



## 9<sup>th</sup> International Conference on Micro and Nano Flows (MNF 2025)

Edinburgh, 3-5 September 2025

### Programme Schedule

**Venue:** Nucleus building, King's building campus,  
University of Edinburgh

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## Keynote Speakers

Prof. Christos N. Markides

Clean Energy Processes (CEP) Laboratory, *Imperial College London, UK*

Christos Markides is Professor of Clean Energy Technologies, Head of the Clean Energy Processes Laboratory, and Leader the Experimental Multiphase Flow Laboratory, which is the largest experimental space of its kind at Imperial College London. He is also, amongst other, Editor-in-Chief of journals Applied Thermal Engineering and AI-Thermal/Fluids. He specialises in applied thermodynamics, fluid flow and heat/mass transfer processes in highperformance devices, technologies and systems, with a specific interest in the development and application of advanced diagnostic techniques for the provision of detailed, spatiotemporally resolved information in turbulent, reacting and multiphase flows. He has published ~400 journal and >350 conference articles on these topics (h-index = 70). He has won multiple awards, including IMechE's 'Donald J. Groen' outstanding paper prize in 2016, IChemE's 'Global Award for Best Research Project' in 2018, and received Imperial College's President Awards for Research Excellence in 2018 and Teaching Excellence in 2017.



### **Title: Advanced measurements of interfacial reacting flows**

*Multiphase flows are commonly encountered in diverse applications. Of interest to us in this talk are two-phase, interfacial reacting flow systems where the production and accumulation of a solid phase can lead to severe operational challenges, and even complete flow blockage. To study these flows, we focus specifically on hydrate formation, where hydrates are inclusion compounds that form initially as thin solid films at the interface between two immiscible liquids, one of which is water.*

*Of importance in flows of interest are the thermodynamic conditions that create favourable drivers for hydrate formation at certain temperatures and pressures. However, beyond this, the hydrate formation process is accompanied by heat release due to its exothermic nature, and in cases where the flow transport processes have timescales of the order of the chemical kinetics, these processes can become coupled, leading to rich and complex phenomena.*

*In this talk, we will discuss recent efforts to develop and apply a range of advanced experimental techniques based on optical measurement principles in order to obtain high spatiotemporal resolution information on important scalar and vector fields in a target interfacial, reacting flow. We will discuss the challenges faced when attempting to perform such measurements, and proceed to present first-of-a-kind data on hydrates forming on the interfaces of sessile drops. We will close with an outlook on remaining opportunities and open questions that motivate further research in this field.*

Prof. Shoji Mori

*Kyushu University, Japan*

Shoji Mori is a professor of Mechanical Engineering at Kyushu University. He earned his Ph.D. from Kyushu University in 2003. After completing his doctoral studies, he began his academic career as a research associate in the Department of Chemical Engineering at Yokohama National University in 2004. In 2007, he was promoted to the position of associate professor in the same department.

In 2019, he joined the Department of Mechanical Engineering at Kyushu University as a professor. His current research interests primarily focus on the development of innovative thermal systems utilizing porous materials.



**Title: Performance Enhancement of Boiling and Water Electrolysis Using Controlled Porous Structures**

*Improving energy efficiency remains a key challenge in the pursuit of a sustainable society. Achieving this goal requires a deeper understanding of phase interface phenomena in energy conversion and transport, as well as the development of novel scientific and technological approaches through the design of high-functionality phase interfaces.*

*In this presentation, I will introduce recent work from our laboratory that explores the integration of phase change phenomena with porous materials to improve the performance of thermal systems. The main topics include the following: (1) Enhancing Critical Heat Flux (CHF) and Heat Transfer Coefficient (HTC) during pool boiling through the use of honeycomb porous plates; (2) Enhancing Critical Current Density (CCD) and reducing overpotential in water electrolysis by drawing analogies with boiling phenomena.*

*These studies aim to provide valuable insights for the development of future thermal technologies that contribute to both improved energy efficiency and sustainability.*



Dr. Mónica S. N. Oliveira

*Department of Mechanical & Aerospace Engineering, University of Strathclyde, UK*

Dr Oliveira is a Senior Lecturer in the Department of Mechanical & Aerospace Engineering at the University of Strathclyde. She holds a PhD in Chemical and Process Engineering from Heriot-Watt University (UK) and a first degree in Chemical Engineering from the University of Porto (Portugal). Following postdoctoral research at the Massachusetts Institute of Technology (USA), she returned to the University of Porto for a research position before joining Strathclyde in 2012. In 2024, Mónica was awarded a Chaires Paris-Sciences Invited Professorship at ESPCI in Paris.



Mónica currently serves on the Council of the British Society of Rheology and on the Executive Council of the European Society of Rheology. Her research focuses on non-Newtonian fluid mechanics and the rheology of complex fluids, often taking advantage of the unique conditions provided by microfluidic platforms. Mónica's work combines experiments, simulations, and theory to explore the dynamics and properties of flows involving nano- or micro-structures—including polymers, surfactants, and particle or active suspensions (e.g. red blood cells, microswimmers such as algae)—in a range of biophysical and technological processes.

