ICTAM 2024
THE 26TH INTERNATIONAL CONGRESS OF THEORETICAL AND APPLIED MECHANICS

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THE 26TH INTERNATIONAL CONGRESS OF
THEORETICAL AND APPLIED MECHANICS

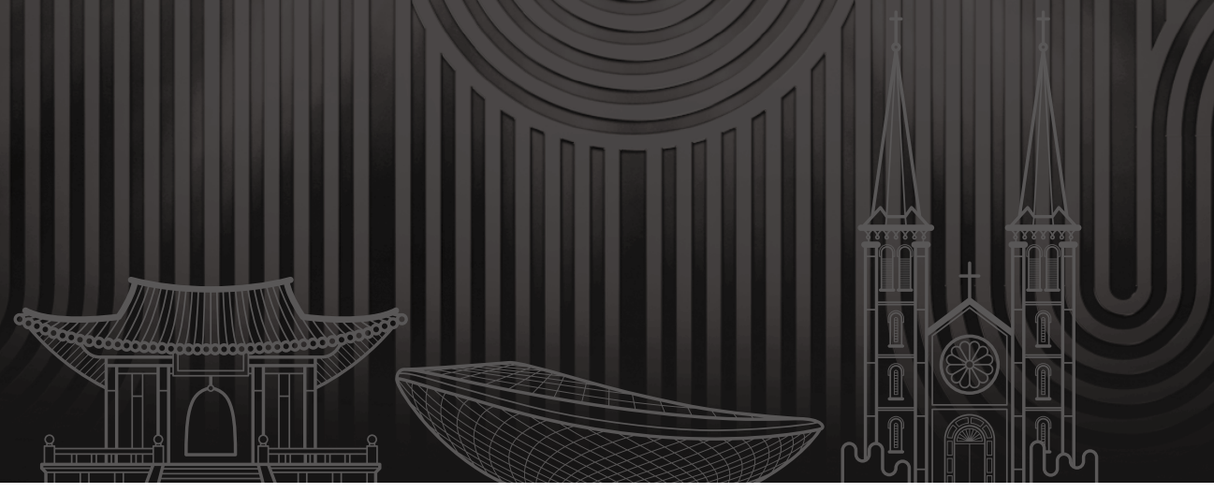
ICTAM

2024 DAEGU, KOREA

25SUN – 30FRI AUGUST 2024

THE 100TH ANNIVERSARY OF ICTAM

Program Book



ORGANIZER The Korean Society of Mechanical Engineers KCTAM HOST IUTAM International Union of Theoretical and Applied Mechanics

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Contents

Congress Mobile Page

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ICTAM Overview & History

The 26th International Congress of Theoretical and Applied Mechanics

Overview

Name	The 26th International Congress of Theoretical and Applied Mechanics (ICTAM 2024)
Date	August 25 ~ 30, 2024
Venue	EXCO, Daegu, Korea
Host	IUTAM International Union of Theoretical and Applied Mechanics
Organizer	KSME The Korean Society of Mechanical Engineers, KCTAM
Sponsors	DAEGU METROPOLITAN CITY, KOREA TOURISM ORGANIZATION, EXCO

ICTAM History

Number	Year	Place	Congress President
26th	2024	Daegu, Korea, Republic of	H.D. Kim
25th	2021	Milano, Italy (virtual event)	A. Corigliano
24th	2016	Montreal, Canada	J.M. Floryan
23rd	2012	Beijing, China	Y. Bai
22nd	2008	Adelaide, Australia	E. O. Tuck
21st	2004	Warsaw, Poland	W. Gutkowski
20th	2000	Chicago, USA	H. Aref
19th	1996	Kyoto, Japan	T. Tatsumi
18th	1992	Haifa, Israel	J. Singer
17th	1988	Grenoble, France	P. Germain and M. Piau
16th	1984	Lyngby, Denmark	F. I. Niordson
15th	1980	Toronto, Canada	F. P. J. Rimrott
14th	1976	Delft, The Netherlands	W. T. Koiter
13th	1972	Moscow, USSR	N. I. Muskhelishvili
12th	1968	Stanford, USA	N. J. Hoff
11th	1964	Munich, Germany	H. Görtler
10th	1960	Stresa, Italy	G. Colonnetti
9th	1956	Brussels, Belgium	F. H. van den Dungen
8th	1952	Istanbul, Turkey	K. Erim
7th	1948	London, United Kingdom	R. V. Southwell
6th	1946	Paris, France	H. Villat
5th	1938	Cambridge, USA	K. T. Compton
4th	1934	Cambridge, United Kingdom	C. E. Inglis
3rd	1930	Stockholm, Sweden	A. F. Enström
2nd	1926	Zürich, Switzerland	E. Meissner
1st	1924	Delft, The Netherlands	C. B. Biezeno

ICTAM 2024 President

Heuy Dong Kim
President of ICTAM 2024

Dear Colleagues, Friends and TAM Researchers

Greetings from the President of ICTAM 2024.

It feels like just yesterday when, in the summer of 2019, I received an email from the IUTAM Secretary General. Along with some colleagues of mine, we decided to make an effort to host the 24th ICTAM in 2024.

As you all know, 2020 was marked by the unexpected outbreak of COVID-19, which prevented us from holding the 23rd ICTAM initially planned to take place in Milan, Italy. I can even vividly remember presenting our proposal to host the 24th ICTAM virtually, an unprecedented approach in our history.

The 24th International Congress of Theoretical and Applied Mechanics (ICTAM2024) is a historic and monumental event, as it marks the 100th anniversary of our founding. Over the past century, ICTAM has made significant contributions to industrial and engineering advancements. With immense respect and gratitude to our predecessors who have passed down such a brilliant tradition and history, I am eagerly looking forward to celebrating the 100th anniversary of ICTAM 2024 with you in Daegu at the end of August 2024.

The ICTAM 2024 team has worked tirelessly with the support and encouragement of numerous Mechanics researchers from around the world to ensure the successful hosting of this prestigious event. ICTAM 2024 will feature 4 Plenary Lectures, 16 Sectional Lectures, 8 Mini Symposia, and 45 Thematic Sessions, providing a substantial technical program with approximately 2,200 papers to be presented during the congress.

In addition to the paper presentations, we have prepared a variety of special events to celebrate the 100th anniversary at the Welcome Reception and Congress Banquet, as well as several cultural tour courses. I would like to take this opportunity to thank the Secretary General of ICTAM 2024, the organizing committee members, the IUTAM President, and all IUTAM colleagues for their dedication in preparing for this event.

At the end of August, the weather in Daegu is expected to be pleasant, with temperatures ranging from 25 to 28 degrees Celsius, as the summer heat will have subsided. Various local festivals are planned in Daegu during this time, providing a great opportunity for participants to enjoy both traditional and modern Korean culture.

Daegu, the host city for ICTAM 2024, is South Korea's third-largest city with a population of 2.5 million, known for its educational and commercial significance. Daegu boasts excellent transportation facilities, affordable accommodation, and is a very safe and convenient city. The citizens of Daegu are known for their hospitality and are well-prepared to warmly welcome all ICTAM 2024 participants.

Moreover, the ICTAM 2024 team is committed to providing a highly beneficial academic program as well as ensuring that all attendees have a comfortable and enjoyable time in Daegu. We look forward to welcoming you all at the end of August in Daegu.

Sincerely yours,

President of ICTAM 2024

IUTAM President

Norman A. Fleck
President of IUTAM

Dear Delegate of ICTAM 2024,

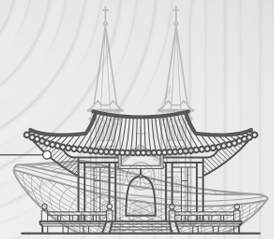
Welcome to the centennial anniversary of ICTAM. This congress is the Olympics of Mechanics, and, like the Olympics, it meets every 4 years and brings together the leading international scientists and engineers in our field. Our aim is to present, discourse and learn from each other, and enjoy the cultural setting of beautiful Daegu. Please do make full use of the opportunity to meet with both old and new friends and to help stimulate another 100 years of Mechanics.

I am very grateful for the tireless efforts by the local organizers (led by ICTAM 2024 President Heuy Dong Kim, ICTAM Secretary-General Simon Song and Prof. Sanjay Mittal Secretary of the IUTAM Congress Committee) in making this event a reality. They have done such a great job! So, welcome to this landmark event in Mechanics. Welcome to Daegu, South Korea.

Norman A. Fleck, President of IUTAM

Memo

Organizations



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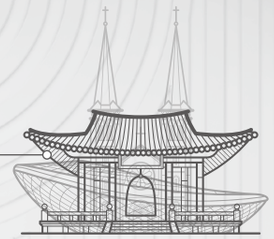

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A project to develop the site after the relocation of military units in Daegu Metropolitan City
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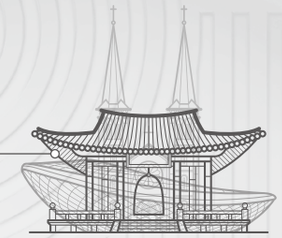

THE 26TH INTERNATIONAL CONGRESS OF THEORETICAL AND APPLIED MECHANICS

ICTAM 2024
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Plenary Lectures

Opening Lecture

August 26 Mon 09:00 ~ 10:00 — **Convention Hall, 5F, EXCO**

Dist. Prof. **Yoon Young Kim**
Sookmyung Women's University, Korea, Republic of

Biography

≫ B.S. (1981) and M.S. (1983), Seoul National University. Ph.D. (1989), Stanford University

≫ Assistant to Distinguished Professor (1991~), Seoul National University

≫ President (2016), Korean Society of Mechanical Engineers

≫ President (2018-2020), Asian Society of Struct. Multi. Optimization

≫ Vice-President (2015~2019), Int. Society of Struct. Multi. Optimization

≫ Co-Chair (2016), 12th World Congress on Computational Mechanics

≫ Fellow/Member (2019~), Korean Academy of Science and Technology and Engineering & National Academy of Engineering, Korea

≫ ASME (American Society of Mechanical Engineers) Rayleigh Lecture Award (2023)

≫ JSCES (Japan Society for Computational Engineering and Science) Grand Prize (2022)

≫ National Medal of Honor in Science and Technology (2021)

≫ The Mechanical Engineer of the Year (2019)

Abstract Summary

EXOTIC ANISOTROPIC METAMATERIALS FOR NOVEL MANIPULATION OF ELASTIC WAVES

Elastic waves are critically used for non-destructive evaluations in industrial and medical fields. Because the wave field is multimodal, involving coupled longitudinal and transverse wave modes, manipulating elastic waves for specific new applications is very challenging. Here, we show that elastic waves can be manipulated unprecedentedly if engineered materials of exotic anisotropy, not found in natural materials, are elaborately used. We present the principle to "design" exotic anisotropy for wave manipulation, actual fabrication through single-phase metamaterials, and their unique applications.

Closing Lecture

August 30 Fri 14:00 ~ 15:00 — **Convention Hall, 5F, EXCO**

Prof. **Gareth H. McKinley**
Massachusetts Institute of Technology, USA

Biography

Gareth H. McKinley FRS is the School of Engineering Professor of Teaching Innovation and former Associate Head and Interim Head of the Department of Mechanical Engineering at MIT. His research interests include extensional rheometry, microfluidic rheometry and non-Newtonian fluid dynamics. He is the author of over 370 technical publications and has won the Publication Award of the Society of Rheology twice (2007; 2022) as well as the 2021 Walters Award from J. Non-Newtonian Fluid Mechanics. He was awarded the Bingham Medal of The Society of Rheology in 2013, the Gold Medal from the British Society of Rheology in 2014 and the G.I.Taylor Medal from the Society for Engineering Science (SES) in 2022. In 2019 he was elected to the National Academy of Engineering and also inducted as a Fellow of the Royal Society of London. He was awarded an honorary doctorate from KU Leuven in 2023, and in 2024 was elected as a corresponding member of the Australian Academy of Sciences.

Abstract Summary

SPATIOTEMPORAL SIGNATURES OF ELASTO-INTERIAL TURBULENCE (EIT) IN COMPLEX FLUIDS

The addition of small amounts of polymers to a Newtonian solvent makes a fluid viscoelastic and can lead to significant viscous drag reduction in high-speed flows. The interaction of viscoelasticity and inertia in a dilute polymer solution results in the emergence of unique inertioelastic instabilities that are still far from being understood. The nonlinear evolution of these instabilities engenders a state of turbulence with significantly different spatiotemporal features compared to Newtonian turbulence, commonly termed elastoinertial turbulence (EIT). We systematically explore EIT by studying the dynamics of low-speed submerged jets of dilute aqueous polymer solutions injected through a nozzle into tanks of quiescent water or polymer solution.

Prize Lectures

The Rodney Hill Prize Lecture

August 28 Wed 10:20 ~ 11:20 **Convention Hall, 5F, EXCO**

Prof. **Yonggang Huang**
Northwestern University, USA

Biography

Yonggang Huang received B.S. (1984) from Peking University, and M.S. (1987) and Ph.D. (1990) from Harvard University. He has taught at University of Arizona, Michigan Technological University, University of Illinois at Urbana-Champaign, and is the Jan and Marcia Achenbach Professor at Northwestern University. He has received awards for teaching and undergraduate student advising at all these universities. His current research interests include mechanics of stretchable electronics, and mechanics-guided deterministic 3D assembly. He is a member of US National Academy of Sciences, US National Academy of Engineering, American Academy of Arts and Sciences, a foreign member of Royal Society (London), Chinese Academy of Sciences, and Royal Society of Canada.

Description

The Rodney Hill Prize for 2024 has been awarded to Professor Yonggang Huang, Achenbach Professor of Mechanical Engineering, Civil and Environmental Engineering, and of Materials Science and Engineering at Northwestern University, USA.

This prize is presented once every four years at the International Congress of Theoretical and Applied Mechanics (ICTAM), the next occasion being August 2024 at ICTAM 2024 in Daegu, South Korea. The Prize of $25,000 is awarded to a single scientist for outstanding research in solid mechanics over the previous decade. Younger researchers are equally eligible for consideration as those who are more established, and the work should be of great current interest (representing, for example, an emerging field of application of solid mechanics or a significant breakthrough in an established branch of the subject). The prizewinner is determined by a small committee whose members are internationally distinguished in solid mechanics.

The international panel of experts considered many strong nominations from a diverse field. Professor Yonggang Huang receives the prize for his applications of solid mechanics to several emerging fields of significant societal impact, specifically for his work during the last 10 years on mechanics-guided, deterministic 3D assembly and fractal mechanics for stretchable electronics. His work in these areas is having profound impact on materials science, electronics, energy storage, biomedical engineering and manufacturing.

ELSEVIER

2024 Yonggang Huang
THE RODNEY HILL PRIZE
in Solid Mechanics

Abstract Summary

SHAPE PROGRAMMABLE THREE-DIMENSIONAL MESOSTRUCTURES AND FUNCTIONAL DEVICES

A rapidly expanding research area involves the development of routes to shape programmable three-dimensional (3D) structures with feature sizes in the mesoscopic range (that is, between tens of nanometres and hundreds of micrometres). A goal is to establish methods to control the properties of materials systems and the function of devices, through not only static architectures, but also morphable structures and shape-shifting processes. Soft matter equipped with responsive components can switch between designed shapes, but cannot support the types of dynamic morphing capabilities needed to reproduce continuous shape-shifting processes of interest for many applications. Challenges lie in the establishment of 3D assembly/fabrication techniques compatible with wide classes of materials and 3D geometries, and schemes to program target shapes after fabrication. In this talk, I will introduce a mechanics-guided assembly approach that exploits controlled buckling for constructing complex 3D micro/nanostructures from patterned two-dimensional (2D) micro/nanoscale precursors that can be easily formed using established semiconductor technologies. This approach applies to a very broad set of materials (e.g., semiconductors, polymers, metals, and ceramics) and even their heterogeneous integration, over a wide range of length scales (e.g., from 100 nm to 10 cm). To allow realization of 3D mesostructures that are capable of qualitative shape reconfiguration, we devise a loading-path controlled strategy that relies on elastomer platforms deformed in different time sequences to elastically alter the 3D geometries of supported mesostructures via nonlinear buckling. I will also introduce a recent work on shape programmable soft surface, constructed from a matrix of filamentary metal traces, driven by programmable, distributed electromagnetic forces that follow from the passage of electrical currents in the presence of a static magnetic field. Under the guidance of a mechanics model-based strategy to solve the inverse problem, the surface can morph into a wide range of 3D target shapes and shape-shifting processes. The compatibility of our approaches with the state-of-the-art fabrication/processing techniques, along with the versatile capabilities, allow transformation of diverse existing 2D microsystems into complex configurations, providing unusual design options in the development of novel functional devices.

