology, China
80	Poster Presentation **Simulation and Characterization of the Drying Process in Lithium-Ion Battery Electrodes Based on Pore Network Modeling** Bing Dong/Beijing Institute of Petrochemical Technology, China
57	Poster Presentation **Numerical investigation on the temperature drop process of a buried waxy crude oil pipeline during shutdown period** Qing Yuan/Yangtze University, China
62	Poster Presentation **A Computational Framework for Chemo-Specific Degradation of Radiative Coolers under Environmental Fouling** Lin Guo/Shandong University, China
64	Poster Presentation **Dynamic Spectral Modulation of Silica Hydrogel Windows via Dry/Wet Transition for Energy-Efficient Buildings** Dong Niu/Dalian Maritime University, China
81	Poster Presentation **CFD Investigation of Room-Scale Aerodynamics on the Cooling Performance of an Emergency Diesel Generator Heat Exchanger** YuRong Li/NPRI, China
146	Poster Presentation **Design and Optimization of Dual-Temperature Collaborative Architecture for Multi-Mode Aircraft Thermal Management System** Shengnan Ji/Harbin Institute of Technology, China

ID	Title
147	Poster Presentation **Investigation of Saturated Flow Boiling Heat Transfer in Mini-channel Based on the SCIR Algorithm** Junhua Gong/Beijing Institute of Petrochemical Technology, China
152	Poster Presentation **Characteristics of supersonic condensation flow of moist air within the port channel of a pressure reduction valve** Fan Yuhao/Huazhong University of Science and Technology, China
82	Poster Presentation **High-Precision Parameter Identification for Hydrogen Fuel Cell Voltage Models Using a Backpropagation Neural Network** Chenzi Zhang/Xi'an Jiaotong University, China

PO2 Poster Presentation 2

2025-10-11 13:30~17:00 Wuhan Opties Valley Kingdom Plaza The Public Area, 3F

ID	Title
154	Poster Presentation **Numerical simulation study on structural Optimization from 5-24.5K international comparison device to 2-5K reference level temperature measurement device** Qi Wang/Northeastern University, China
83	Poster Presentation **Numerical simulation of pool boiling heat transfer on micro-structured surfaces** Xiaolong Bi/Xi'an Jiaotong University, China
86	Poster Presentation **Natural Convection Heat Transfer of Al2O3-Cu/Water Hybrid Nanofluids in a Cubic Enclosure with Double Heat Sources at the Bottom** Yu-Meng Wang/Lanzhou University of Technology, China
87	Poster Presentation **Nonlinear electroosmosis of polyelectrolyte solution in confined nanochannels** Xinxi Liu/Xi'an Jiaotong University, China
88	Poster Presentation **Enhancing the immersion cooling efficacy of Li-ion battery module by tailoring the coolant flow path** Huaqiang Liu/Dalian Maritime University, China
219	Poster Presentation **Effect of Fly Ash Recirculation Port and Secondary Air Optimization on the Flow Characteristics and Secondary Combustion of Fly Ash in Biomass Boilers** Yixue Zhang/Qingdao University of Science and Technology, China

ID	Title
14	Poster Presentation **Self-Adaptive VO2 Radiative Cooling Multilayer Structure with Diffenrent Band Selective Emissivity for Electronic Cooling** Xin Zhao/Xi'an Jiaotong University, China
217	Poster Presentation **Immersed Boundary Projection Method for Fluid-Structure Interaction Problems** Yuchen Zhang/Yonsei University, South Korea
218	Poster Presentation **Non-intrusive reduced-order modeling of space-time-dependent parameterized problems** Xiaomin Wang/Yonsei University, South Korea

About the Traffic

- **From Wuhan Tianhe Airport to Optics Valley Kingdom Plaza Hotel Wuhan**
  （武汉天河机场 → 武汉光谷金盾酒店）
  - ✓ By Metro: Take Metro (Line 2, towards Fozuling Station direction) from Tianhe Airport, transfer to Bus 702 (towards Luoyu East Road Youloukou Bus Station direction) at Guangbutun Station, and get off at Luoyu Road Wujiawan Bus Station. Walk 260 meters to the hotel.
    武汉天河机场乘坐地铁2号线（往佛祖岭站方向），在广埠屯站下车，换乘702号公交（往珞喻东路油篓口方向），在珞喻路吴家湾站下车，步行260米到武汉光谷金盾酒店。
  - ✓ By Taxi: approximately 49 kilometers, takes about 60 minutes and costs around 150 RMB.
    全程约49公里，乘车约60分钟，费用约150元。

- **From Wuhan Railway Station to Optics Valley Kingdom Plaza Hotel Wuhan**
  （武汉火车站 → 武汉光谷金盾酒店）
  - ✓ By Metro: Take Metro (Line 19, towards Xinyuexi Park Station direction) from Wuhan Railway Station, transfer to Line 11 (towards Jianganlu Station direction) at Guanggu 5th Road Station, and get off at Wuhan Sports University Station. Walk 1000 meters to the hotel.
    武汉站西广场站乘坐地铁19号线（往新月溪公园站方向），在光谷五路站下车，站内换乘11号线（往江安路方向），在武汉体育学院站下车，步行1000米到武汉光谷金盾酒店。
  - ✓ By Taxi: approximately 19 kilometers, takes about 27 minutes and costs around 40 RMB.
    全程约19公里，乘车约27分钟，费用约40元。

- **From Hankou Railway Station to Optics Valley Kingdom Plaza Hotel Wuhan**
  （汉口火车站 → 武汉光谷金盾酒店）
  - ✓ By Metro: Take Metro (Line 2, towards Fozuling Station direction) from Hankou Railway Station, transfer to Bus 702 (towards Luoyu East Road Youloukou Bus Station direction) at Guangbutun Station, and get off at Luoyu Road Wujiawan Bus Station. Walk 260 meters to the hotel.
    汉口火车站乘坐地铁2号线（往佛祖岭站方向），在广埠屯站下车，换乘702号公交（往珞喻东路油篓口方向），在珞喻路吴家湾站下车，步行260米到武汉光谷金盾酒店。
  - ✓ By Taxi: approximately 21 kilometers, takes about 45 minutes and costs around 35 RMB.
    全程约21公里，乘车约45分钟，费用约35元。

- **From Wuchang Railway Station to Optics Valley Kingdom Plaza Hotel Wuhan**
  （武昌火车站 → 武汉光谷金盾酒店）
  - ✓ By Metro: Take Metro (Line 11, towards Gediannanzhan Station direction) from Wuchang Railway Station, and get off at Wuhan Sports University Station. Walk 1000 meters to the hotel.
    武昌火车站乘坐地铁11号线（葛店南站方向），在武汉体育学院站下车，步行1000米到武汉光谷金盾酒店。
  - ✓ By Taxi: approximately 7.7 kilometers, takes about 19 minutes and costs around 15 RMB.
    全程约7.7公里，乘车约19分钟，费用约15元。

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