**Title: Spatiotemporal distribution of red blood cells in microfluidic branching networks**

*Understanding the dynamics of red blood cells (RBCs) in microfluidic networks is key for optimizing microfluidic devices and developing novel strategies for diagnosis and treatment of blood-related diseases. In this talk we discuss the behaviour of RBC suspensions flowing through networks with successive bifurcations and/or bends, focusing on the spatiotemporal distribution of RBCs and the resulting impact on the cell-free layer close to the walls. Our findings highlight the importance of cell-free layer asymmetry cascading down a vascular network, leading to biased phase separation that deviates from established empirical predictions.*

Prof. Simone Mancin

*Department of Management and Engineering, University of Padova, Italy*

Simone Mancin is an Associate Professor at the Department of Management and Engineering of the University of Padova, Italy. He is also Visiting Prof. at the Dept. of Chemical Engineering of Brunel University London and member of the Centre for Energy Efficient and Sustainable Technologies of Brunel University London. His research mainly focuses on advanced materials, nano-depositions, nano-coatings, surface treatments, single- and two- phase heat transfer in enhanced surfaces and micro-geometries for electronic thermal management and air conditioning and refrigeration and phase change materials (PCMs) for advanced latent thermal energy storages. He is the author or co-author of about 250 papers, most published in the international scientific journals. He is associate editor of HEDH, Part C: Journal of Mechanical Engineering Science, Heat Transfer Research, Thermal Science and Engineering Progress, and Journal of Energy Storage and he is member of the Editorial Board of International Journal of Thermofluids and Energies.



**Title: Micro-roughness effects for innovative and efficient 3D printed heat exchangers**

*The additive manufacturing capabilities open new frontiers in the design of complex geometries in many different application fields, especially thermal science, in which multi-functional, efficient, compact components with internal cooling or heating channels are becoming more and more requested. Among the possible additive manufacturing technologies, the laser powder bed fusion process has recently been proven to manufacture high-conductivity metals, with good mechanical and thermal properties (i.e. pure copper and copper alloys), attracting the attention of the heat transfer community. However, depending on the material, design, and process parameters, the surface micro-roughness of the components can remarkably change and become a critical issue in cooling applications.*

*This talk analyses the effects of the surface roughness and micro-roughness of 3D printed channels on both heat transfer and fluid flow during either single and two phase flow trying to highlight the most important parameters to take into accounts when we want optimize heat exchangers to be manufactured by 3D metal printing for real applications and not just to become fancy paperweights.*

Prof. Panagiota Angeli

ThAMeS Multiphase, *Department of Chemical Engineering, University College London, UK*

Prof Panagiota Angeli, FIChemE, is a Professor in the Department of Chemical Engineering at UCL, Deputy Head ED&I, and leads the ThAMeS Multiphase group. She obtained a Diploma in Chemical Engineering from the National Technical University of Athens and a PhD on Multiphase Flows at Imperial College London. She specializes on complex multiphase flows particularly those involving two liquid phases and their application in microchemical systems. Her research aims to link small scale interactions and interfacial phenomena to the macroscopic behaviour of the complex flows and to the development of predictive models. She has been investigating the effects of surfactants, particles and non-Newtonian rheologies on two-phase microchannel flows, as well as their applications to the analysis and intensification of metal separations, and to the manufacturing of complex formulations. The experimental investigations have been enabled by original and advanced sensing and measurement techniques, such as micro- and high speed Particle Image Velocimetry (PIV) and ultrasound. Prof Angeli's work has been supported by substantial UK Research Council and European Union funding and by industry. She has been awarded a RAEng/Leverhulme Trust Fellowship and has participated and chaired UK EPSRC and international (Norway, Sweden, Ireland, Belgium) research funding review panels. She has published over 200 journal papers.



**Title: Droplet microfluidics for production of complex formulations**

*Dispersions/emulsions of two immiscible liquids find numerous applications in pharmaceutical and healthcare formulations, food and agrochemicals. In recent years, microchannels have been extensively used to produce emulsions with small drop sizes and narrow size distributions. Surfactants and colloidal particles are commonly added to vary the interfacial properties, control the drop size, stabilise the emulsions and influence the final product rheology. The small volumes of microfluidic channels allow the application of external forces to control droplet formation.*

*In the talk, I will discuss the flow patterns and dynamic phenomena occurring during drop formation and break up in microfluidic channels in the presence of surfactants and colloidal particles. Detailed measurements of interface evolution and flow fields, based on fluorescent imaging and high speed particle image velocimetry, will be used to understand the physics of droplet formation and to develop predictive models. Recent results on the application of external electrical fields to manipulate the drop formation patterns and on the development of microfluidics for the formulation of double emulsions will be shown.*



Prof. Guanyi Chen

Distinguished Professor of BioEnergy and Environment, *Tianjin University, China*

Prof. Chen has dedicated many years to the field of agricultural waste utilization for the production of biomass-derived gas and biogas, as well as the control of associated environmental pollution. He is an active member of the International Standard Organization (ISO/TC255), focusing on Safety and Environment Issues in biogas.

Prof. Chen has played a critical role in leading several major symposiums, serving as the Chairman of the 1st through 4th International Symposium on Biomass/Waste Energy and Environment in 2017, 2019, 2022, and 2023, and the 6th and 7th International Symposium on Gasification and Its Applications in 2018 and 2021, respectively. Since 2021, he has represented China as an expert in the IEA Bioenergy-Gasification task.