Prize Lectures

Batchelor Prize Lecture

August 28 Wed **11:20 ~ 12:20** **Convention Hall, 5F, EXCO**

Prof. **Charles Meneveau**
Johns Hopkins University, USA

Biography

Charles Meneveau is the Louis M. Sardella Professor in the Department of Mechanical Engineering and is Associate Director of the Institute for Data Intensive Engineering and Science (IDIES). He holds joint appointments in the JHU Department of Physics and Astronomy and of Environmental Health and Engineering. His area of research is focused on understanding and modeling hydrodynamic turbulence, and complexity in fluid mechanics in general. The insights that have emerged from Professor Meneveau's work have led to new numerical models for Large Eddy Simulations (LES) and applications in engineering and environmental flows, including wind farms. He also focuses on developing methods to share the very large data sets that arise in computational fluid dynamics. He received his B.S. degree in Mechanical Engineering from the Universidad Técnica Federico Santa María in Valparaíso, Chile, in 1985 and advanced degrees from Yale University. He then was a postdoctoral fellow at the Center for Turbulence Research at Stanford and has been on the Johns Hopkins University faculty since 1990.
Prof. Meneveau is Deputy Editor of the Journal of Fluid Mechanics and has served as the Editor-in-Chief of the Journal of Turbulence until 2015. Professor Meneveau is a member of the US National Academy of Engineering, a foreign corresponding member of the Chilean Academy of Sciences, a Fellow of APS, ASME and AAM, and the recipient of an honorary doctorate from the Danish Technical University.

Description

The G K Batchelor Prize for 2024 has been awarded to Professor Charles Meneveau, Louis M. Sardella Professor of Mechanical Engineering, Johns Hopkins University, USA. The award and Batchelor prize lecture will take place in August 2024 at the International Congress of Theoretical and Applied Mechanics (ICTAM) in Daegu, South Korea.

This prestigious prize of $25,000 is sponsored by the Journal of Fluid Mechanics and is awarded every 4 years at ICTAM to recognise the achievements of an active scientist who has made significant research contributions to fluid mechanics over the previous decade. Younger researchers are equally eligible for consideration as those who are more established, and the work should be of great current interest (representing, for example, an emerging field of application of fluid mechanics or a significant breakthrough in an established branch of the subject).

The international panel of experts considered many strong nominations from a diverse field. Professor Meneveau receives the prize for his high-impact fundamental contributions to the study of turbulence and wall-bounded flows, and for bringing insightful and rigorous fluid mechanics to the science of wind turbines and wind farms for the benefit of society.

Abstract Summary

TURBULENCE, MACRO-VORTICES, AND REDUCED FLOW MODELS FOR WIND ENERGY APPLICATIONS

In this presentation we provide an overview of how knowledge about turbulent boundary layer structure and statistics has had a profound impact on our understanding of wind farm performance. We discuss the asymptotic limit of the fully developed wind turbine array boundary layer in which a double-logarithmic mean velocity distribution emerges for the horizontally averaged velocity. We discuss the question of power density and stress the importance of turbulence in facilitating vertical transport of mean kinetic energy. Of direct relevance to power variability, we show how models of wave-number frequency spectra of turbulent boundary layers can be used to predict frequency spectra of fluctuating power generation of entire wind farms. Focusing on individual wake structures, we then discuss the technique of yawing wind turbines for wake steering, wherein turbine wakes can be redirected to reduce interactions with downstream turbines. The wake deflection is associated with the generation of counter-rotating streamwise vortices of very large size (macro-vortices), whose magnitude can be predicted using classical lifting line theory. Finally, we summarize continuing efforts to couple local wake models with global boundary layer models in new-generation analytical wind farm models, and close by stressing the importance and continued need for reduced analytical models of flow phenomena affecting various aspects of wind energy.

Sectional Lectures

Fluids

Date & Time August 27 (Tue) 08:00 ~ 09:30

Room Convention Hall, 5F, EXCO

Prof. **Anke Lindner**
PMMH-ESPCI/Université Paris Cité, France

Title
DYNAMICS OF RIGID AND FLEXIBLE FIBERS IN COMPLEX FLOWS

Prof. **Lydia Bourouiba**
Massachusetts Institute of Technology, USA

Title
FLUIDS AND BIOPHYSICS OF DISEASE TRANSMISSION

Room Auditorium, 5F, EXCO

Prof. **Haecheon Choi**
Seoul National University, Korea, Republic of

Title
MACHINE-LEARNING-BASED LARGE EDDY SIMULATION OF TURBULENT FLOW

Prof. **Anne-Virginie Salsac**
CNRS - Université de Technologie de Compiègne, France

Title
Damage and rupture of capsules in flow: what to learn from numerical models and microrheometric experiments?

Date & Time August 29 (Thu) 08:00 ~ 09:30

Room Convention Hall, 5F, EXCO

Prof. **Gautam Biswas**
Indian Institute of Technology Kanpur, India

Title
THE REGIMES BETWEEN PARTIALLY COALESCING AND SPLASHING DROPS

Dr. **Jacques Magnaudet**
CNRS /IMFT, France

Title
FROM LEONARDO TO STABFEM: THE LONG STORY OF PATH INSTABILITY OF RISING BUBBLES MADE SHORT

Room Auditorium, 5F, EXCO

Prof. **Guowei He**
Institute of Mechanics Chinese Academy of Sciences, China

Title
SPACE-TIME ENERGY SPECTRA AND DYNAMIC COUPLING IN TURBULENT FLOWS

Prof. **Jakob Mann**
Technical University of Denmark (DTU), Denmark

Title
ATMOSPHERIC TURBULENCE AND WIND ENERGY

Solids

Date & Time August 27 (Tue) 08:00 ~ 09:30

Room 211, 2F, EXCO

Prof. **Ellen M. Arruda**
University of Michigan, USA

Title
SOFT TISSUE CHARACTERIZATION AND MODELING - MATERIAL PROPERTIES, STRUCTURAL CONSIDERATIONS, INVERSE METHODS, AND DIGITAL TWINS

Prof. **Ferdinando Auricchio**
University of Pavia, Italy

Title
ADDITIVE MANUFACTURING: DESIGN, PRODUCTION, MODELING, COMPUTATIONS

Room Grand Ballroom B, 3F, EXCO

Prof. **Nicolas MOËS**
Université catholique de Louvain (Belgium)

Title
A NEW WAY TO TRACK FRONTS WITH EXTREME MESH DEFORMATION (X-MESH)

Prof. **Alan Cocks**
University of Oxford, UK

Title
MICROMECHANICAL MODELLING AT ELEVATED TEMPERATURE - A PERSONAL PERSPECTIVE

Date & Time August 29 (Thu) 08:00 ~ 09:30

Room 211, 2F, EXCO

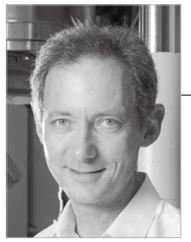
Prof. **Claudia Comi**
Department of Civil and Environmental Engineering Politecnico di Milano, Italy

Title
METAMATERIALS TO MANIPULATE WAVES AND THERMAL EFFECTS: DESIGN AND APPLICATIONS

Prof. **Stanisław Stupkiewicz**
IPPT PAN/Department of Mechanics of Materials, Poland

Title
DIFFUSE-INTERFACE MODELLING OF DISPLACIVE TRANSFORMATIONS AT MICRO- AND MACRO-SCALE

Room Grand Ballroom B, 3F, EXCO



Dr. **Francois HILD**
Université Paris-Saclay, France

Title
ON THE FUTURE OF EXPERIMENTAL MECHANICS IN THE DIGITAL WORLD: AN EIKOLOGICAL PERSPECTIVE

Prof. **Henrik Myhre Jensen**
Aarhus University, Denmark

Title
PROPAGATING INSTABILITIES IN SOLIDS

Topics

ICTAM — The 26th International Congress of Theoretical and Applied Mechanics

Mini Symposia Topics

MS01 Chemo-mechanics and materials for energy conversion and storage
Co-chairs Prof. **Hanqing Jiang**, Prof. **Robert M. McMeeking**

MS02 Soft matter, theory meets experiment
Co-chairs Prof. **Lihua Jin**, Prof. **John Biggins**

MS03 Nonlinear mechanical models for biological and bioinspired materials
Co-chairs Prof. **Nicola M. Pugno**, Prof. **Peter Fratzl**

MS04 Mechanics in health and sport
Co-chairs Prof. **Guy Genin**, Prof. **Songbai Ji**, Prof. **Christophe Clanet**

MS05 Data-driven mechanics and artificial intelligence
Co-chairs Prof. **Bernd R. Noack**, Dr. **Balint Kaszas**, Prof. **Stefanie Reese**, Prof. **George Haller**

MS06 Fluid dynamics of disease transmission
Co-chairs Prof. **Lydia Bourouiba**, Prof. **Roberto Verzicco**

MS07 Non-reacting and reacting fluid dynamics for sustainable propulsion systems
Co-chairs Prof. **Thierry Schuller**, Prof. **Adam Michael Steinberg**

MS08 Fluid mechanical challenges for sustainability & climate change
Co-chairs Prof. **Graham Hughes**, Prof. **Jens Nørkær Sørensen**

Fluids Topics

FM01 Biological fluid mechanics
Co-chairs Prof. **Sarah Waters**, Dr. **Simon Mendez**

FM02 Boundary layers
Co-chairs Prof. **Xuesong Wu**, Dr. **Yongyun Hwang**, Prof. **Sergio Pirozzoli**

FM03 Zero-emission combustion
Co-chairs Prof. **Chiara Galletti**, Prof. **Christine Mounaïm-Rousselle**

FM04 Compressible flow
Co-chairs Prof. **Jaiyoung Ryu**, Prof. **Devesh Ranjan**

FM05 Convection
Co-chairs Prof. **Anne Sergent**, Prof. **Quan Zhou**

FM06 Drops, bubbles and interfaces
Co-chairs Prof. **Stéphane Zaleski**, Prof. **Cristian Marchioli**

FM07 Multiphase and particle-laden flows
Co-chairs Prof. **Jacek Pozorski**, Prof. **Francesco Picano**

FM08 Flow instability and transition
Co-chairs Prof. **V. Shankar**, Prof. **Daniel Rodriguez**

FM09 Thin film flows
Co-chairs Dr. **Georg Dietze**, Prof. **Alexander Oron**

FM10 Geophysical and environmental fluid dynamics
Co-chairs Dr. **Michael Le Bars**, Prof. **Wontae Hwang**

FM11 Low Reynolds number flows and suspension
Co-chairs Prof. **Jae-Sung Kwon**, Prof. **G P Raja Sekhar**

FM12 Micro- and nano-fluidics
Co-chairs Prof. **Maria Vittoria Salvetti**, Dr. **Marie-Caroline Jullien**

FM13 Non-Newtonian and complex fluids
Co-chairs Prof. **Anke Lindner**, Prof. **Prabhu R Nott**

FM14 Computational fluid dynamics
Co-chairs Prof. **Seungwon Shin**, Prof. **Santosh Ansumali**

FM15 Turbulence
Co-chairs Prof. **H. Jane Bae**, Dr. **Enrico Calzavarini**, Dr. **Mickaël Bourgoin**

FM16 Vortex dynamics
Co-chairs Dr. **Melissa Green**, Prof. **Morten Brøns**

FM17 Waves in fluids
Co-chairs Prof. **Yeunwoo Cho**, Prof. **Victor Shrira**

FM18 Electro-and magneto-hydrodynamics
Co-chairs Prof. **Ming-Jiu Ni**, Prof. **Rhokyun Kwak**

Topics

ICTAM The 26th International Congress of Theoretical and Applied Mechanics

Fluids / Solids Topics
FS01 Acoustics
Co-chairs Prof. **John Allen**, Prof. **Christophe Bailly**
FS02 Emerging experimental techniques across the length and time scales
Co-chairs Dr. **Francois Hild**, Prof. **Kyung Chun Kim**
FS03 Nonlinear dynamics and pattern formation
Co-chairs Prof. **Oleg Gendelman**, Prof. **Alexander Fidlin**
FS04 Porous media and liquid foam
Co-chairs Prof. **Xiaojing (Ruby) Fu**, Dr. **Ikuya Kinefuchi**
FS05 Fluid structure interactions
Co-chairs Prof. **Daegyoum Kim**, Prof. **Yegao Qu**
FS06 Granular materials and flows
Co-chairs Prof. **Jerzy Rojek**, Prof. **Devang V Khakhar**
FS07 Optimization for solids and fluids
Co-chairs Prof. **Taraneh Sayadi**, Dr. **Joe Alexandersen**
FS08 Education in mechanics
Co-chairs Prof. **Vikram Pakrashi**, Prof. **Francesco Dal Corso**
FS09 Reduced order modeling of fluids and solids
Co-chairs Prof. **Majdi Azaiez** , Prof. **Ishan Sharma**, Prof. **Francisco (Paco) Chinesta**, Prof. **Elias Cueto**

Solids Topics
SM01 Biomechanics and biomaterials
Co-chairs Prof. **Gang Bao**, Prof. **G. K. Ananthasuresh**
SM02 Tribology-contact and friction
Co-chairs Prof. **Marco Paggi**, Prof. **Ramin Aghababaei**
SM03 Elasticity
Co-chairs Prof. **Santosh Kapuria**, Prof. **Ernian Pan**
SM04 Damage & fracture mechanics
Co-chairs Prof. **Roberta Massabo**, Prof. **Djimedo Kondo**
SM05 Geomechanics and geophysics
Co-chairs Prof. **John Rudnicki**, Prof. **Takashi Matsushima**
SM06 Impact mechanics and wave propagation
Co-chairs Prof. **Santosh Kapuria**, Prof. **Mira Mitra**, Prof. **Han Zhao**
SM07 Multi-component, composites and hierarchical materials
Co-chairs Prof. **Pedro Camanho**, Prof. **Yin Fan**, Prof. **Francois Barthelat**
SM08 Phase transformations and thermomechanical phenomena
Co-chairs Prof. **Moran Wang**, Prof. **Changqing Chen**, Prof. **Lorenza Petrini**
SM09 Additive manufacturing
Co-chairs Prof. **Jesper Hattel**, Prof. **Ferdinando Auricchio**
SM10 Multibody and vehicle dynamics
Co-chairs Prof. **Niels Leergaard Pedersen**, Prof. **Robert Seifried**
SM11 Nanostructures and MEMS
Co-chairs Prof. **M Taher A Saif**, Prof. **Manas Chandra Ray**
SM12 Plasticity, viscoplasticity and creep
Co-chairs Prof. **Henrik Myhre Jensen**, Prof. **Lorenzo Bardella**
SM13 Stability and instability of materials and structures
Co-chairs Prof. **Davide Bigoni**, Prof. **Lingadahally S Ramachandra**
SM14 Computational solid mechanics
Co-chairs Prof. **Emilio Martinez-Paneda**, Prof. **Yuri Bazilevs**
SM15 Vibrations and control of structures
Co-chairs Prof. **Guang Meng**, Dr. **Igor Berinskii**
SM16 Soft materials and extremely deformable structures
Co-chairs Prof. **Antonina Pirrotta**, Prof. **Sumit Basu**
SM17 Metamaterials architectured materials and topology optimization
Co-chairs Prof. **Wei Chen**, Prof. **Ole Sigmund**
SM18 Nonlinear dynamics for design
Co-chairs Prof. **Jerzy Warminski**, Dr. **Pedro Ribeiro**

Instructions for Moderator & Presenter

Instructions for presenters (invited talks & oral presentations)

❶ The official language is English.

❷ Presentation time (including Q&A)
≫ Plenary (Prize) Speaker 60 mins
≫ Sectional Speaker 45 mins
≫ Invited Speaker 30 mins
≫ Oral Presenter 20 mins

❸ Please check your presentation schedule on our website under the following tab.
≫ [My page] - [My session]
≫ [Daily Program]

❹ **A laptop will be provided in each session room for presentations.**

❺ You can bring your own laptop computer to project your presentation. For international speakers, be sure that you have the necessary cords/converters so that your laptop will work with the LCD projector. HDMI connections will be used. The default for the screen is 16:9. We strongly encourage you to have a backup of your presentation on a USB storage device in the event your laptop has a technical problem or is incompatible with the LCD projector.