His editorial contributions are notable as well, being an associate editor for the journal Biomass & Bioenergy and a guest editor for various prestigious journals, including Science of the Total Environment, Fuel Processing Technology, and Energy & Fuels. Prof. Chen's exemplary work has earned him two second-place awards and one first-place award in National S&T progress. In 2022, he was honored with the prestigious Pandey Award by the International Bioprocessing Association (IBA).

#### **Title: Exploring Micro-Nanofluidic Reactions in Biomass Energy Conversion Processes**

*Micro-nanofluidic reactions refer to physi-chemical reactions happening in micro-nano scale channels and structures. In recent years, their potentials in promoting efficiency and effectiveness of biomass energy conversion have been widely explored. This presentation highlights their applications in four aspects, namely nanobubbles in anaerobic digestion, micro-nanofluidic interactions during hydrothermal conversion, the catalytic reforming of landfill leachate concentrate and the micro-nanofluidic effects on tar gasification during online transformation. By precisely controlling the flow rate, temperature, and pressure of reactants, micro-nanofluidic technology not only makes the reaction process more efficient but also allows for real-time monitoring and control, significantly enhancing the reliability and safety of the reactions. Future perspectives especially development of microfluidic reactors are also discussed, which features in compact size, simple structure, and ease of operation, demonstrating significant potential in biomass energy conversion. With the development of micro-nano technologies and the application of artificial intelligence and big data, microfluidic reactors are expected to play an increasingly important role in the fields of chemistry and environmental science, driving biomass energy conversion towards more efficient, environmentally friendly, and economical directions.*

DAY 0 - Tuesday 2, September 2025		
17:00-19:00	Reception and Welcome Cocktail	
DAY 1 - Wednesday 3, September 2025		
9:00-9:30	Registration/Opening	
9:30-10:15	Key Note 1 - Professor Christos N. Markides, Imperial College London, UK Title: <i>Advanced measurements of interfacial reacting flows</i> Chair: Prof. Khellil Sefiane Location: Larch Lecture Theatre	
10:15-10:45	Coffee Break	
10:45	<u>Micro &amp; Nano Flows Fundamentals 1</u> Chair: Dr. Nan Gao Larch Lecture Theatre  M001: Vibration-induced suppression of ice nucleation in water nanofilms by Pengxu Chen, Rohit Pillai, Saikat Datta	<u>Heat Transfer Applications at Micro &amp; Nanoscales</u> Chair: Dr. Rohit Pillai Elm Lecture Theatre  M019: Two-phase microfluidics droplet in Microsystems cooling by Wenpei Lu, Abdel Illah El Abed, Rachid Bennacer
	M002: Molecular insights into ice nucleation under acoustic excitation by Saikat Datta, Pengxu Chen, Rohit Pillai  M003: A novel numerical coupling strategy considering instantaneous local phase change at the porous interface during hypersonic transpiration cooling by Zeyi Chen, Guice Yao, Dongsheng Wen  M004: The effect of surfactants on the mechanical equilibrium of bulk nanobubbles by Duncan Dockar, Patrick Sullivan, Jacqueline Mifsud, Rohit Pillai, and Livio Gibelli  M005: Molecular Dynamics Study of the Effect of Concave Interfaces on the Shape and Stability of Nanobubble by Yusuke Jonosono, Shin-ichi Tsuda, Hiroki Nagashima Takashi Tokumasu  M006: Generation of Structure-dependent nanobubble in Multi-Nanoparticle Systems by Zhao Song, Yueming Yang, Jinhuan Pu, Dongsheng Wen	M020: Interfacial Thermal Resistance of Graphene-Water Interfaces: Role of Pressure by Thejas Hulikal Chakrapani, Rohit Pillai  M021: Multi-scale investigation of coupled fluid flow, thermal and heterogeneous chemical reactions in fibrous porous media during thermal oxidation by Jinyue Zhang, Jin Zhao Dongsheng Wen  M022: A Novel Lattice Boltzmann Model for Pore-scale Thermal Ablation of Porous Composites under High Temperature Vapor Flow by Jiahui Zhao, Guice Yao, Jin Zhao, Dongsheng Wen  M023: Harnessing Electrospun Nanofibers and Hydrodynamic Cavitation for Enhanced CO2 Sequestration by Rokhsareh Bakhtiari, Seyedreza Tebyani, Araz Sheibani Aghdam, Hongwei Wu, Morteza Ghorbani, Ali Koşar, Fevzi Çakmak Cebeci  M024: Pore-scale effect on phase-change heat transfer enhancement and drag reduction at the porous interface using CFD-PNM coupling method for transpiration cooling applications by Kaiyan Jin, Jin Zhao, Dongsheng Wen
11:00		
11:15		
11:30		
11:45		
12:00		
12:15-13:15	Lunch Break	