❻ We ask that all **presentations be ready** at the beginning of the technical session

❼ There is **no specified template** for this congress.

❽ Audio, Photo, Video, and Mobile Phone Policy
Please note that audio, photo, and video recording by various devices (including cameras, laptops, PDAs, mobile phones, watches, and tablet PCs) are strictly prohibited during all oral sessions unless prior permission is obtained from the congress organizer. Mobile phones must also be switched off or set to silent mode while attending sessions.

Instructions for Short Oral Presentation + Poster Presenters

❶ The official language is English.

❷ Please visit the [My page] - [My session] menu to check your presentation schedule. **All short oral presentation + poster presenters must be present at their designated times to give a three-minute presentation on their paper in the congress room**. During the poster sessions on Tuesday and Thursday, a Q&A will take place in front of your designated poster board in the Grand Ballroom A, 3F, EXCO

※ **Presentation Schedule**

Category	Poster mounting	Short oral presentation	Poster session	Poster dismounting
Poster session 1	August 26, 09:00~14:00	August 27, 09:50~11:20	August 27, 11:20~12:20	August 30, 09:00~16:00
Poster session 2		August 29, 09:50~11:20	August 29, 11:20~12:20	

❸ **A laptop will be provided in each session room for presentations.**

❹ For Short Oral Presentations, it is mandatory to use the provided communal laptop. To ensure a smooth presentation process, please make sure to upload your presentation files during the break time. This will help avoid any delays during the scheduled session time.

❺ Posters will be displayed in the Grand Ballroom, 3F, EXCO. Each poster board is identified with a presentation number (not an abstract submission reference number) on the list of the program book. Please note that all posters that have not been removed by the noticed dismounting time will be automatically taken down and discarded.

❻ Posters must not exceed the following dimensions (A0 size): 841 mm (width) x 1,189 mm (height) and must be printed by the presenter. Each poster should include the title (preferably at the top), as well as the names and affiliations of the authors.

❼ Audio, Photo, Video, and Mobile Phone Policy
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Instructions for session moderators (chairs)

❶ The official language is English.

❷ Presentation time
≫ Plenary Speaker 60 mins (including Q&A)
≫ Sectional Speaker 45 mins (including Q&A)
≫ Invited Speaker 30 mins (including Q&A)
≫ Oral Presenter 20 mins (including Q&A)
≫ Short Oral Presenter 3 mins (Presentation only, not including a Q&A)
Q&A for the short oral presentation will take place in front of the designated poster board in the Grand Ballroom, 3F, EXCO.

❸ Please check your chairing session schedule and speakers' biographies and abstracts on our website under the following tab.
≫ [My page] - [My session]
≫ [Daily Program]
Please note that you need to log in with a valid registered account in order to access the page above.
To reduce the environmental impact of the congress, the biographies and abstracts of speakers are not provided as printed copies on-site.

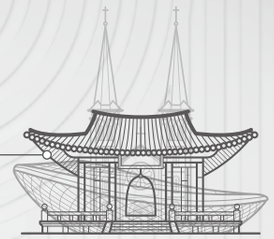
❹ We request that all session moderators (chairs) **arrive in the session room 15 minutes before the session begins.**

❺ **We highly recommend you make sure to keep your session schedule**. The session chair is given a bell and the printed session timetable to help keep time, which we recommend being used.

❻ In case of a "No-show" of a speaker, **please inform the audience of a break time for the "No-show" slot and let them know the next presentation start time**. Congress staff in each session room will display a break-time slide.

❼ There is **no specified template** for this congress.

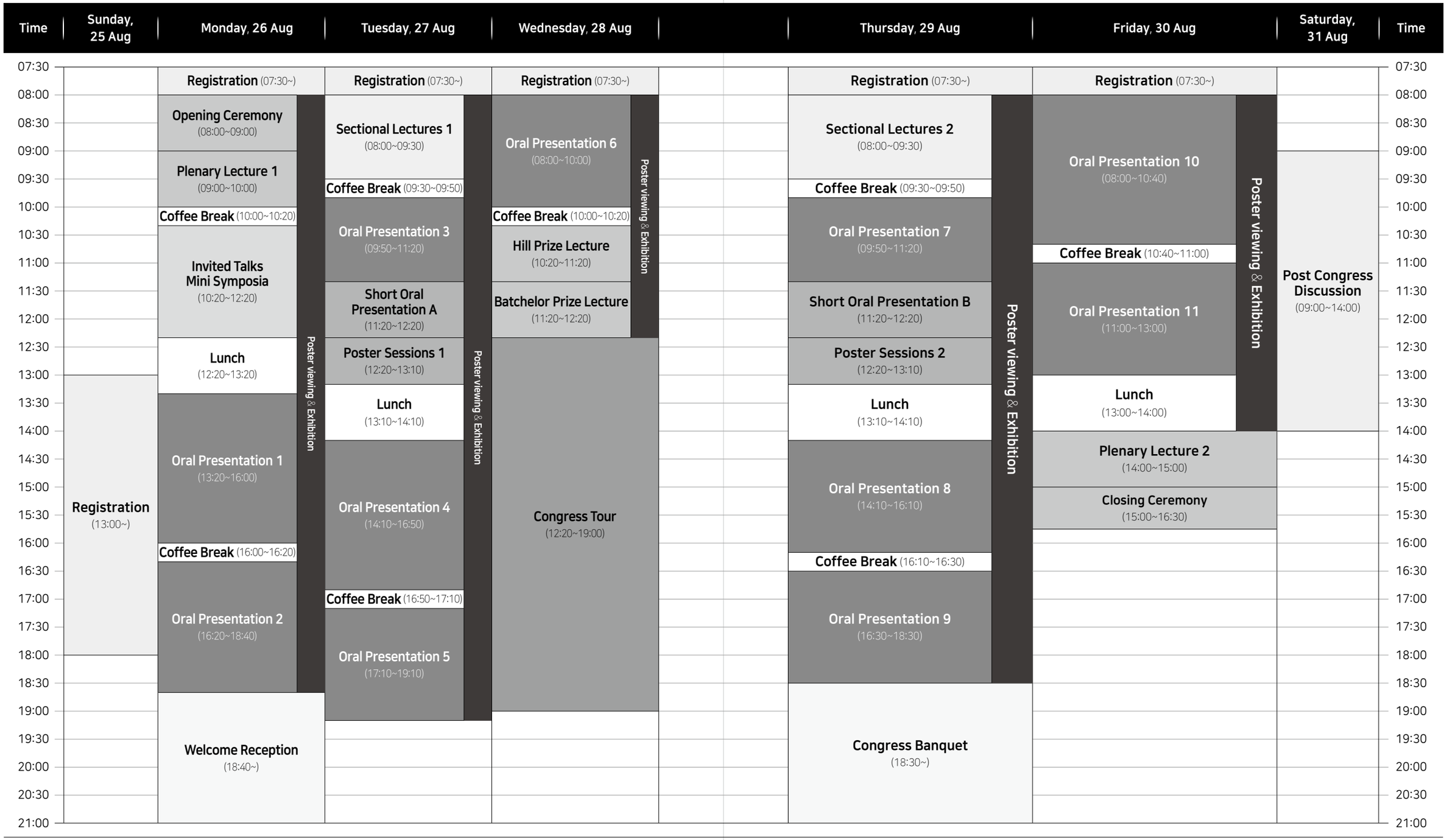
❽ Audio, Photo, Video, and Mobile Phone Policy
Please note that audio, photo, and video recording by various devices (including cameras, laptops, PDAs, mobile phones, watches, and tablet PCs) are strictly prohibited during all oral sessions unless prior permission is obtained from the congress organizer. Mobile phones must also be switched off or set to silent mode while attending sessions.



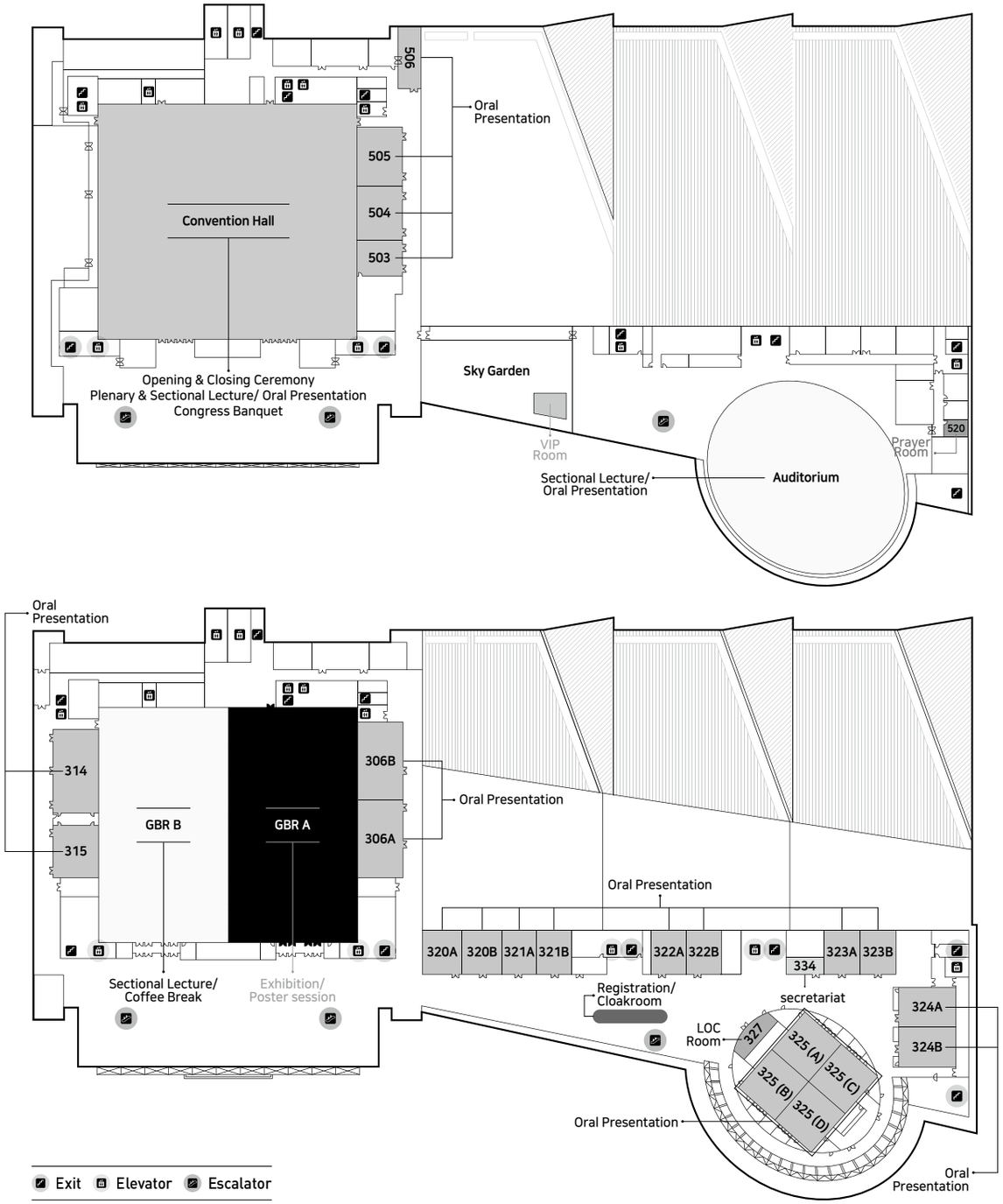
Daily Program

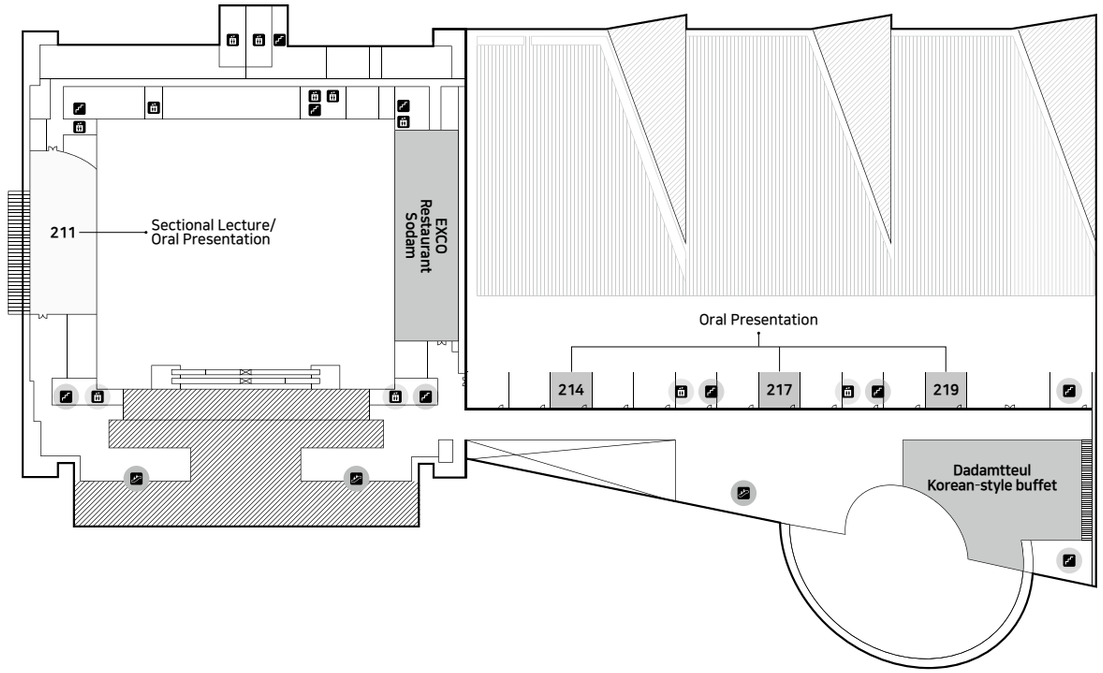
Program at a Glance

ICTAM The 26th International Congress of Theoretical and Applied Mechanics



Official Program Info





Registration

Registration Desk

Resistration desk is located in the lobby, 3F, EXCO. Name tags, Lunch Coupon and Congress kits will be distributed at the registration. The name badge must be worn while attending to be admitted to all the scientific sessions, exhibit hall, and social events.

≫ **The registration desk will be in operating during these hours**:

Date	August 25 (Sun)	August 26 (Mon)	August 27 (Tue)	August 28 (Wed)	August 29 (Thu)	August 30 (Fri)
Time	13:00~18:00	07:30~18:30	07:30~19:00	07:30~12:30	07:30~18:30	07:30~16:30

Certificate of Attendance

All participants may download and print the certificate of attendance at My Page on the ICTAM 2024 website after the closing ceremony.

Exhibition

Exhibitor badges will be distributed at the exhibition desk and each must wear it during the exhibition.

≫ **Location** : Grand Ballroom, 3F, EXCO

≫ **Operating hours**

Date	August 25 (Sun)	August 26 (Mon)	August 27 (Tue)	August 28 (Wed)	August 29 (Thu)	August 30 (Fri)
Time	Set Up	08:00~18:40	08:00~19:10	08:00~12:20	08:00~18:30	08:00~14:00

Official Program Info

Official Program

Opening Ceremony

Date & Time	August 26 (Mon) 08:00 ~ 09:00
Venue	Convention Hall, 5F, EXCO

Welcome Reception

Date & Time	August 26 (Mon) 18:30 ~ 20:30
Venue	Grand Ballroom, 3F, EXCO
Attendees	Everyone who has registered is welcome to join

Congress Banquet

Date & Time	August 29 (Thu) 18:30 ~ 20:30
Venue	Convention Hall, 5F, EXCO

* Only those who purchased the banquet ticket in advance can attend.

Closing Ceremony

Date & Time	August 30 (Fri) 15:00 ~ 15:45
Venue	Convention Hall, 5F, EXCO

Elsevier Workshop

Date & Time	August 27 (Tue) 13:10 ~14:10
Room No.	306A
Title	Career Pathways for Early Career Researchers: Leveraging Your PhD Skills and Securing Research Grants

Organizer Speaker

Dr. **Carina Arasa Cid**

Elsevier, Netherlands

Part 1. Career path after academia and other possible career path.
Part 2. Unlocking Grant Success with Funding Institutional
Part 3. Q&A (15min)

Description

This workshop helps early career researchers and final-stage PhD students navigate career development beyond academia and secure research funding. Participants will learn to identify fulfilling job opportunities and leverage Funding Institutional by Elsevier to efficiently find and track grants, aligning with trending research areas like Climate Action and AI.