**DAY 1 - Wednesday 3, September 2025  
(Afternoon)**

13:15-14:00	<b>Key Note 2 - Professor Shoji Mori, Kyushu University, Japan</b> Title: <i>Performance Enhancement of Boiling and Water Electrolysis Using Controlled Porous Structures</i> Chair: Prof. Tassos Karayiannis Location: Larch Lecture Theatre		
	<u><b>Boiling &amp; Microlayers</b></u> Chair: <b>Dr Biao Shen</b> Larch Lecture Theatre	<u><b>Mathematical and Computational Approaches</b></u> Chair: <b>Dr Panos E. Theodorakis</b> Elm Lecture Theatre	<u><b>Special Session: Complex Fluids Rheology</b></u> Chair: <b>Prof. Monica Oliveira</b> Larch Yew Theatre
14:00	<b>M007: Development of Efficient Dynamic Modelling Framework for Boiling Heat Transfer</b> by Biao Shen, Masahiro Iwai, Akiko Kaneko	<b>M025: Thermocapillary Flow and Combining of Two Bubbles Under Varying Temperature Gradients</b> by Yousuf Alhendal	<b>M035: Flows of shear-thickening fluids</b> by Philippe Bourrianne
14:15	<b>M008: A Methodology for Generalising Impact of Microlayer on Nucleate Boiling Heat and Mass Transfer</b> by Mitchell S. Whiting, Ilya T'Jollyn	<b>M026: Numerical analysis of thermal energy recovery from photovoltaic panels by thin liquid films</b> by Boris Balakin, Moritz Beckedahl, Jon-Thøger Gjøvåg Hagen	
14:30	<b>M009: OpenFOAM simulation of microlayer structure beneath an isolated bubble in nucleate boiling</b> by Zhanpeng Zhang, Biao Shen, Akiko Kaneko	<b>M027: Combined Experimental and Numerical Investigation of Taylor Flow in a Microfluidic Channel using SPH and Micro-PIV Techniques</b> by Chiya Savari, Jason Stafford	<b>M036: Nonlinear Three-Dimensional Electrohydrodynamic Interactions of Viscous Dielectric Drops</b> by Michael A. McDougall, Stephen K. Wilson, Debasish Das
14:45	<b>M010: Interfacial thermal resistance during boiling: insights from Isobaric molecular simulations</b> by Avik Saha, Omar Matar	<b>M028: Many-Body Dissipative Particle Dynamics of Micro and Nano Scale Flows</b> by Luis H. Carnevale, King L. Ng, Piotr Deuar, Zhizhao Che, Micha I Klamka, Tomasz Bobinski, Panagiotis E. Theodorakis	
15:00	<b>M011: Micro-bubbles growing within micro-seconds in flow boiling are predictable</b> by Herman D. Haustein	<b>M029: Universality of Energy Barrier of Homogeneous Bubble Nucleation in Cryogenic Fluids</b> by Takanori Mori, Hiroki Nagashma, Takashi Tokumasu, Satoshi Watanabe, Shinichi Tsuda	<b>M102: Machine Learning for Viscoelastic Fluid Modelling: Training and Microfluidic Simulations</b> by J. L. Cummings, C. Fernandes, K. Zografos, F. Dong, M.A. Alves, M.S.N. Oliveira
15:15	<b>M012: Thermal Performance and Pressure Fluctuations of Low Concentration Butanol/Water Mixture in a Rectangular Microchannel</b> by Arif Widyatama, Mandi Venter, Daniel Orejon, Jaco Dirker, Khellil Sefiane	<b>M030: HPnets: Physics-informed neural networks for forward and inverse modeling in heterogeneous porous medium flows</b> by Haoyun Xing, Dongsheng Wen	
15:30-16:00	Coffee Break		

**DAY 1 - Wednesday 3, September 2025  
(Evening)**

	<b><u>Boiling &amp; Condensation</u></b> <i>Chair: Prof. Prashant Valluri</i> <i>Larch Lecture Theatre</i>	<b><u>Special Session: Advances in Microscale Biological Flows</u></b> <i>Chair: Prof. Efstathios Kaliviotis</i> <i>Elm Lecture Theatre</i>
16:00	<b>M013: Effect of liquid height on critical heat flux in low-pressure pool boiling for Novec 7100</b> by Zhihao Chen, Jiatong Yu, Yoshio Utaka	<b>M031: Microhemodynamics of testosterone treated Red Blood Cells RBCs</b> by Anastasios Koulogiannis, Carola König, Sudarshan Ramachandran, Stavroula Balabani  <b>M032: Modeling microscale blood flow, influenced by the shear-induced migration of deformable cells</b> by Panagiota A. Polykarpou, Efstathios Kaliviotis, Pavlos S. Stephanou
16:15	<b>M014: Dimensional Modes of Bubble Formation during Photothermal Boiling in Carbon Nanofluids through Acoustic Signal Analysis</b> by Adam McElligott, Boris Balakin	
16:30	<b>M015: Machine Learning Study of Bubble Nucleation and Dynamics on a Boiling Surface based on Lattice Boltzmann Method</b> by Jiajun Wang, Biao Shen, Akiko Kaneko	
16:45	<b>M016: Flow condensation and adiabatic pressure drop of propane/CO2 blend in a microchannel</b> by Michał Pysz, Simone Seresin, Nicolò Mattiuzzo, Marco Azzolin	
17:00	<b>M017: Heat Transfer through a Condensate Droplet during Dropwise Condensation in the Presence of Non-Condensable Gases</b> by Harsh Shrivastava, Nirbhay Kumar, Chayan Das, Abhijit Raha, Saurabh Khatri, Soumyadip Sett	<b>M033: Passive microfluidic applications for blood characterization and diagnostics</b> by M. Louka, D. Pasias, A. Passos and E. Kaliviotis  <b>M034: Numerical simulation of capillary-driven flow in a microchannel</b> by Ioannis Bagkeris, Alexandros Syrakos, Georgios C. Georgiou
17:15	<b>M018: Dropwise Condensation Tune via Silicone Oil Grafting</b> by Anam Abbas, Zafar Iqbal, Gary G. Wells, Glen McHale, Khellil Sefiane, Daniel Orejon	