Presentation Code Guide

1 Plenary Lecture

MoPL0001

- Mo: Day of the week
- PL: Plenary Lecture
- 0001: Paper number to be presented

Mo Monday / Tu Tuesday / We Wednesday / Th Thursday / Fr Friday

2 Sectional Lecture

TuSLFM01

- Tu: Day of the week
- SL: Sectional Lecture
- F: Fluids (SM: Solids)
- M01: Paper number to be presented

3 Mini Symposia/ Thematic Session

MoMS0501

- Mo: Day of the week
- MS: Session code
- 0501: Paper number to be presented

MS Mini symposia / FM Thematic session Fluids /
FS Thematic session Solids / SM Thematic Session Fluids-Solids

4 Short Oral Presentation + Poster

ThPM0301.001

- Th: Day of the week
- P: Poster
- M: Session code
- 03: Paper number to be presented
- 01: Poster number

M Mini symposia/ F Thematic session Fluids/
S Thematic session Solids / X Thematic session Fluids-Solids

Room Assignment for Sessions

Program	Monday, Aug 26				Tuesday, Aug 27				
	Plenary Lecture 1	Invited Talks Mini Symposia	Oral Presentation 1	Oral Presentation 2	Sectional Lectures 1	Oral Presentation 3	Short Oral Presentation + Poster A	Oral Presentation 4	Oral Presentation 5
	09:00 ~ 10:00	10:20 ~ 12:20	13:20 ~ 16:00	16:20 ~ 18:40	08:00 ~ 09:30	09:50 ~ 11:20	11:20 ~ 12:20	14:10 ~ 16:50	17:10 ~ 19:10
PL	Convention Hall								
SL (Fluids)					Convention Hall, Auditorium				
SL (Solids)					211, GBR B				
MS01		323A		504				504	
MS02		323B	505	505				505	
MS03		324A	503					503	
MS04		324B							
MS05		325A	504						505
MS06		325B							503
MS07		325C							504
MS08		325D		503					
FM01			325A	325A		323B	323B		
FM02				324B		324B	324B	324B	324B
FM03			324B						
FM04			324A			324A	324A	324A	324A
FM05				323B				323B	323B
FM06			323A	323A		323A	323A	323A	323A, 325C
FM07			325B	325B, 325C		325B	325B		325B
FM08			322B	322B		322B	322B	322B	322B
FM09			506	506		506			
FM10			321B					321B	321B
FM11			321A					306A	
FM12			323B						
FM13				324A		325A	325A	325A	325A
FM14				325D		325D	325D	325D	325D
FM15			Auditorium	Auditorium		Auditorium	Auditorium	Auditorium	Auditorium
FM16			325C			325C	325C	325B	
FM17			219						219
FM18			325D			322A	322A	325C	

	Wednesday, Aug 28			Thursday, Aug 29					Friday, Aug 30		
	Oral Presentation 6	Hill Prize Lecture	Batchelor Prize Lecture	Sectional Lectures 2	Oral Presentation 7	Short Oral Presentation B	Oral Presentation 8	Oral Presentation 9	Oral Presentation 10	Oral Presentation 11	Plenary Lecture 2
	08:00 ~ 10:00	10:20 ~ 11:20	11:20 ~ 12:20	08:00 ~ 09:30	09:50 ~ 11:20	11:20 ~ 12:20	14:10 ~ 16:10	16:30 ~ 18:30	08:00 ~ 10:40	11:00 ~ 13:00	14:00 ~ 15:00
PL		Convention Hall	Convention Hall								Convention Hall
SL (Fluids)				Convention Hall, Auditorium							
SL (Solids)				211, GBR B							
MS01						322B			504		
MS02						324B	505		505		
MS03						503			503		
MS04						323B					
MS05	503, 504, 505					505	503, 504	503, 504, 505		503, 505	
MS06						504					
MS07										504	
MS08						325C					
FM01					325A	325A	325A	325A	325A		
FM02	324B				324B		324B	324B	324B	324B	
FM03	325B						325B				
FM04							324A	324A	324A	324A	
FM05	323B, 324A						323B	323B		323B	
FM06	323A, 325C				323A	323A	323A, 325C	323A	323A	323A	
FM07					325B	325B		325B	325B	325B	
FM08	322B				322B			322B	322B		
FM09					506	506		506	506		
FM10						324A			321B	325A	
FM11	306A					Auditorium			321A		
FM12						325D	322B		323B		
FM13	325A				324A						
FM14	325D				325D		325D	325D	325D	322B, 325D	
FM15	Auditorium				Auditorium		Auditorium	Auditorium	Convention Hall		
FM16					325C			325C	325C	325C	
FM17						219	219	219			
FM18					322A						

Room Assignment for Sessions

Program	Monday, Aug 26				Tuesday, Aug 27				
	Plenary Lecture 1	Invited Talks Mini Symposia	Oral Presentation 1	Oral Presentation 2	Sectional Lectures 1	Oral Presentation 3	Short Oral Presentation + Poster A	Oral Presentation 4	Oral Presentation 5
	09:00 ~ 10:00	10:20 ~ 12:20	13:20 ~ 16:00	16:20 ~ 18:40	08:00 ~ 09:30	09:50 ~ 11:20	11:20 ~ 12:20	14:10 ~ 16:50	17:10 ~ 19:10
FS01						214	214	217	
FS02				219					
FS03									217
FS04			214						
FS05			211	211		211	211	211	211
FS06								214	214
FS07						219	219	219	
FS08			217	217		217	217		
FS09				214					
SM01			306A	306A					
SM02				320A		306A	306A		306A
SM03				321B		321B	321B		
SM04			322A	322A			506	322A	322A
SM05						314	314		314
SM06			315					315	315
SM07						504	504		
SM08									
SM09						503	503		506
SM10									
SM11						505	505	506	
SM12								320B	320B
SM13			314	314				314	
SM14			306B	306B		306B	306B	306B	306B
SM15				315		315	315		
SM16				321A		321A	321A	321A	321A
SM17			320A			320A	320A	320A	320A
SM18			320B	320B		320B	320B		

Wednesday, Aug 28			Thursday, Aug 29					Friday, Aug 30		
Oral Presentation 6	Hill Prize Lecture	Batchelor Prize Lecture	Sectional Lectures 2	Oral Presentation 7	Short Oral Presentation B	Oral Presentation 8	Oral Presentation 9	Oral Presentation 10	Oral Presentation 11	Plenary Lecture 2
08:00 ~ 10:00	10:20 ~ 11:20	11:20 ~ 12:20	08:00 ~ 09:30	09:50 ~ 11:20	11:20 ~ 12:20	14:10 ~ 16:10	16:30 ~ 18:30	08:00 ~ 10:40	11:00 ~ 13:00	14:00 ~ 15:00
				214		214				
					214			219		
217					217	217				
								214		
211				211		211	211	211	211	
					211		214		214	
219				219					219	
				217						
214										
321A					321A	321A			321A	
				306A			306A	306A	306A	
321B				321B	321B	321B	321B		321B	
322A					322A	322A	322A	322A	322A	
				314		314	314		314	
					314					
506				504		506				
306B					306B	306B				
				503					506	
					315		217	217	217	
				505						
					320B	320B		320B		
314					306A			314	320B	
				306B			306B	306B	306B	
315				315		315	315	315	315	
				321A			321A			
320A				320A	320A	320A	320A	320A	320A	
320B				320B			320B			

Time	Room	Code	Program	
Sunday, August 25, 2024				
13:00 ~	Registration			
Monday, August 26, 2024				
07:30 ~	Registration			
08:00 ~ 09:00	Opening Ceremony			56p
09:00 ~ 10:00	Convention Hall, 5F	PL01	Opening Lecture - Yoon Young Kim	56p
10:00 ~ 10:20	Coffee Break			
10:20 ~ 12:20	Room 323A, 3F	MS01	Chemo-mechanics and materials for energy conversion and storage	56p
	Room 323B, 3F	MS02	Soft matter, theory meets experiment	57p
	Room 324A, 3F	MS03	Nonlinear mechanical models for biological and bioinspired materials	57p
	Room 324B, 3F	MS04	Mechanics in health and sport	58p
	Room 325A, 3F	MS05	Data-driven mechanics and artificial intelligence	58p
	Room 325B, 3F	MS06	Fluid dynamics of disease transmission	59p
	Room 325C, 3F	MS07	Non-reacting and reacting fluid dynamics for sustainable propulsion systems	59p
	Room 325D, 3F	MS08	Fluid mechanical challenges for sustainability & climate change	60p
12:20 ~ 13:20	Lunch & Special Sessions			
13:20 ~ 16:00	Oral Presentation 1			61p
	Auditorium, 5F	FM15	Turbulence	61p
	Room 211, 2F	FS05	Fluid structure interactions	62p
	Room 214, 2F	FS04	Porous media and liquid foam	63p
	Room 217, 2F	FS08	Education in mechanics	64p
	Room 219, 2F	FM17	Waves in fluids	65p
	Room 306A, 3F	SM01	Biomechanics and biomaterials	66p
	Room 306B, 3F	SM14	Computational solid mechanics	67p
	Room 314, 3F	SM13	Stability and instability of materials and structures	68p
	Room 315, 3F	SM06	Impact mechanics and wave propagation	69p
	Room 320A, 3F	SM17	Metamaterials architectured materials and topology optimization	70p
	Room 320B, 3F	SM18	Nonlinear dynamics for design	71p
	Room 321A, 3F	FM11	Low Reynolds number flows and suspension	72p
	Room 321B, 3F	FM10	Geophysical and environmental fluid dynamics	73p
	Room 322A, 3F	SM04	Damage & fracture mechanics	74p
	Room 322B, 3F	FM08	Flow instability and transition	75p
	Room 323A, 3F	FM06	Drops, bubbles and interfaces	76p
	Room 323B, 3F	FM12	Micro- and nano-fluidics	77p
	Room 324A, 3F	FM04	Compressible flow	78p
	Room 324B, 3F	FM03	Zero-emission combustion	79p
	Room 325A, 3F	FM01	Biological fluid mechanics	80p
13:20 ~ 16:00	Room 325B, 3F	FM07	Multiphase and particle-laden flows	81p
	Room 325C, 3F	FM16	Vortex dynamics	82p
	Room 325D, 3F	FM18	Electro- and magneto-hydrodynamics	83p
	Room 503, 5F	MS03	Nonlinear mechanical models for biological and bioinspired materials	84p
	Room 504, 5F	MS05	Data-driven mechanics and artificial intelligence	85p
	Room 505, 5F	MS02	Soft matter, theory meets experiment	86p
	Room 506, 5F	FM09	Thin film flows	87p
16:00 ~ 16:20	Coffee Break			
16:20 ~ 18:40	Oral Presentation 2			88p
	Auditorium, 5F	FM15	Turbulence	88p
	Room 211, 2F	FS05	Fluid structure interactions	89p
	Room 214, 2F	FS09	Reduced order modeling of fluids and solids	90p
	Room 217, 2F	FS08	Education in mechanics	91p
	Room 219, 2F	FS02	Emerging experimental techniques across the length and time scales	92p
	Room 306A, 3F	SM01	Biomechanics and biomaterials	93p
	Room 306B, 3F	SM14	Computational solid mechanics	94p
	Room 314, 3F	SM13	Stability and instability of materials and structures	95p
	Room 315, 3F	SM15	Vibrations and control of structures	96p
	Room 320A, 3F	SM02	Tribology-contact and friction	97p
	Room 320B, 3F	SM18	Nonlinear dynamics for design	98p
	Room 321A, 3F	SM16	Soft materials and extremely deformable structures	99p
	Room 321B, 3F	SM03	Elasticity	100p
	Room 322A, 3F	SM04	Damage & fracture mechanics	101p
	Room 322B, 3F	FM08	Flow instability and transition	102p
	Room 323A, 3F	FM06	Drops, bubbles and interfaces	103p
	Room 323B, 3F	FM05	Convection	104p
	Room 324A, 3F	FM13	Non-Newtonian and complex fluids	105p
	Room 324B, 3F	FM02	Boundary layers	106p
	Room 325A, 3F	FM01	Biological fluid mechanics	107p
	Room 325B, 3F	FM07	Multiphase and particle-laden flows	108p
	Room 325C, 3F	FM07	Multiphase and particle-laden flows	109p
	Room 325D, 3F	FM14	Computational fluid dynamics	110p
	Room 503, 5F	MS08	Fluid mechanical challenges for sustainability & climate change	111p
	Room 504, 5F	MS01	Chemo-mechanics and materials for energy conversion and storage	112p
	Room 505, 5F	MS02	Soft matter, theory meets experiment	113p
	Room 506, 5F	FM09	Thin film flows	114p
18:40 ~	Welcome Reception			

Mon. (Aug. 26)

Plenary Lecture 1		
Opening Lecture		
Moderator	Kyung-Suk Kim (Brown University, USA)	
Room	Convention Hall, 5F	
MoPL0001	09:00~10:00	EXOTIC ANISOTROPIC METAMATERIALS FOR NOVEL MANIPULATION OF ELASTIC WAVES **Yoon Young Kim** (Sookmyung Women's University, Korea, Republic of) Corresponding Author Yoon Young Kim (Sookmyung Women's University, Korea, Republic of)

Invited Talks Mini Symposia		
MS01	Chemo-mechanics and materials for energy conversion and storage	
Moderator	Robert M. McMeeking (University of California, USA) / Hanqing Jiang (Westlake University, China)	
Room	Room 323A, 3F	
MoMS0101 (INVITED)	10:20~10:50	EXPLORATION OF LIBS DIGITAL TWIN BASED ON THE MULTISCALE COMPUTATIONAL METHOD AND THE IMPLANTABLE WIRELESS SENSING SYSTEM **Hao-Sen Chen** (Beijing Institute of Technology, China) Corresponding Author Hao-Sen Chen (Beijing Institute of Technology, China)
MoMS0102 (INVITED)	10:50~11:20	COUPLED PROCESSES IN STRUCTURAL BATTERY COMPOSITES **Leif E. Asp** (Chalmers University of Technology, Sweden) Corresponding Author Leif E. Asp (Chalmers University of Technology, Sweden)
MoMS0103 (INVITED)	11:20~11:50	COUPLED PROBLEMS OF CHEMO-MECHANICS: KINETICS AND STABILITY OF CHEMICAL REACTION FRONTS **Alexander Freidin** (Institute for Problems in Mechanical Engineering of the Russian Academy of Sciences, Russia) Corresponding Author Alexander Freidin (Institute for Problems in Mechanical Engineering of the Russian Academy of Sciences, Russia)
MoMS0104 (INVITED)	11:50~12:20	MULTISCALE MODELLING OF TRANSIENT COUPLED DIFFUSION-MECHANICS **Laurent Stainier** (Centrale Nantes, France) Corresponding Author Laurent Stainier (Centrale Nantes, France)

MS02	Soft matter, theory meets experiment	
Moderator	Lihua Jin (University of California, Los Angeles, USA) / John Biggins (Cambridge University, United Kingdom)	
Room	Room 323B, 3F	
MoMS0201 (INVITED)	10:20~10:50	CRACK TIP STRAIN FIELD ANALYSIS OF SOFT MATERIALS **Kenji Urayama** (Kyoto University, Japan) Corresponding Author Kenji Urayama (Kyoto University, Japan)
MoMS0202 (INVITED)	10:50~11:20	PNEUMATIC SHAPE MORPHING **José Bico** (CNRS-ESPCI-Paris, France) Corresponding Author José Bico (CNRS-ESPCI-Paris, France)
MoMS0203 (INVITED)	11:20~11:50	THE VISCOELASTIC BEHAVIOR OF LIQUID CRYSTAL ELASTOMERS **Thao D. Nguyen** (Johns Hopkins University, USA) Corresponding Author Thao D. Nguyen (Johns Hopkins University, USA)
MoMS0204 (INVITED)	11:50~12:20	MULTIPHYSICS MODELING OF GRAYSCALE DIGITAL LIGHT PROCESSING PRINTING FOR PIXEL-LEVEL MANIPULATIONS **Hang Jerry Qi** (Georgia Institute of Technology, USA) Corresponding Author Hang Jerry Qi (Georgia Institute of Technology, USA)
MS03	Nonlinear mechanical models for biological and bioinspired materials	
Moderator	Rodney Scott Ruoff (IBS(Institute for Basic Science), Korea, Republic of) / Keiji Numata (Kyoto University and RIKEN, Japan)	
Room	Room 324A, 3F	
MoMS0301 (INVITED)	10:20~10:50	SOLID MECHANICS OF CARBON THIN FILM MATERIALS **Rodney Scott Ruoff** (IBS(Institute for Basic Science), Korea, Republic of) Corresponding Author Rodney Scott Ruoff (IBS(Institute for Basic Science), Korea, Republic of)
MoMS0302 (INVITED)	10:50~11:20	MECHANICAL AND NANOSTRUCTURAL EFFECTS OF STRAIN RATE ON SPIDER DRAGLINE SILK FIBERS AT NATURAL AND UNNATURAL HUMIDITY **Keiji Numata** (Kyoto University and RIKEN, Japan) Corresponding Author Keiji Numata (Kyoto University and RIKEN, Japan)
MoMS0303 (INVITED)	11:20~11:50	MULTISCALE APPROACHES FOR THERMO-HIGRO-MECHANICAL EFFECTS IN DECOHESION AND FRACTURE OF BIOLOGICAL AND BIOINSPIRED MATERIALS **Giuseppe Puglisi** (Bari Polytechnique, Italy) Corresponding Author Giuseppe Puglisi (Bari Polytechnique, Italy)
MoMS0304 (INVITED)	11:50~12:20	LEVERATING ARTIFICIAL INTELLIGENCE FOR BIO-INSPIRED DESIGN AND BEYOND **Seunghwa Ryu** (KAIST, Korea, Republic of) Corresponding Author Seunghwa Ryu (KAIST, Korea, Republic of)

MS04	Mechanics in health and sport	
Moderator	Guy M Genin (Washington University in St. Louis, USA) / Songbai Ji (Worcester Polytechnic Institute, USA)	
Room	Room 324B, 3F	
MoMS0401 (INVITED)	10:20~10:50	MECHANOMEDICINE: FROM BIOMECHANICS AND MECHANOBIOLOGY TO MECHANOPATHOLOGY AND MECHANOTHERAPY **Feng Xu** (xi'an jiaotong university, China) Corresponding Author Feng Xu (xi'an jiaotong university, China)
MoMS0402 (INVITED)	10:50~11:20	SPORTS AERODYNAMICS: CRICKET BALL, BADMINTON SHUTTLECOCK AND FRISBEE **Sanjay Mittal** (IIT Kanpur, India) Corresponding Author Sanjay Mittal (IIT Kanpur, India)
MoMS0403 (INVITED)	11:20~11:50	THE MECHANICS OF SURGICAL KNOTS **Pedro M. Reis** (EPFL, Switzerland) Corresponding Author Pedro M. Reis (EPFL, Switzerland)
MoMS0404 (INVITED)	11:50~12:20	LARGE- AND MULTISCALE MODELING OF TRAUMATIC BRAIN AND AXONAL INJURY **Songbai Ji** (Worcester Polytechnic Institute, USA) Corresponding Author Songbai Ji (Worcester Polytechnic Institute, USA)
MS05	Data-driven mechanics and artificial intelligence	
Moderator	Michael David Graham (University of Wisconsin-Madison, USA) / Miguel A Bessa (Brown University, USA)	
Room	Room 325A, 3F	
MoMS0501 (INVITED)	10:20~10:50	DATA-DRIVEN DYNAMIC MODEL OF TURBULENT PIPE FLOW ON AN INVARIANT MANIFOLD **Michael David Graham** (University of Wisconsin-Madison, USA) Corresponding Author Michael David Graham (University of Wisconsin-Madison, USA)
MoMS0502 (INVITED)	10:50~11:20	DATA-DRIVEN NONLINEAR MODEL REDUCTION TO SPECTRAL SUBMANIFOLDS IN SOLID AND FLUID MECHANICS **Balint Kaszas** (ETH Zurich, Switzerland) Corresponding Author George Haller (ETH Zurich, Switzerland)
MoMS0503 (INVITED)	11:20~11:50	GRADIENT-FREE NEURAL TOPOLOGY OPTIMIZATION **Miguel A Bessa** (Brown University, USA) Corresponding Author Miguel A Bessa (Brown University, USA)
MoMS0504 (INVITED)	11:50~12:20	MACHINE LEARNING CONTROL FOR TURBULENCE EXPERIMENTS--A GENERAL FRAMEWORK FOR MANY ACTUATORS AND MANY SENSORS **Bernd R. Noack** (Harbin Institute of Technology, China) Corresponding Author Bernd R. Noack (Harbin Institute of Technology, China)

MS06	Fluid dynamics of disease transmission	
Moderator	L. Bourouiba (MIT, USA) / Roberto Verzicco (Univ. Rome Tor Vergata, Italy)	
Room	Room 325B, 3F	
MoMS0601 (INVITED)	10:20~10:50	THE INFECTION CONTROL CULTURE WARS – IMPLICATIONS FOR CONTROL OF AIRBORNE PATHOGENS **Chandini Raina Raina MacIntyre** (UNSW, Australia) Corresponding Author Chandini Raina Raina MacIntyre (UNSW, Australia)
MoMS0602 (INVITED)	10:50~11:20	INFLUENCE OF THE GEOMETRY OF THE ENVIRONMENT ON SHORT-RANGE TRANSMISSION OF RESPIRATORY DISEASES: THE EXAMPLE OF THE TABLE **Simon Mendez** (CNR, France) Corresponding Author Simon Mendez (CNRS, France)
MoMS0603 (INVITED)	11:20~11:50	AEROSOLIZATION MECHANISMS OF SALIVA DURING SPEECH **Manouk Abkarian** (CNRS-INSERM-Université de Montpellier, France) Corresponding Author Manouk Abkarian (CNRS-INSERM-Université de Montpellier, France)
MoMS0604 (INVITED)	11:50~12:20	DROPLET FRAGMENTATION AND AEROSOL FORMATION **Stephane Zaleski** (Sorbonne Université, France) Corresponding Author Stephane Zaleski (Sorbonne Université, France)
MS07	Non-reacting and reacting fluid dynamics for sustainable propulsion systems	
Moderator	Adam Michael Steinberg (Georgia Institute of Technology, USA) /	
Room	Room 325C, 3F	
MoMS0701 (INVITED)	10:20~10:50	HIGH-FREQUENCY TRANSVERSE COMBUSTION INSTABILITIES OF LEAN-PREMIXED HYDROGEN-AIR FLAMES **Kyutae Kim** (KAIST, Korea, Republic of) Corresponding Author Kyutae Kim (KAIST, Korea, Republic of)
MoMS0702 (INVITED)	10:50~11:20	NUMERICAL INVESTIGATION ON THE IMPACT OF HYDROGEN ON THE DYNAMICS AND ACOUSTIC RESPONSE OF LEAN PARTIALLY PREMIXED FLAMES IN GAS-TURBINE COMBUSTORS. **Davide Laera** (Polytechnic University of Bari, Italy) Corresponding Author Davide Laera (Polytechnic University of Bari, Italy)
MoMS0703 (INVITED)	11:20~11:50	PRESSURE EFFECTS ON THE MORPHOLOGY AND LUMINOSITY OF DUAL SWIRL H2-AIR FLAMES **Thibault Frederic Guiberti** (KAUST, Saudi Arabia) Corresponding Author Thibault Frederic Guiberti (KAUST, Saudi Arabia)
MoMS0704 (INVITED)	11:50~12:20	REDUCED ORDER MODELING FOR THE DYNAMICS OF SPRAY FLAMES **Vishal Srinivas Acharya** (Georgia Institute of Technology, USA) Corresponding Author Vishal Srinivas Acharya (Georgia Institute of Technology, USA)

MS08	Fluid mechanical challenges for sustainability & climate change	
Moderator	Graham Hughes (Imperial College London, United Kingdom)	
Room	Room 325D, 3F	
MoMS0801 (INVITED)	10:20~10:50	ANALYTICAL MODELING OF THE ATMOSPHERIC BOUNDARY LAYER FOR WIND ENERGY APPLICATIONS **Charles Meneveau** (Johns Hopkins University, USA) Corresponding Author Charles Meneveau (Johns Hopkins University, USA)
MoMS0802 (INVITED)	10:50~11:20	COMPUTATIONAL FLUID DYNAMICS FOR URBAN SUSTAINABILITY: GRAPPLING WITH THE COMPLEXITIES OF REAL-WORLD ENVIRONMENTS **Marco Giometto** (Columbia University, USA) Corresponding Author Marco Giometto (Columbia University, USA)
MoMS0803 (INVITED)	11:20~11:50	EVOLVING PERMEABILITY OF SUB- AND SUPRA- GLACIAL FLOW **Kasia Warburton** (Dartmouth College, USA) Corresponding Author Kasia Warburton (Dartmouth College, USA)
MoMS0804 (INVITED)	11:50~12:20	FATIGUE LOAD REDUCTION ON FLOATING WIND TURBINE IN AN UPSTREAM WAKE **Sang Lee** (Korea Advanced Institute of Science and Technology, Korea, Republic of) Corresponding Author Sang Lee (Korea Advanced Institute of Science and Technology, Korea, Republic of)

Oral Presentation 1		
FM15	Turbulence	
Moderator	Chao Sun (Tsinghua University, China) / Hayato Masuda (Osaka University, Japan)	
Room	Auditorium, 5F	
MoFM1501 (INVITED)	13:20~13:50	PHASE TRANSITIONS IN ATMOSPHERIC AND QUANTUM TURBULENCE **Pablo Daniel Mininni** (Universidad de Buenos Aires, Argentina) Corresponding Author Pablo Daniel Mininni (Universidad de Buenos Aires, Argentina)
MoFM1502 (INVITED)	13:50~14:20	A STUDY ON THE MECHANISM OF DRAG MODULATION BY DISPERSED DROPS IN TWO-PHASE TAYLOR-COUETTE TURBULENCE **Chao Sun** (Tsinghua University, China) Corresponding Author Chao Sun (Tsinghua University, China)
MoFM1503	14:20~14:40	WEAVING CLASSICAL TURBULENCE WITH QUANTUM SKELETON **Weiyu Shen** (Peking University, China) Corresponding Author Yue Yang (Peking University, China)
MoFM1504	14:40~15:00	LAGRANGIAN TRANSPORT FORMALISM FOR UNDERSTANDING AND SOLVING THE TURBULENT CHANNEL FLOW PROBLEM **T.-W. Lee** (Arizona State University, USA) Corresponding Author T.-W. Lee (Arizona State University, USA)
MoFM1505	15:00~15:20	MULTI-SCALAR MIXING IN BOUNDED AND UNBOUNDED TURBULENT FLOWS **Alais Hewes** (McGill University, Canada) Corresponding Author Laurent Mydlarski (McGill University, Canada)
MoFM1506	15:20~15:40	TURBULENCE MODULATION BY POLYMER ADDITIVES: UNDERSTANDING THROUGH THE HIERARCHY OF COHERENT VORTICES **Hayato Masuda** (Osaka University, Japan) Corresponding Author Hayato Masuda (Osaka University, Japan)

FS05	Fluid structure interactions	
Moderator	Ikhyun Kim (Keimyung University, Korea, Republic of) / René Ledesma-Alonso (Universidad Nacional Autónoma de México, Mexico)	
Room	Room 211, 2F	
MoFS0501	13:20~13:40	THE INTERACTION BETWEEN A 2D MECHANICAL VALVE AND A PULSATILE FLOW **René Ledesma-Alonso** (Universidad Nacional Autónoma de México, Mexico) Corresponding Author René Ledesma-Alonso (Universidad Nacional Autónoma de México, Mexico)
MoFS0502	13:40~14:00	EXPERIMENTAL INVESTIGATIONS OF SHOCK WAVE-INDUCED FeS TO α-Fe2O3 PHASE TRANSFORMATION FOR PHOTOCATALYTIC APPLICATION USING A SHOCK TUBE **Sivaprakash Paramasivam** (Keimyung University, Korea, Republic of) Corresponding Author Ikhyun Kim (Keimyung University, Korea, Republic of)
MoFS0503	14:00~14:20	MECHANICAL-THERMO-CHEMICAL COUPLED ABLATION MECHANISM OF HFTAC SOLID SOLUTION **Chunyu Cheng** (Xidian Univercity, China) Corresponding Author Yichun Zhou (Xidian University, China)
MoFS0504	14:20~14:40	ADVANCING DESORPTION RATES IN MAGNESIUM HYDRIDE TANKS THROUGH DUAL CONCENTRIC HEAT EXCHANGER DESIGN **Hongnan Zhang** (University of Kent, United Kingdom) Corresponding Author Bo Li (University of Kent, United Kingdom)
MoFS0505	14:40~15:00	BOILING LIQUID IMPACT OF A CIRCULAR FLAT DISC **Yee Li (Ellis) Fan** (University of Twente, Netherlands) Corresponding Author Yee Li (Ellis) Fan (University of Twente, Netherlands)
MoFS0506	15:00~15:20	EXPERIMENTAL INVESTIGATIONS OF ACOUSTIC SHOCK WAVE-INDUCED PHASE TRANSITIONS IN CHALCOGENIDES USING A TABLETOP PRESSURE-DRIVEN SHOCK TUBE **Martin Britto Dhas** (Keimyung University, Korea, Republic of) Corresponding Author Ikhyun Kim (Keimyung University, Korea, Republic of)
MoFS0507	15:20~15:40	THE ICE RESPONSE TO EXTERNAL LOADS IN FROZEN CHANNEL **Konstantin Alexandrovich Shishmarev** (Harbin Engineering University, China) Corresponding Author Konstantin Alexandrovich Shishmarev (Harbin Engineering University, China)
MoFS0508	15:40~16:00	SCALING OF CRITICAL REDUCED VELOCITY FOR GALLOPING ONSET **MD MAHBUB ALAM** (Harbin Institute of Technology (Shenzhen), China) Corresponding Author MD MAHBUB ALAM (Harbin Institute of Technology (Shenzhen), China)

FS04	Porous media and liquid foam	
Moderator	Xiaojing Fu (California Institute of Technology, USA) / Mamta Jotkar (Universidad Politécnica de Madrid, Spain)	
Room	Room 214, 2F	
MoFS0401 (INVITED)	13:20~13:50	PHYSICAL PRINCIPLES BEHIND PHASE SEPARATION FORMING POROUS STRUCTURES **Hajime Tanaka** (The University of Tokyo, Japan) Corresponding Author Hajime Tanaka (The University of Tokyo, Japan)
MoFS0402 (INVITED)	13:50~14:20	WETTABILITY EFFECTS ON MULTIPHASE DISPLACEMENT IN POROUS MEDIA BY MICROFLUIDIC EXPERIMENTS **Moran Wang** (Tsinghua University, China) Corresponding Author Moran Wang (Tsinghua University, China)
MoFS0403	14:20~14:40	CAPILLARY RISE IN CELLULOSE FOAM AND IN A PACKING OF GLASS SPHERES **Norman A. Fleck** (Cambridge University, United Kingdom) Corresponding Author Norman A. Fleck (Cambridge University, United Kingdom)
MoFS0404	14:40~15:00	HOW MISCIBLE VISCOUS FINGERING OCCURS IN A HYPERUNIFORM POROUS MEDIUM **Mamta Jotkar** (Universidad Politécnica de Madrid, Spain) Corresponding Author Mamta Jotkar (Universidad Politécnica de Madrid, Spain)
MoFS0405	15:00~15:20	A PHASE-FIELD MODEL FOR COARSENING OF THREE-PHASE POROUS MATERIALS: AN ANALOG STUDY WITH SNOW **Xiaojing Fu** (California Institute of Technology, USA) Corresponding Author Xiaojing Fu (California Institute of Technology, USA)
MoFS0406	15:20~15:40	TIME DEPENDENT MISCIBLE DISPLACEMENTS IN LAYERED POROUS MEDIA **Syed Zahid** (SRM University AP, India) Corresponding Author Tapan Kumar Hota (SRM University AP, India)