## DAY 2 - Thursday 4, September 2025

9:00-9:45	<b>Key Note 3 - Professor Monica Oliveira</b> , Strathclyde University, UK Title: <b>Spatiotemporal distribution of red blood cells in microfluidic branching networks</b> Chair: Prof. Yasuyuki Takata Location: Larch Lecture Theatre	
	<b><u>Bio Medical Flows</u></b> Chair: <b>Prof. Pangiota Angeli</b> Larch Lecture Theatre	<b><u>Special Session: Rising Stars Droplets at Interfaces</u></b> Chair: <b>Dr. Daniel Orejon</b> Elm Lecture Theatre
9:45	<b>M037: Visualization of Venous Thrombus Formation and Mass Transport in Microchannel Flow</b> by Kazuya Tatsumi, Hideo Hirakata, Naoko Sugita	
10:00	<del><b>M038: Trauma mimicking conditions differentially modulate haemostatic plug formation in a T junction microfluidic model using ECFCs expressing wild type or mutant thrombomodulin</b></del> by Jorice Abu Hanna, Anastasios Koulogiannis, Gaol Morrow, Stavroula Balabani and Nicola Curry <b>Withdrawn</b>	<b>M096: Hot liquid marbles</b> by Pritam Kumar Roy, Yui Takai, Rui Matsubara, Mizuki Tenjimbayashi, Timothée Mouterde
10:15	<b>M101: Shear-induced separation of circulating tumour cells in liquid biopsies</b> by Benjamin Owen, Roslyn Hay, Chiara Ghera, Jian Zhou, Ian Papautsky, Timm Kruger	
10:30	<b>M040: A Portable Lab-on-a-Disc Platform for Integrated Extraction and LAMP-Based Amplification of HBV-DNA in Plasma Samples</b> by Ünal Akar, Esra Ağel, Ali Koşar	<b>M097: Self-cleaning mechanisms: Modelling how drops capture particles on flat surfaces</b> by Abhinav Naga, Franziska Sabbath, Doris Vollmer, Halim Kusumaatmaja
10:45	<b>M041: An Integrated Microfluidic Platform for Point-of-Care Detection of High-Risk HPV16 and HPV18 in Resource Limited Environments</b> by Natish Kumar, Ravi Kumar Arun	<b>M098: Sliding or Rolling of Walking Micro Drops? An Open Question</b> by Khodayar Javadi, Salar Heyat Davoudian, and Ali Kosar
11:00	<b>M042: Experimental characterization of the flow inside small endodontic cavities during ultrasonic activation</b> by Anastasios Koulogiannis, Pangiota Angeli, Stavroula Balabani	<b>M099: Investigating Advancing Contact Lines for Microdroplets on Circular Micropillared Surfaces</b> by Janice To, Khellil Sefiane, Rodrigo Ledesma-Aguilar, Daniel Orejon
11:15-11:45	<b>Coffee Break</b>	
	<b><u>Micro &amp; Nano Flows Fundamentals 2</u></b> Chair: <b>Dr Timothée Mouterde</b> Larch Lecture Theatre	<b><u>Micro Nano Fluids Droplets</u></b> Chair: <b>Dr John Christy</b> Elm Lecture Theatre
11:45	<b>M043: Surface Charge regulation in hBN nanochannels</b> by Mei Liu, Takashi Taniguchi, Kenji Watanabe, Timothée Mouterde	<b>M055: The evolution of levitated annular droplet clusters induced by laser spot heating</b> by Xin Yan, Jinliang Xu, Guanglin Liu, Hongbiao Wang
12:00	<del><b>M044: Bipolar and Unipolar Surface Charging by Evaporating Water Droplets</b></del> by Nitish Singh, Aaron Ratschow, Nabeel Aslam, Dan Daniel <b>Withdrawn</b>	<b>M056: The Effects of Oscillation on the Mobility of Wind Driven Sessile Droplets</b> by Zichen Zhang, Guiping Lin, Xueqin Bu
12:15	<b>M045: Characteristics of ethanol natural evaporation in capillary tubes with multiple environmental conditions</b> by Zhuorui Li, Bin Liu, Yuqi Ji, Guangxu Li, Yali Guo	<b>M057: Inertial and Dynamic Wetting Effects on Droplet Mobilization in Shear-Driven Micro Gas Flows</b> by Zichen Zhang, Aoyu Zhang, Tongtong Qi, Xiaoyan Ma



## DAY 2 - Thursday 4, September 2025

	<b><u>Micro &amp; Nano Flows Fundamentals 2 (contd...)</u></b> Chair: <b>Dr. Timothée Mousterde</b> Larch Lecture Theatre	<b><u>Micro Nano Fluids Droplets (contd...)</u></b> Chair: <b>Dr. John Christy</b> Elm Lecture Theatre
12:30	<b>M046: Effect of Hydrophilic Nanofiber Alignment on Precursor Film Propagation</b> by Masumi Misaka, Hideaki Teshima, Qin-Yi Li, Koji Takahashi	<b>M058: Vaporization and boiling regimes of isopropyl alcohol and water droplets on heated bronze surfaces under reduced pressure</b> by Wiktoria Lada-Kasznia, Tomasz Hałon, Bartosz Zajączkowski
12:45	<b>M047: Double emulsion formation in flow-focusing microchannels</b> by Chen Tang, Teng Dong, Loïc Chagot, Panagiota Angeli	<b>M059: Effect of impact velocity and droplet spreading on low pressure evaporation of isopropyl alcohol and water</b> by Wiktoria Lada-Kasznia, Tomasz Hałon, Bartosz Zajączkowski
13:00	<b>M048: Space Experimental Investigation of Nanofluids Droplet Evaporation on China Space Station</b> by Qiu-Sheng Liu, Qi-Shengg Chen, Yu Zhang, Yi Qin, Ying-Yi Liu, Dong Guo	<b>M060: Influence of Thermal History on Wettability and the Leidenfrost Phenomenon</b> by Yutaku Kita, Kensuke Kida, Takaaki Ariyoshi, Sumitomo Hidaka, Masamichi Kohno, Yasuyuki Takata
13:15-14:00	<b>Lunch Break</b>	
14:00-14:45	<b>Key Note 4 - Professor Simone Mancin, University of Padova, Italy</b> Title: <b>Micro-roughness effects for innovative and efficient 3D printed heat exchangers</b> Chair: Prof. Ali Kosar Location: Larch Lecture Theatre	
	<b><u>Micro &amp; Nano Engineered Surfaces</u></b> Chair: <b>Dr. Marilize Everts</b> Larch Lecture Theatre	<b><u>Special Session: Wetting Bio Smart 1</u></b> Chair: <b>Prof. Halim Kusumaatmaja</b> Elm Lecture Theatre
14:45	<b>M049: Experiments on Flow Boiling in a Micro-Pin Fin Heat Sink</b> by Ali Al-Zaidi, Tassos G. Karayiannis	<b>M065: Computational Fluidics</b> by Roi Almog, Bat-El Pinchasik  <b>M089: 3D Bubble and Foam Absorbers: Designing Membrane-Free Electrolyzer Cells</b> by William S. Y. Wong
15:00	<b>M050: Laser-Textured Superbiphilic Aluminum Surfaces: Fabrication, Wettability Evolution, and Potential for Flow Boiling Enhancement</b> by Abdi Anchala, Monica Oliveira, Rodrigo Santos, Nuno Ferreira, Hongwei Wu	
15:15	<b>M051: Single Bubble Dynamics for Micro-Engineered Surfaces</b> by Marilize Everts, Matthias Welzl, Siqing Ye, Dieter Bruggemann	
15:30	<b>M052: Spray Cooling Characteristics of Steel Plate with Periodic Micropillar Structures Surface</b> by Masamichi Kohno, Takaaki Ariyoshi, Yutaku Kita, Haruya Sugaya, Yasuyuki Takata, Hiroyuki Fukuda	
15:45	<b>M053: Leidenfrost Phenomenon of Nanodroplets on Rough Surfaces with Varying Wettability</b> by Guangxu Li, Zhuorui Li, Bin Liu	<b>M088: Drop dynamics on Slippery Liquid Infused Surfaces</b> by Ciro Sempredon, Hossein Abdolnezhad, Martin Brinkmann
16:00	<b>M054: Superhydrophilic Graphene Oxide Copper Foam Solar Evaporator for Enhanced Water and Vapor Transport</b> by Fengyong Lv, Jie Miao, Zhongyu Wang, Jing Hu, Daniel Orejon	<b>M063: Numerical simulations of wetting on biomembranes</b> by Timo Höllein, Sebastian Aland

DAY 2 - Thursday 4, September 2025 (Evening)	
16:15-17:30	Break & Poster Session – Nucleus 1 <sup>st</sup> Floor
17:45-18:45	Break/Labs Visits – Please be on the Ground Floor after the Poster Session
19:00-22:00	Gala Dinner