FS08	Education in mechanics	
Moderator	Francesco Dal Corso (University of Trento, Italy) / Tomohiko Sano (Keio University, Japan)	
Room	Room 217, 2F	
MoFS0801	13:20~13:40	ALTERNATIVEMETHODS FOR INTRODUCING STRENGTH CRITERIA **Holm Altenbach** (Otto-von-Guericke-Universität Magdeburg, Germany) Corresponding Author Holm Altenbach (Otto-von-Guericke-Universität Magdeburg, Germany)
MoFS0802	13:40~14:00	ABSOLUTE AND RELATIVE ACCELEARATIONS: COMPARISON BETWEEN CHINESE AND AMERICAN TEXTBOOKS OF MECHANICS **Li-Qun Chen** (Shanghai University, China) Corresponding Author Li-Qun Chen (Shanghai University, China)
MoFS0803	14:00~14:20	THE SCAFFOLDED PROJECT: FROM EXAM PROBLEMS TO POSTERS PRESENTING SELF-DEFINED PROJECTS IN FOUR SEMINARS **Outi Tammisola** (KTH Royal institute of Technology, Sweden) Corresponding Author Fredrik Lundell (Royal Institute of Technology, Sweden)
MoFS0804	14:20~14:40	THREE PEDAGOGICAL PRINCIPLES FOR TEACHING MECHANICS **Mohd Furquan** (Indian Institute of Technology Delhi, India) Corresponding Author Mohd Furquan (Indian Institute of Technology Delhi, India)
MoFS0805	14:40~15:00	UNDERSTANDING WHISTLING WATER JARS: MECHANICS MEETS CULTURE **Vikram Pakrashi** (University College Dublin, Ireland) Corresponding Author Vikram Pakrashi (University College Dublin, Ireland)
MoFS0806	15:00~15:20	DEVELOPING AN INTERDISCIPLINARY STEAM COURSE THAT INTEGRATES ARTS INTO MATERIALS SCIENCE EDUCATION **In-Suk Choi** (Seoul National University, Korea, Republic of) Corresponding Author In-Suk Choi (Seoul National University, Korea, Republic of)
MoFS0807	15:20~15:40	ADVANCED BIFURCATION ANALYSIS USING MODIFIED STIFFNESS METHOD OF GROUP THEORETIC IMPERFECTIONS **I. Ario** (Hiroshima University, Japan) Corresponding Author Haicheng Ma (Hiroshima University, Japan)
MoFS0808	15:40~16:00	TOPOLOGY-OPTIMIZED TPMS STRUCTURES IN DOUBLE-WALL COOLING **Kirttayoth Yeranee** (Shanghai Jiao Tong University, China) Corresponding Author Yu Rao (Shanghai Jiao Tong University, China)

FM17	Waves in fluids	
Moderator	Triantaphyllos Akylas (Massachusetts Institute of Technology, USA) / Lev Shemer (Tel Aviv University, Israel)	
Room	Room 219, 2F	
MoFM1701 (INVITED)	13:20~13:50	NONLINEAR SURFACE WAVE PATTERNS AND EXPONENTIAL ASYMPTOTICS **Triantaphyllos Akylas** (Massachusetts Institute of Technology, USA) Corresponding Author Triantaphyllos Akylas (Massachusetts Institute of Technology, USA)
MoFM1702 (INVITED)	13:50~14:20	SPATIAL EVOLUTION OF YOUNG WIND WAVES UNDER STEADY WIND FORCING **Lev Shemer** (Tel Aviv University, Israel) Corresponding Author Lev Shemer (Tel Aviv University, Israel)
MoFM1703	14:20~14:40	SELF-INDUCED TRANSPARENCY OF LONG WATER WAVES OVER BATHYMETRY: THE DISPERSIVE SHOCK MECHANISM **Victor I Shrira** (Keele University, United Kingdom) Corresponding Author Victor I Shrira (Keele University, United Kingdom)
MoFM1704	14:40~15:00	NONLINEAR RESONANT STANDING WAVES EXCITED BY A FINITE WAVEMAKER **Evgeny Mogilevskiy** (Tel Aviv University, Israel) Corresponding Author Evgeny Mogilevskiy (Tel Aviv University, Israel)
MoFM1705	15:00~15:20	NUMERICAL SIMULATIONS FOR SURFACTANT-COVERED FARADAY WAVES: ROLE OF MARANGONI STRESSES IN PATTERN FORMATION **Debashis Panda** (Imperial College London, United Kingdom) Corresponding Author Debashis Panda (Imperial College London, United Kingdom)
MoFM1706	15:20~15:40	ACOUSTIC-GRAVITY WAVES IN A STRATIFIED OCEAN **Injamamul Haque Ahmed** (Institute of Advanced Study in Science and Technology, Guwahati, India) Corresponding Author Injamamul Haque Ahmed (Institute of Advanced Study in Science and Technology, Guwahati, India)
MoFM1707	15:40~16:00	HYSTERESIS PHENOMENA OF FORCED GRAVITY–CAPILLARY WAVES ON DEEP WATER **Beomchan Park** (Incheon international airport corporation, Korea, Republic of) Corresponding Author Yeunwoo Cho (Korea Advanced Institute of Science and Technology, Korea, Republic of)

SM01	Biomechanics and biomaterials	
Moderator	Guy M Genin (Washington University in St. Louis, USA) / Shamik Sen (IIT Bombay, India)	
Room	Room 306A, 3F	
MoSM0101	13:20~13:40	MEASURING MECHANICAL BEHAVIOUR OF GRIP-ACTIVATED HAND MUSCLES **Simon Vauthier** (Institut national de recherche et de sécurité (INRS), France) Corresponding Author Christophe NOEL (INRS, France)
MoSM0102	13:40~14:00	TOWARDS DIGITAL FOOT TWIN **G. K. Ananthasuresh** (Indian Institute of Science, India) Corresponding Author G. K. Ananthasuresh (Indian Institute of Science, India)
MoSM0103	14:00~14:20	RESEARCH SKIN STRAIN'S IMPACT ON SPECTRAL REFLECTANCE THROUGH HYPERSPECTRAL IMAGING **Zongze Huo** (Tianjin university, China) Corresponding Author Zhiyong Wang (Department of Mechanics, School of Mechanical Engineering, Tianjin University, China)
MoSM0104	14:20~14:40	SAGA OF THE STRONGEST SPINE: UNRAVELLING THE MECHANICAL UNDERPINNINGS OF THE HERO SHREW SPINE **Sri Ganesh Subramanian** (University of Manchester, United Kingdom) Corresponding Author Finn Box (University of Manchester, United Kingdom)
MoSM0105	14:40~15:00	PASSIVE MECHANICS THEORY OF A SINGLE MUSCLE FIBER FOR MOLECULAR DIAGNOSIS OF MUSCLE DISEASES **bin chen** (Zhejiang Univ., China) Corresponding Author bin chen (Zhejiang Univ., China)
MoSM0106	15:00~15:20	BIOCHEMOMECHANICAL MODEL OF DORSAL CLOSURE IN DROSOPHILA EMBRYOGENESIS **Xiqiao Feng** (Tsinghua University, China) Corresponding Author Xiqiao Feng (Tsinghua University, China)

SM14	Computational solid mechanics	
Moderator	Emilio Martinez-Paneda (University of Oxford, United Kingdom) / Shaoxing Qu (Zhejiang University, China)	
Room	Room 306B, 3F	
MoSM1401	13:20~13:40	A COMPUTATIONAL FRAMEWORK FOR PREDICTING HYDROGEN-ASSISTED FAILURES **Emilio Martinez-Paneda** (University of Oxford, United Kingdom) Corresponding Author Emilio Martinez-Paneda (University of Oxford, United Kingdom)
MoSM1402	13:40~14:00	MOLECULAR SIMULATION-GUIDED AND PHYSICS-INFORMED CONSTITUTIVE MODELING OF HIGHLY STRETCHABLE HYDROGELS WITH DYNAMIC IONIC BONDS **Shaoxing Qu** (Zhejiang University, China) Corresponding Author Shaoxing Qu (Zhejiang University, China)
MoSM1403	14:00~14:20	MULTISCALE FINITE ELEMENT MODELING OF DYNAMIC SHEAR LOCALIZATION AND FRACTURE IN POROUS PRINTED METALS **José Rodríguez-Martínez** (Universidad Carlos III de Madrid, Spain) Corresponding Author José Rodríguez-Martínez (Universidad Carlos III de Madrid, Spain)
MoSM1404	14:20~14:40	AN ATOMISTIC THERMO-CHEMO-MECHANICAL COUPLED MODEL FOR LONG-TERM HYDROGEN DIFFUSION IN MAGNESIUM **Pilar Ariza Moreno** (University of Seville, Spain) Corresponding Author Pilar Ariza Moreno (University of Seville, Spain)
MoSM1405	14:40~15:00	TOWARDS QUANTUM COMPUTATIONAL MECHANICS **Burigede Liu** (University of Cambridge, United Kingdom) Corresponding Author Burigede Liu (University of Cambridge, United Kingdom)
MoSM1406	15:00~15:20	PROXIMAL GALERKIN: A STRUCTURE-PRESERVING FINITE ELEMENT METHOD FOR POINTWISE BOUND CONSTRAINTS **Brendan Keith** (Brown University, USA) Corresponding Author Brendan Keith (Brown University, USA)

SM13	Stability and instability of materials and structures	
Moderator	Davide Bigoni (University of Trento, Italy) / Pedro Ponte Castañeda (University of Pennsylvania, USA)	
Room	Room 314, 3F	
MoSM1301 (INVITED)	13:20~13:50	MACROSCOPIC INSTABILITIES AND DOMAIN FORMATION IN PNEUMATICALLY ACTUATED POROUS ELASTOMERS **Pedro Ponte Castañeda** (University of Pennsylvania, USA) Corresponding Author Pedro Ponte Castañeda (University of Pennsylvania, USA)
MoSM1302 (INVITED)	13:50~14:20	SIZE-EFFECTS IN METAL MATRIX COMPOSITES UNDER LOWCYCLE SHEARING **Christian F. Niordson** (Technical University of Denmark, Denmark) Corresponding Author Christian F. Niordson (Technical University of Denmark, Denmark)
MoSM1303	14:20~14:40	WRINKLING OF A FILM/SUBSTRATE BILAYER WITH PERIODIC MATERIAL PROPERTIES: AN ASSESSMENT OF THE WINKLER FOUNDATION MODEL **Yibin Fu** (Tianjin University, China) Corresponding Author Yibin Fu (Tianjin University, China)
MoSM1304	14:40~15:00	EXPLORING MULTISTABILITY IN 3D PRINTED KRESLING STRUCTURES: INFLUENCE OF CREASE GEOMETRY AND VISCOSITY **Diego Misseroni** (University of Trento, Italy) Corresponding Author Diego Misseroni (University of Trento, Italy)
MoSM1305	15:00~15:20	SUBSTRATE NONLINEARITIES GOVERN MULTISTABILITY IN WRINKLING OF ELASTIC FILMS ON ELASTIC HALFSPACE **Jan Zavodnik** (University of Ljubljana, Slovenia) Corresponding Author Jan Zavodnik (University of Ljubljana, Slovenia)
MoSM1306	15:20~15:40	NUMERICAL ANALYSIS OF WRINKLE-TO-FOLD TRANSITIONS INDUCED BY WATER SURFCE TENSION **Rikuto Ohta** (Nagoya University, Japan) Corresponding Author So Nagashima (Nagoya University, Japan)
MoSM1307	15:40~16:00	BOUNDARY EFFECT ON SURFACE WRINKLING MORPHOLOGY IN STRIP REGIONS **Xinlu Deng** (Shanghai Jiao Tong University, China) Corresponding Author Kai-Ming Hu (Shanghai Jiao Tong University, China)

SM06	Impact mechanics and wave propagation	
Moderator	Yazhou Guo (Northwestern Polytechnical University, China, China) / Guiji Wang (Institute of Fluid Physics, China Academy of Engineering Physics, China)	
Room	Room 315, 3F	
MoSM0601 (INVITED)	13:20~13:50	A NEW STRENGTH MODEL FOR DUCTILE METALS CONSIDERING THE EFFECT OF THE STRESS STATES **Yazhou Guo** (Northwestern Polytechnical University, China, China) Corresponding Author Yazhou Guo (Northwestern Polytechnical University, China, China)
MoSM0602	13:50~14:10	DYNAMIC MECHANICAL RESPONSES OF COCRNI MEDIUM ENTROPY ALLOY UNDER SHOCK COMPRESSION **Guiji Wang** (Institute of Fluid Physics, China Academy of Engineering Physics, China) Corresponding Author Guiji Wang (Institute of Fluid Physics, China Academy of Engineering Physics, China)
MoSM0603	14:10~14:30	DEFORMATION MODES OF GRADIENT HEXACHIRAL AUXETICS: EXPERIMENTAL STUDY **Li Xin** (Nanjing university of science and technology, China) Corresponding Author Li Xin (Nanjing university of science and technology, China)
MoSM0604	14:30~14:50	DUAL-MODE DEFORMATION OF RESCH ORIGAMI FOR IMPACT MITIGATION **Changwoo Ha** (Seoul National University, Korea, Republic of) Corresponding Author Jinkyu Yang (Seoul National University, Korea, Republic of)

SM17	Metamaterials architectured materials and topology optimization	
Moderator	Ole SIgmund (Technical University of Denmark, Denmark) / Alejandro Marcos Aragón (Delft University of Technology, Netherlands)	
Room	Room 320A, 3F	
MoSM1701	13:20~13:40	IMPACT RESISTANCE OF DUAL-MATERIAL ASSEMBLED AUXETIC STRUCTURES **Weijing Wang** (Harbin Institute of Technology, China) Corresponding Author Li MA (Harbin Institute of Technology, China)
MoSM1702	13:40~14:00	MAXIMIZING FAILURE RESISTANCE OF PERIODIC AND APERIODIC ARCHITECTED MATERIALS **Markus Tandrup Holm** (Technical University of Denmark, Denmark) Corresponding Author Markus Tandrup Holm (Technical University of Denmark, Denmark)
MoSM1703	14:00~14:20	TOPOLOGY OPTIMIZATION OF FRACTURE METAMATERIALS **Alejandro Marcos Aragón** (Delft University of Technology, Netherlands) Corresponding Author Alejandro Marcos Aragón (Delft University of Technology, Netherlands)
MoSM1704	14:20~14:40	INVERSE DESIGN OF PLATE-LATTICES **Paul Philipp Meyer** (ETH Zurich, Switzerland) Corresponding Author Paul Philipp Meyer (ETH Zurich, Switzerland)
MoSM1705	14:40~15:00	DEFECT DYNAMICS STUDY ON PLASTICITY IN NANO-ARCHITECTURED METALS **ILL RYU** (Seoul National University, Korea, Republic of) Corresponding Author ILL RYU (Seoul National University, Korea, Republic of)
MoSM1706	15:00~15:20	ELASTIC BEHAVIOUR OF 2D-MICROBEAM-BASED LATTICE METAMATERIALS IN PRESENCE OF MODULATED ARCHITECTURE DISORDER **Thuy Nguyen** (DVRC, Paris & CEA/SPEC, France, France) Corresponding Author Thuy Nguyen (DVRC, Paris & CEA/SPEC, France, France)

SM18	Nonlinear dynamics for design	
Moderator	Jerzy Warminski (Lublin University of Technology, Poland) / Paulo Batista Gonçalves (Pontifical Catholic University of Rio de Janeiro, PUC-Rio, Brazil)	
Room	Room 320B, 3F	
MoSM1801	13:20~13:40	MECHANICAL DESIGN AND EXPERIMENTAL VERIFICATION OF A VIBRO-IMPACT CAPSULE MOVING IN SMALL BOWEL BASED ON NONLINEAR DYNAMICS **MAOLIN LIAO** (University of Science and Technology Beijing, China) Corresponding Author MAOLIN LIAO (University of Science and Technology Beijing, China)
MoSM1802	13:40~14:00	NONLINEAR VIBRATION BEHAVIOUR OF VISCOELASTIC LAMINATED COMPOSITE PLATES **Deepak Kumar** (Indian Institute of Technology Delhi, India) Corresponding Author Deepak Kumar (Indian Institute of Technology Delhi, India)
MoSM1803	14:00~14:20	INVERSE STATIC AND DYNAMIC DESIGN FOR MOTION CONTROL OF SOFT MACHINES DRIVEN BY DIELECTRIC ELASTOMER ACTUATORS **Tao Bo** (Beijing Institute of Technology, China) Corresponding Author Kai Luo (Beijing Institute of Technology, China)
MoSM1804	14:20~14:40	NONLINEAR DYNAMICS AND SYNCHRONIZATION PHENOMENON FOR ROTATING STRUCTURE WITH PENDULUMS **Zofia Szmit** (Lublin University of Technology, Poland) Corresponding Author Zofia Szmit (Lublin University of Technology, Poland)
MoSM1805	14:40~15:00	DYNAMIC DESIGN OF SOFT AND CONTINUUM SYSTEMS **Kai Luo** (Beijing Institute of Technology, China) Corresponding Author Kai Luo (Beijing Institute of Technology, China)
MoSM1806	15:00~15:20	DESIGN OPTIMIZATION OF FORCE-DEFLECTION CURVES FOR TRANSIENT DYNAMICS USING B-SPLINE PARAMETERIZATION **Sehyeon Kang** (Seoul National University, Korea, Republic of) Corresponding Author Seonho Cho (Seoul National University, Korea, Republic of)
MoSM1807	15:20~15:40	SLOWEST FLOW FOR A POINT MASS ON A VIBRATING HORIZONTAL FRICTIONAL TABLE **Dheeraj Varma Manthena** (Indian Institute of Technology Hyderabad, India) Corresponding Author Chandrika Prakash Vyasarayani (Indian Institute of Technology Hyderabad, India)
MoSM1808	15:40~16:00	ENERGY DISSIPATION OF NONLINEAR ENERGY SINK SYSTEM OF FINITE-LENGTH BEAM ON ELASTIC MEDIUM **Jianjun Ma** (Henan University of Science and Technology, China) Corresponding Author Jianjun Ma (Henan University of Science and Technology, China)