Poster List	
16:30-18:00	<b>P01: Sustainable Synthesis of Micro and Nanoparticles in Droplet Micro-Reactors</b> <i>by Ahlam Al Hadhrami, Antonios Anastasiou</i>
	<b>P02: Automated Sand Cleaner Machine</b> <i>by Owais Alhendal, Fatemah Alhendal</i>
	<b>P03: Study of the Hydrodynamic Characteristics of a Falling Liquid Film in an Open Vertical Microchannel</b> <i>by Ibtehal Al Houqni, Maria Perez-Page, Antonios Anastasiou</i>
	<b>P04: Numerical analysis of flow and heat transfer characteristics in micro ribbed channels</b> <i>by Jinqi Jia, Xubin Lei, Mingkun Shao, Jinliang Xu, Guanglin Liu, Xin Yan</i>
	<b>P05: Experimental Investigation of two-phase flow and drop evaporation aboard the two-phase system experiment rack of China Space Station</b> <i>by Qiu-Sheng Liu, Jing-Chang Xie, Jing Xue, Yue-Qun Tao, Qi-Shengg Chen, Yu-Feng He, Dong Guo, GuoNing Liu</i>
	<b>P06: Experimental Evaluation of Surface Roughness Effects on Pool Boiling Heat Transfer and Critical Heat Flux</b> <i>by Jasper Nonneman, Camille De Rijcke, Jana Rogiers, Michel De Paepe, Ilya T'Jollyn</i>
	<b>P07: Investigation of Vapor Bubble Dynamics on Transparent Heated Surfaces with Varied Wettability during Droplet Impact</b> <i>by Tabin M Thomas, Huihan Yang, Prashant Valluri, Khellil Sefiane</i>
	<b>P08: Marangoni-Induced Microlayer Dynamics in Binary Mixtures During Pool Boiling</b> <i>by Ningxi Zhang, Dani Orejon, Jionghui Liu, Khellil Sefiane</i>
	<b>P09: Effect of microchannel aspect ratio on flow boiling heat transfer</b> <i>by Zheng Zhang, Guanmin Zhang, Shuaijie Ding, Maocheng Tian</i>
	<b>P10: Shape Optimization of Cavity-Based Microfluidic Rare Cell Separation Device</b> <i>by Panagiotis Skaltsounis, George Kokkoris, Angeliki Tserepi</i>

DAY 3 - Friday 5, September 2025		
9:00-9:45	<b>Key Note 5 - Professor Panagiota Angeli, UCL, London, UK</b> Title: <b>Droplet microfluidics for production of complex formulations</b> Chair: Prof. Christos Markides Location: Larch Lecture Theatre	
	<b><u>Experimental Approaches</u></b> Chair: <b>Dr. Yutaku Kita</b> Larch Lecture Theatre	<b><u>Special Session: Active Matter</u></b> Chair: <b>Prof. Jeffrey L. Moran</b> Elm Lecture Theatre
9:45	<b>M067: A Visualization Technique for Assessing Microchannel Deformation</b> by Ezgi Kestek, İsmail Bütün, Rabia Mercimek, Morteza Ghorbani, Ali Koşar <b>M068: Nanoscale Visualization of Multiphase Transport in Confined Geometries: A STED-Enhanced Nanofluidic Study at Subsurface Conditions</b> by Haowei Lu, Peixue Jiang, Ruina Xu	<b>M085: Biological flows inside cells</b> by Eric Lauga
10:00		
10:15	<b>M069: Simultaneous 2c-PLIF and <math>\mu</math>PIV Measurements of Droplets Impingement on Micro/nanostructured Spray Cooling Enhanced Surface</b> by Xun Zhu, Shiyi Jiang, Ruina Xu, Peixue Jiang	<b>M087: Toward Active Thermofluidics: Harnessing Microbial Motility for Mass and Heat Transfer Across Scales</b> by Anupam Sengupta
10:30	<b>M070: Silicon Microfluidics Platform with Electrified Channel Walls for Chemical and Electrochemical Applications</b> by Adrianna Elżbieta Frąckowiak, Katja-Sophia Csizi, Robert Dean Lovchik, Diego Monserrat Lopez, Marcel Mayor and Emanuel Lörtcher <b>M071: Solving Sedimentation in Syringe-Driven Systems: Passive and Active Approaches</b> by Maryamsadat Ghoreishi, Zita Salajková, Chiara Scognamiglio, Giovanna Peruzzi, Lucia Iafrate, Giancarlo Ruocco, Gianluca Cidonio, Marco Leonetti, and Riccardo Reale	<b>M086: Active Heat Transfer Fluids: Enhancement of Convective Heat Transfer by Self-Propelled Microparticles</b> by Jacob B. Velazquez, Jeffrey L. Moran
10:45		
11:00	<b>M072: A new concept of a flat plate solar collector using photothermal liquid films</b> by Jon Thøger Gjøvåg Hagen, Adam McElligott, Boris Balakin	
11:15-11:45	<b>Coffee Break</b>	
	<b><u>Nanofluids and Applications</u></b> Chair: <b>Prof. Javier Navas</b> Larch Lecture Theatre	<b><u>Special Session: Wetting Bio Smart 2</u></b> Chair: <b>Dr. Abhinav Naga</b> Elm Lecture Theatre
11:45	<b>M073: Highly stable nanofluids based on a linear silicone fluid</b> by Juan Jesús Gallardo, Rodrigo Alcantara, Violeta Guillén-Dominguez, Ivan Carrillo Berdugo, Desirée de los Santos, Javier Navas	<b>M062: Droplet Impact and Spreading on Doubly Re-entrant Pillars</b> by Navdeep Singh, Thanaphun Jitniyom, Miguel Navarro-Cia, and Nan Gao
12:00	<b>M074: Thermohydraulic performance of micro-porous heat sink cooled with MXene-based nanofluid</b> by Adeel Arshad, Muhammad Imran	
12:15	<b>M075: How surface inclination affects the evaporation process and deposition mechanism in colloidal drops</b> by Anna Kalogirou, Mark Blyth, Alexandros Askounis	<b>M066: Bioinspired Superhydrophobic Sand Mulch for Improving Irrigation Efficiency in Desert Agriculture</b> by Muhammad Subkhi Sadullah, Amr Al-Zubi, and Himanshu Mishra
12:30	<b>M076: Improvement of Thermal Efficiency in PCM-Metal Foam Thermal Energy Storage Through MgO-Al<sub>2</sub>O<sub>3</sub> Hybrid Nanofluids</b> by Hurmat Khan, Huseyin Kaya, Ihsan Ur Rahman, Abdul Qadeer Khoso, Atiq Ur Rehman Fareedi, Bernardo Buonomo, Oronzio Manca, Sergio Nardini	
12:45	<b>M077: MD Study of Excess Heat Capacity in Nanofluids</b> by Iván Carrillo-Berdugo, Ricardo Grau-Crespo, Javier Navas <b>M078: Numerical Analysis of Liquid Cooling in Lithium-Based Batteries Incorporating Nano-enhanced Phase Change Materials and Metal foam</b> by Aanandsundar Arumugam, Bernardo Buonomo, Sergio Nardini, Oronzio Manca	<b>M064: Liquid Diodes with Increasing Complexity</b> by Aviv Littman, Bat-El Pinchasik <b>M061: Visualising energy dissipation on superhydrophobic surfaces</b> by Aqib Asif, Abhinav Naga, Michael Rennick, Glen McHale, Halim Kusumaatmaja
13:00		

13:15:14:00	Lunch Break	
DAY 3 - Friday 5, September 2025		
14:00-14:45	<b>Key Note 6 - Professor Guanyi Chen (Fawei Lin), Tianjin University, China</b> Title: <b>Exploring Micro-Nanofluidic Reactions in Biomass Energy Conversion Processes</b> Chair: Prof. Masashimi Kohno Location: Larch Lecture Theatre	
14:45	Break	
	<b><u>Single Phase Heat Transfer in Microsystems, Heat Exchangers and Reactors</u></b> Chair: <b>Dr. Alexandros Askounis</b> Larch Lecture Theatre	<b><u>Pumps &amp; Other Devices</u></b> Chair: <b>Prof. Anupam Sengupta</b> Elm Lecture Theatre
14:45	<del><b>M079: Heat Recovery from Grey Water Drains with a Compact Multi Tube Heat Exchanger: Balancing Heat Recovery Rate and Pumping Power</b> by Samer Ali, Jalal Faraj, Georges EL Achkar, Rani Taher, Mahmoud Khaled</del> <b>Withdrawn</b>	<del><b>M091: Additively manufactured single stage Knudsen pump</b> by Franz Schweizer, Klaus Bader, Lucien Baldas, Samuel Bergdolt, Jürgen Brandner, Stéphane Colin, Celine Deutschbein, Stefan Hongsbach, Jan G. Korvink, Marcos Rojas-Cardenas</del> <b>Given on 3<sup>rd</sup> of September</b>
15:00	<b>M080: Numerical Investigation of Thermal Performance Enhancement in Bioinspired Shark-Skin Finned Microchannel Heat Sinks</b> by Ge Gao, Guangze Li, Yuhui Wang, Liuiyong Chang, Longfei Chen	<b>M093: Design and modelling of a Knudsen micropump for integration in a Pulsed tube Cryo-cooler</b> by Thanasis Basdanis, Phassawat Leelaburanathanakul, Thierry Camps, Marcos Rojas-Cardenas, Christine Barrot, Lucien Baldas, Jürgen J. Brandner, Stéphane Colin
15:15	<b>M081: Performance Evaluation of Finned Tube Heat Exchangers for Indirect Evaporative Cooling</b> by Talha Bin Nadeem, Muhammad Imran, Adeel Arshad, Emad Tandis	<b>M092: Fabrication of a Knudsen micropump for integration in a Pulsed tube Cryocooler</b> by Phassawat Leelaburanathanakul, Thanasis Basdanis, Thierry Camps, Marcos Rojas-Cardenas, Christine Barrot, Lucien Baldas, Jürgen J. Bradner, Stéphane Colin
15:30	<b>M082: Performance enhancement of a concentric annular heat exchanger with isothermal blocks</b> by Sara Touzani, Yousuf Alhendal, Abdelkhalek Cheddadi, Mohammed Touhami Ouazzani	<b>M094: Microfluidic battery for sub-freezing conditions</b> by Shafali Thakur, Sunny Kumar, Ravi Kumar Arun
15:45	<b>M083: Comparative MD Study of Force Field Performance for Fatty Acid-Based Phase Change Materials</b> by Yunes Salman, Ivan Carrillo-Berdugo, Javier Navas	<b>M095: Low-Temperature Characteristics of Mushrooms: Mechanisms and Experimental Analysis</b> by Xinru Niu, Bin Liu
16:00	<b>M084: Numerical Simulation of Microscale Heat Transfer in Rarefied Polyatomic Gases</b> by Ankit Farkya, Anil Kumar, Anirudh Singh Rana	
16:15-16:30	Coffee Break	
16:30:17:00	Concluding Remarks	