FM11	Low Reynolds number flows and suspension	
Moderator	Jae-Sung Kwon (Incheon National University, Korea, Republic of) / G P Raja Sekhar (Indian Institute of Technology Kharagpur, India)	
Room	Room 321A, 3F	
MoFM1101	13:20~13:40	ELECTROPHORETIC TRAJECTORY OF A NON-UNIFORMLY CHARGED PARTICLE SUSPENDED IN A VISCOELASTIC FLUID IN THE PRESENCE OF A BACKGROUND LINEAR FLOW **Rajnandan Borthakur** (Indian Institute of Technology Gandhinagar, Gujarat, India, India) Corresponding Author Rajnandan Borthakur (Indian Institute of Technology Gandhinagar, Gujarat, India, India)
MoFM1102	13:40~14:00	CLOGGING OF INTERLOCKING PARTICLES IN A 2D HOPPER **Jules Tampier** (CNRS - Paris Cité, France) Corresponding Author Jules Tampier (CNRS - Paris Cité, France)
MoFM1103	14:00~14:20	IMPACT OF VISCOSITY VARIATIONS ON SQUIRMER LOCOMOTION **G P Raja Sekhar** (Indian Institute of Technology Kharagpur, India) Corresponding Author G P Raja Sekhar (Indian Institute of Technology Kharagpur, India)
MoFM1104	14:20~14:40	RIGID-BODY MOTION OF A SLIP SOLID PARTICLE NEAR A PLANE SLIP WALL **Anis LOUCHAMI** (IRSN, France) Corresponding Author Anis LOUCHAMI (IRSN, France)
MoFM1105	14:40~15:00	ACOUSTOFLUDIC ALIGNMENT AND SEPARATION OF NON-SPHERICAL MICRO-OBJECTS BY ACOUSTIC RADIATION TORQUE AND FORCE **Muhammad Soban Khan** (Chonnam National University, Korea, Republic of) Corresponding Author Jinsoo Park (Chonnam National University, Korea, Republic of)
MoFM1106	15:00~15:20	MIGRATION OF AN ACTIVE DROPLET IN A COMBINED COUETTE-POISEUILLE FLOW **ARINDAM BASAK** (Indian Institute of Technology Kharagpur, India, India) Corresponding Author ARINDAM BASAK (Indian Institute of Technology Kharagpur, India, India)
MoFM1107	15:20~15:40	LET IT FLOW: CLOGGING BY BRIDGING OF SUSPENSIONS IN CONSTRICTED CHANNELS **Alban Sauret** (UCSB, USA) Corresponding Author Alban Sauret (UCSB, USA)

FM10	Geophysical and environmental fluid dynamics	
Moderator	Daniel Lecoanet (Northwestern University, USA) / Wontae Hwang (Seoul National University, Korea, Republic of)	
Room	Room 321B, 3F	
MoFM1001	13:20~13:40	THE PROBABILITY DENSITY BEHIND LAYERED THERMAL STRATIFICATIONS PRODUCED BY POINT SOURCES AND SINKS **Paul Michael Mannix** (Imperial College London, United Kingdom) Corresponding Author Paul Michael Mannix (Imperial College London, United Kingdom)
MoFM1002	13:40~14:00	LOCAL ENERGY-FLUX VECTOR IN STRONGLY STRATIFIED TURBULENCE **Naoto Yokoyama** (Tokyo Denki University, Japan) Corresponding Author Naoto Yokoyama (Tokyo Denki University, Japan)
MoFM1003	14:00~14:20	FROM A VORTEX GAS TO A VORTEX CRYSTAL IN INSTABILITY-DRIVEN TWO-DIMENSIONAL TURBULENCE **Adrian van Kan** (University of California at Berkeley, USA) Corresponding Author Adrian van Kan (University of California at Berkeley, USA)
MoFM1004	14:20~14:40	DYNAMIC PROPERTIES OF VORTICES IN DECAYING QUASI-GEOSTROPHIC TURBULENCE **Krishna Priya V R** (Indian Institute of Technology Kharagpur, India) Corresponding Author Krishna Priya V R (Indian Institute of Technology Kharagpur, India)
MoFM1005	14:40~15:00	WAVE-TURBULENCE INTERACTIONS IN A COMBINED WIND-WATER TUNNEL. **Pim Adriaan Bullee** (ETH Zürich, Switzerland) Corresponding Author Pim Adriaan Bullee (ETH Zürich, Switzerland)
MoFM1006	15:00~15:20	SHELL MODEL UNDERGOING A CRITICAL CASCADE TRANSITION **Santiago J. Benavides** (Universidad Politecnica de Madrid, Spain) Corresponding Author Santiago J. Benavides (Universidad Politecnica de Madrid, Spain)
MoFM1007	15:20~15:40	STRIPE STRUCTURES CORRESPONDING TO THE FOCUS WAVENUMBERS OF LOCAL FLUX VECTORS IN CHARNEY-HASEGAWA-MIMA TURBULENCE **Masanori TAKAOKA** (Doshisha University, Japan) Corresponding Author Masanori TAKAOKA (Doshisha University, Japan)
MoFM1008	15:40~16:00	NON-EQUILIBRIUM EFFECTS IN HYDROMAGNETIC DYNAMOS **Krzysztof A. Mizerski** (Institute of Geophysics, Polish Academy of Sciences, Poland) Corresponding Author Krzysztof A. Mizerski (Institute of Geophysics, Polish Academy of Sciences, Poland)

SM04	Damage & fracture mechanics	
Moderator	Djimedo KONDO (Sorbonne University, France) / Roberta Massabo (University of Genova, Italy)	
Room	Room 322A, 3F	
MoSM0401 (INVITED)	13:20~13:50	RECENT ADVANCES IN MODELLING HYDROGEN EMBRITTLEMENT IN ADVANCED ALLOYS **HUAJIAN GAO** (Tsinghua University, China) Corresponding Author Huajian Gao (Tsinghua University, China)
MoSM0402 (INVITED)	13:50~14:20	ADVANCEMENTS ON PHASE-FIELD MODELS FOR FRACTURE APPLIED TO QUASI-BRITTLE MATERIALS IN COMPRESSION **Marco Paggi** (IMT School for Advanced Studies Lucca, Italy) Corresponding Author Marco Paggi (IMT School for Advanced Studies Lucca, Italy)
MoSM0403	14:20~14:40	ON THE SUITABILITY OF SINGLE-EDGE NOTCH TENSION (SENT) TESTING FOR ASSESSING HYDROGEN-ASSISTED CRACKING SUSCEPTIBILITY **Livia Cupertino Malheiros** (Imperial College London, United Kingdom) Corresponding Author Livia Cupertino Malheiros (Imperial College London, United Kingdom)
MoSM0404	14:40~15:00	THE ORIGIN OF THE ENERGY SPLIT IN PHASE-FIELD FRACTURE AND EIGENFRACTURE **Johannes Storm** (Technische Universität Dresden, Germany) Corresponding Author Johannes Storm (Technische Universität Dresden, Germany)
MoSM0405	15:00~15:20	HYDROGEN-INDUCED FRACTURE OF ADVANCED HIGH-STRENGTH STEEL - FINITE ELEMENT MODELING AND VALIDATION **Geonjin Shin** (Seoul National University, Korea, Republic of) Corresponding Author Myoung-Gyu Lee (Seoul National University, Korea, Republic of)
MoSM0406	15:20~15:40	2D COMPRESSION PROBLEM : STUDY OF BIFURCATED SOLUTION IN FRACTURE BY ANALYTICAL AND NUMERICAL ANALYSES **Chaima Mastouri** (LSPM (CNRS-UPR 3407), Université Sorbonne Paris Nord, France) Corresponding Author Radhi Abdelmoula (LSPM (CNRS-UPR 3407), Université Sorbonne Paris Nord, France)
MoSM0407	15:40~16:00	AN ANISOTROPIC DEGRADATION TENSOR PHASE-FIELD MODEL APPLIED TO STRUCTURES UNDER COMPRESSION **Carlos Lamarca Carvalho Sousa Esteves** (Universidade Estadual de Campinas, Brazil) Corresponding Author Marco Lúcio Bittencourt (Universidade Estadual de Campinas, Brazil)

FM08	Flow instability and transition	
Moderator	Francois Gallaire (EPFL, Switzerland)	
Room	Room 322B, 3F	
MoFM0801	13:20~13:40	NOISE-INDUCED TRANSITIONS AFTER A STEADY SYMMETRY-BREAKING BIFURCATION: THE CASE OF THE SUDDEN EXPANSION **Francois Gallaire** (EPFL, Switzerland) Corresponding Author Francois Gallaire (EPFL, Switzerland)
MoFM0802	13:40~14:00	STREAMWISE-LOCALISED INVARIANT SOLUTIONS IN SQUARE-DUCT FLOW **Stanislaw Wojciech Gepner** (Warsaw University of Technology, Poland) Corresponding Author Stanislaw Wojciech Gepner (Warsaw University of Technology, Poland)
MoFM0803	14:00~14:20	ON THE ONSET AND EXPONENTIAL DECAY OF TURBULENCE IN PIPE **Alexander Yakhot** (Ben-Gurion University, Israel) Corresponding Author Alexander Yakhot (Ben-Gurion University, Israel)
MoFM0804	14:20~14:40	GLOBAL STABILITY OF BRANCHING PIPE NETWORKS **Thomas James Angus Scott** (Swinburne University of Technology, Australia) Corresponding Author Thomas James Angus Scott (Swinburne University of Technology, Australia)
MoFM0805	14:40~15:00	INSTABILITY OF RECIPROCATING PIPE FLOW IN A CURVED BEND **Fanrui Cheng** (Swinburne University of Technology, Australia) Corresponding Author Fanrui Cheng (Swinburne University of Technology, Australia)
MoFM0806	15:00~15:20	STABILITY OF COMPRESSIBLE CHANNEL FLOW PAST COMPLIANT WALLS **Mandeep Deka** (Indian Institute of Science (IISc) Bangalore, India) Corresponding Author Mandeep Deka (Indian Institute of Science (IISc) Bangalore, India)
MoFM0807	15:20~15:40	MEAN AZIMUTHAL VELOCITY OF PUFF IN PIPE FLOW **Cheng Chen** (Peking University, China) Corresponding Author Jianjun Tao (Peking University, China)

FM06	Drops, bubbles and interfaces	
Moderator	Cristian Marchioli (University of Udine, Italy) / Gretar Tryggvason (Johns Hopkins University, USA)	
Room	Room 323A, 3F	
MoFM0601 (INVITED)	13:20~13:50	NUMERICAL STUDIES OF THREE PHASE FLOWS **Gretar Tryggvason** (Johns Hopkins University, USA) Corresponding Author Gretar Tryggvason (Johns Hopkins University, USA)
MoFM0602 (INVITED)	13:50~14:20	MORPHOLOGY OF DROPLETS IN NEWTONIAN AND VISCOELASTIC TURBULENCE **Marco Edoardo Rosti** (Okinawa Institute of Science and Technology Graduate University, Japan) Corresponding Author Marco Edoardo Rosti (Okinawa Institute of Science and Technology Graduate University, Japan)
MoFM0603	14:20~14:40	UNDERSTANDING NON-NEWTONIAN DROP REBOUND SUPPRESSION ON UNSTRUCTURED SUPER-HYDROPHOBIC SURFACES : CAPILLARY PRESSURE & EXTENSIONAL VISCOSITY **Khusro Kamaluddin** (IIT Ropar, India) Corresponding Author Khusro Kamaluddin (Department of Mechanical Engineering, Indian Institute of Technology, Ropar, Rupnagar, Punjab 140001, INDIA, India)
MoFM0604	14:40~15:00	TOWARDS MODELLING HIGHLY COMPRESSIBLE TWO-PHASE FLOW NEAR THE LIQUID-VAPOR CRITICAL POINT USING PHASE-FIELD METHOD: A PRELIMINARY STUDY **sakir amiroudine** (University of Bordeaux, France) Corresponding Author sakir amiroudine (University of Bordeaux, France)
MoFM0672	15:00~15:20	CAPTURING THE KNIFE EDGE SHAPE OF A BUBBLE TRANSLATING THROUGH VISCOELASTIC SOLUTIONS **Yannis Dimakopoulos** (Department of Chemical Engineering, University of Patras, Greece) Corresponding Author Yannis Dimakopoulos (Department of Chemical Engineering, University of Patras, Greece)

FM12	Micro- and nano-fluidics	
Moderator	Maria Vittoria Salvetti (University of Pisa, Italy) / Gianluca Boccardo (Politecnico di Torino, Italy)	
Room	Room 323B, 3F	
MoFM1201 (INVITED)	13:20~13:50	COLLECTIVE EFFECTS IN BACTERIAL SUSPENSIONS **Carine Douarche** (CNRS, Université Paris Saclay, France) Corresponding Author Carine Douarche (CNRS, Université Paris Saclay, France)
MoFM1202 (INVITED)	13:50~14:20	QUARTZ CRYSTAL MICROBALANCE (QCM) FREQUENCY RESPONSE TO DISCRETE ADSORBATES IN LIQUIDS **Alexander M Leshansky** (Technion-IIT, Israel) Corresponding Author Alexander M Leshansky (Technion-IIT, Israel)
MoFM1203	14:20~14:40	ELECTRICALLY DRIVEN MOTION OF BUBBLES IN A MICROCHANNEL: TOWARDS NEW FILTRATION STRATEGIES **Anne-Laure Biance** (ILM, UMR 5306 CNRS, Université Lyon 1, France) Corresponding Author Anne-Laure Biance (ILM, UMR 5306 CNRS, Université Lyon 1, France)
MoFM1204	14:40~15:00	THERMOPHORESIS IN A MICROFLUIDIC CHIP WITH CONTROLLED TEMPERATURE GRADIENT: FROM NONEQUILIBRIUM SORET EFFECT TO NON-GAUSSIAN DIFFUSION **Xu Zheng** (Institute of Mechanics, CAS, China) Corresponding Author Xu Zheng (Institute of Mechanics, CAS, China)
MoFM1205	15:00~15:20	ELECTROKINETIC MULTIPHASE FLOW AT SPONTANEOUSLY CHARGED LIQUID-LIQUID INTERFACE: A DIFFUSE INTERFACE MODEL WITH ADSORPTION-INDUCED INTERFACE CHARGE **Yunfan Huang** (Tsinghua University, China) Corresponding Author Moran Wang (Tsinghua University, China)
MoFM1206	15:20~15:40	OVERSCREENING, FLOW REVERSAL AND COUNTERION SATURATION IN ELECTROOSMSOSIS OF MULTIVALENT ELECTROLYTES IN A NANOPORE **SHUBHRA SAHU** (INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR, India) Corresponding Author SHUBHRA SAHU (INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR, India)

FM04	Compressible flow	
Moderator	**Daniel Livescu** (Los Alamos National Laboratory, USA) / **Jaiyoung Ryu** (Korea University, Korea, Republic of)	
Room	Room 324A, 3F	
MoFM0401 (INVITED)	13:20~13:50	INTERPLAY BETWEEN TURBULENCE AND ACOUSTICS IN COMPRESSIBLE FLOWS **Sanjiva K Lele** (Stanford University, USA) Corresponding Author Sanjiva K Lele (Stanford University, USA)
MoFM0402 (INVITED)	13:50~14:20	REDUCING JET NOISE FROM AN UNDEREXPANDED BICONICAL NOZZLE **Daniel Joseph Bodony** (University of Illinois at Urbana-Champaign, USA) Corresponding Author Daniel Joseph Bodony (University of Illinois at Urbana-Champaign, USA)
MoFM0403	14:20~14:40	GUIDED JET MODE AS A SCREECH CLOSURE IN RECTANGULAR TWIN JETS **Jinah Jeun** (KTH Royal Institute of Technology, Sweden) Corresponding Author Jinah Jeun (KTH Royal Institute of Technology, Sweden)
MoFM0404	14:40~15:00	ON SUPERSONIC STARTING JETS IMPINGING UPON HEMISPHERIC CONCAVITIES **Daniel T. H. New** (Nanyang Technological University, Singapore) Corresponding Author Daniel T. H. New (Nanyang Technological University, Singapore)
MoFM0405	15:00~15:20	COMPUTATIONAL AERO ACOUSTICS OF SUPERSONIC FLOWS IN AXIAL JETS **ALEX JOSEPH P P** (Andong National University, Korea, Republic of) Corresponding Author HEUY DONG KIM (Andong National University, Korea, Republic of)
MoFM0406	15:20~15:40	INFLUENCE OF BLOWING RATIO OF SECONDARY PULSATING JETS ON MIXING ENHANCEMENT IN A SUPERSONIC EJECTOR **ABHILASH SURYAN RESIKENDRAN** (College of Engineering Trivandrum, India) Corresponding Author ABHILASH SURYAN RESIKENDRAN (College of Engineering Trivandrum, India)

FM03	Zero-emission combustion	
Moderator	**Chiara Galletti** (University pf Pisa, Italy)/ **Christine Mounaïm Rousselle** (Univ. Orléans, France)	
Room	Room 324B, 3F	
MoFM0301	13:20~13:40	FEATURES OF GAS DYNAMICS AND COMBUSTION OF TWO COLLIDING LAMINAR MINIJETS **Iurii Alexeevich Litvinenko** (Institute of Theoretical and Applied Mechanics SB RAS, Russia) Corresponding Author Iurii Alexeevich Litvinenko (Institute of Theoretical and Applied Mechanics SB RAS, Russia)
MoFM0302	13:40~14:00	REGIMES OF COMBUSTION OF HYDROGEN MICROJETS **Viktor Vladimirovich Kozlov** (Khristianovich Institute of Theoretical and Applied Mechanics of the Siberian Branch of the Russian Academy of Sciences, Russia) Corresponding Author Viktor Vladimirovich Kozlov (Khristianovich Institute of Theoretical and Applied Mechanics of the Siberian Branch of the Russian Academy of Sciences, Russia)
MoFM0303	14:00~14:20	FLASHBACK OF HYDROGEN FLAMES IN PREMIXED PERFORATED BURNERS: IMPACT OF THE HOLE SHAPE **Chiara Galletti** (University pf Pisa, Italy) Corresponding Author Rachele Lamioni (University of Pisa, Italy)
MoFM0304	14:20~14:40	GRAVITY EFFECTS ON THE LARGE-SCALE PREMIXED FLAME DYNAMICS - FROM LINEAR TO NONLINEAR EVOLUTION **jun jie wang** (Shanghai Jiao Tong University, China) Corresponding Author Hui Xu (Shanghai Jiaotong University, China)
MoFM0305	14:40~15:00	PERFORMANCE EVALUATION OF RADIATIVE PROPERTY MODELS FOR A SPHERICALLY EXPANDING NH3 PREMIXED FLAMES **Raghavendran Raman** (University of Orleans, France) Corresponding Author Raghavendran Raman (University of Orleans, France)
MoFM0306	15:00~15:20	EXPLORING VIABILITY OF OH* RADICALS AS FLAME MARKERS IN H2 COMBUSTION **Keerthana Gudemaranahalli Subramanya** (CNRS, Orleans, France) Corresponding Author Keerthana Gudemaranahalli Subramanya (CNRS, Orleans, France)
MoFM0307	15:20~15:40	EFFECTS OF AMMONIA DISSOCIATION ON THE FORCED IGNITION AND SPHERICAL FLAME PROPAGATION IN AMMONIA/AIR MIXTURES **Zhuyi Qu** (Peking University, China) Corresponding Author Zhuyi Qu (Peking University, China)
MoFM0308	15:40~16:00	AMMONIA LIGHT DUTY-ENGINES : MAIN ISSUES FOR IGNITION **Christine Mounaïm Rousselle** (Univ. Orléans, France) Corresponding Author Christine Mounaïm Rousselle (Univ. Orléans, France)

FM01	Biological fluid mechanics	
Moderator	Sarah Waters (University of Oxford, United Kingdom) / Simon Mendez (CNRS, France)	
Room	Room 325A, 3F	
MoFM0101 (INVITED)	13:20~13:50	A HIGH--FIDELITY MODEL OF THE HUMAN HEART FOR VIRTUAL CLINICAL TRIALS **Roberto Verzicco** (Univ. Rome Tor Vergata, Italy) Corresponding Author Roberto Verzicco (Univ. Rome Tor Vergata, Italy)
MoFM0102 (INVITED)	13:50~14:20	MICROFLUIDIC MODEL OF MICRO-HAEMODYNAMICS IN COMPLEX MEDIA **Anne Juel** (University of Manchester, United Kingdom) Corresponding Author Anne Juel (University of Manchester, United Kingdom)
MoFM0103	14:20~14:40	BLOOD FLOW AND MICROPARTICLE TRANSPORT IN A MICROFLUIDIC BIFURCATION **Yinghui Li** (ETH Zurich, Switzerland) Corresponding Author Filippo Filippo Coletti (ETH Zurich, Switzerland)
MoFM0104	14:40~15:00	BLOOD RHEOLOGY IN MICROCIRCULATION **Andy Vinh Le** (University of Ottawa, Canada) Corresponding Author Manouk Abkarian (Centre de Biologie Structurale CBS, CNRS, INSERM, University of Montpellier, France)
MoFM0105	15:00~15:20	STRUCTURAL DETERMINANTS OF FUNCTION IN THE HUMAN PLACENTA AND THE UMBILICAL CORD **Igor L Chernyavsky** (University of Manchester, United Kingdom) Corresponding Author Igor L Chernyavsky (University of Manchester, United Kingdom)
MoFM0106	15:20~15:40	MULTISCALE COMPUTATIONAL METHODS MODELING HEAT TRANSFER BETWEEN BODY TISSUE AND BLOOD FLOW **Hyeonggyu Song** (Korea Advanced Institute of Science and Technology; KAIST, Korea, Republic of) Corresponding Author HYUN JIN KIM (Korea Advanced Institute of Science and Technology, Korea, Republic of)

FM07	Multiphase and particle-laden flows	
Moderator	Francesco Picano (University of Padova, Italy) / Jacek Pozorski (Polish Academy of Sciences, Poland)	
Room	Room 325B, 3F	
MoFM0701 (INVITED)	13:20~13:50	UNIFIED UNDERSTANDING OF TURBULENCE ATTENUATION BY SOLID PARTICLES **Susumu Goto** (Osaka University, Japan) Corresponding Author Susumu Goto (Osaka University, Japan)
MoFM0702 (INVITED)	13:50~14:20	EFFECTS OF HIERARCHICAL STRUCTURES ON PARTICLE TRANSPORT IN WALL TURBULENCE **Chunxiao Xu** (Tsinghua University, China) Corresponding Author Chunxiao Xu (Tsinghua University, China)
MoFM0703	14:20~14:40	PARTICLE PREFERENTIAL SAMPLING AND CLUSTERING IN HOMOGENEOUS ISOTROPIC TURBULENCE **Alessandro Chiarini** (Okinawa Institute of Science and Technology Graduate University, Japan) Corresponding Author Alessandro Chiarini (Okinawa Institute of Science and Technology Graduate University, Japan
MoFM0704	14:40~15:00	SEDIMENTATION OF SHORT-LIVED RAPID FLOWS OF PARTICULATE SUSPENSIONS **Laurence GIROLAMI** (INRAe, France) Corresponding Author Laurence GIROLAMI (INRAe, France)
MoFM0705	15:00~15:20	CHARACTERISTICS OF BUBBLE CLUSTERS OF RISING AIR BUBBLES IN STAGNANT WATER **Ingu Lee** (Seoul National University, Korea, Republic of) Corresponding Author Haecheon Choi (Seoul National University, Korea, Republic of)
MoFM0706	15:20~15:40	EXPERIMENTAL STUDY ON RADIAL DISTRIBUTION FUNCTION OF COLLIDING PARTICLES IN TURBULENCE FLOW **linli fu** (Sun Yat-sen University, China) Corresponding Author ewe-wei wei saw (Sun Yat-Sen University, China)
MoFM0707	15:40~16:00	PARTICLE RESOLVED DIRECT NUMERICAL SIMULATIONS WITH THE VOLUME-FILTERING METHOD **M. Houssem Kasbaoui** (Arizona State University, USA) Corresponding Author M. Houssem Kasbaoui (Arizona State University, USA)

FM16	Vortex dynamics	
Moderator	Kunihiko Taira (UCLA, USA) / Ari Glezer (Georgia Instiute of Technology, USA)	
Room	Room 325C, 3F	
MoFM1601 (INVITED)	13:20~13:50	EXTREME AERODYNAMICS: APPROACHES AND CHALLENGES IN VORTEX DYNAMICS **Kunihiko Taira** (UCLA, USA) Corresponding Author Kunihiko Taira (UCLA, USA)
MoFM1602 (INVITED)	13:50~14:20	FORMATION AND CONTROL OF A GROUND VORTEX **Ari Glezer** (Georgia Instiute of Technology, USA) Corresponding Author Ari Glezer (Georgia Instiute of Technology, USA)
MoFM1603	14:20~14:40	PARTICLE-INITIATED TRANSIENT GROWTH OF A WAKE VORTEX IN CONSIDERATION OF CONDENSATION TRAILS **Sangjoon Lee** (University of California, Berkeley, USA) Corresponding Author Sangjoon Lee (University of California, Berkeley, USA)
MoFM1604	14:40~15:00	CAPTURING THE DYNAMICS OF TOPOLOGICAL VORTEX STRUCTURES IN THE LEFT VENTRICLE OF THE HEART **Takashi Sakajo** (Kyoto University, Japan) Corresponding Author Takashi Sakajo (Kyoto University, Japan)
MoFM1605	15:00~15:20	A CFD STUDY ON NOZZLE THRUST VECTORING AND GROUND EFFECTS FOR V/STOL AIRCRAFT **CHANHO PARK** (Gwangju Institution of Science and Technology, Korea, Republic of) Corresponding Author CHANHO PARK (Gwangju Institution of Science and Technology, Korea, Republic of)

FM18	Electro- and magneto-hydrodynamics	
Moderator	Gunter Gerbeth (Helmholtz-Zentrum Dresden-Rossendorf, Germany) / Minping Wan (Southern University of Science and Technology, China)	
Room	Room 325D, 3F	
MoFM1801	13:20~13:40	NUMERICAL INVESTIGATION OF THE ROLE OF ENERGY TRANSFERS IN THE VON KáRMáN SODIUM DYNAMO EXPERIMENT **Caroline Nore** (Paris Saclay University, CNRS, LISN, France) Corresponding Author Caroline Nore (Paris Saclay University, CNRS, LISN, France)
MoFM1802	13:40~14:00	EXPERIMENTAL STUDY OF A SINGLE BUBBLE MOTION IN A LIQUID METAL UNDER A HORIZONTAL MAGNETIC FIELD **Gou Hao Yang** (University of Chinese Academy of Sciences, China) Corresponding Author Zhaohui Yao (University of Chinese Academy of Sciences, China)
MoFM1803	14:00~14:20	IMPACT OF MHD MIXED CONVECTION ON THERMAL AND MASS TRANSPORT IN A TYPICAL DCLL BREEDER BLANKET **Wen-Xuan Zhang** (Tianjin University, China) Corresponding Author Feng-Chen Li (Tianjin University, China)
MoFM1804	14:20~14:40	THE RATE OF DISSIPATION OF TOPOLOGICAL IDEAL INVARIANTS OF NON-BAROTROPIC MHD **Asher Yahalom** (Ariel University, Israel) Corresponding Author Asher Yahalom (Ariel University, Israel)
MoFM1805	14:40~15:00	REVERSAL BEHAVIOR OF QUASI-TWO-DIMENSIONAL LIQUID METAL CONVECTION IN A HORIZONTAL MAGNETIC FIELD **Yanwu Cao** (Xi'an Jiaotong University, China) Corresponding Author Juancheng Yang (Xi'an Jiaotong University, China)
MoFM1806	15:00~15:20	TURBULENT TAYLOR-COUETTE FLOW WITH MHD INTERACTION IN AXIAL MAGNETIC FIELD **Hiromichi Kobayashi** (Keio University, Japan) Corresponding Author Hiromichi Kobayashi (Keio University, Japan)
MoFM1807	15:20~15:40	EFFICIENT AND STABLE NUMERICAL METHOD FOR HYPERSONIC MHD WITH STRONGLY VARYING CONDUCTIVITY **Shunhao Peng** (Northwestern Polytechnical University, China) Corresponding Author Yongliang Feng (Northwestern Polytechnical University, China)
MoFM1821	15:40~16:00	FROM DIFFUSION TO WAVE PROPAGATION IN LOW-RM MHD **Samy Lalloz** (Coventry University, United Kingdom) Corresponding Author Samy Lalloz (Coventry University, United Kingdom)

MS03	Nonlinear mechanical models for biological and bioinspired materials	
Moderator	Tao Liu (Queen Mary University London, United Kingdom) / Lukas Laubert (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)	
Room	Room 503, 5F	
MoMS0305	13:20~13:40	QUASI-STATIC RESPONSES OF MARINE MUSSEL PLAQUES ATTACHED TO DEFORMABLE SUBSTRATES UNDER TENSIONS **Tao Liu** (Queen Mary University London, United Kingdom) Corresponding Author Tao Liu (Queen Mary University London, United Kingdom)
MoMS0306	13:40~14:00	MULTI-LEVEL PARAMETER IDENTIFICATION OF A FINITE-STRAIN VISCOELASTIC-VISCOPLASTIC MATERIAL MODEL FOR BIO-SOURCED EPOXY **Lukas Laubert** (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany) Corresponding Author Lukas Laubert (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
MoMS0307	14:00~14:20	MULTISCALE MECHANICS AND OPTIMIZATION DESIGN OF BIOINSPIRED FRACTURE RESISTANT AND IMPACT RESISTANT HETEROSTRUCTURES **Kaijin Wu** (University of Science and Technology of China, China) Corresponding Author Kaijin Wu (University of Science and Technology of China, China)
MoMS0308	14:20~14:40	MECHANICS OF SPIDER SILK CUTTING **Gabriele Greco** (University of Trento, Italy) Corresponding Author Gabriele Greco (University of Trento, Italy)
MoMS0309	14:40~15:00	DROPLETS COLLECTION AND TRANSPORT INSIPIRED BY DESERT BEETLES **Shaohua Chen** (Beijing Institute of Technology, China) Corresponding Author Shaohua Chen (Beijing Institute of Technology, China)
MoMS0310	15:00~15:20	TOPOLOGY OPTIMISATION FOR ENHANCING AUXETIC PROPERTIES OF SKIN BIOMATERIALS **Raj Das** (RMIT University, Australia) Corresponding Author Raj Das (RMIT University, Australia)
MoMS0311	15:20~15:40	A SLIDING FILAMENT MUSCULAR MODEL FOR FLAPPING FLIGHT OF INSECTS **Artyom Falman** (Skolkovo Institute of Science and Technology, Russia) Corresponding Author Artyom Falman (Skolkovo Institute of Science and Technology, Russia)

MS05	Data-driven mechanics and artificial intelligence	
Moderator	Balint Kaszas (ETH Zurich, Switzerland)	
Room	Room 504, 5F	
MoMS0505	13:20~13:40	PHYSICS-INFORMED NETWORK BASED CRACK SIMULATION BY MINIMIZING PERIDYNAMIC POTENTIAL ENERGY **Luyuan Ning** (Shanghai Jiao Tong University, China) Corresponding Author Weizhe Wang (Shanghai Jiao Tong University, China)
MoMS0506	13:40~14:00	A MACHINE LEARNING-ENHANCED SURROGATE MODEL FOR MECHANICAL HISTORY PREDICTION OF KIRIGAMI-INSPIRED METAMATERIALS **Yujie Xiang** (Tongji University, China) Corresponding Author Keke Tang (Tongji University, China)
MoMS0507	14:00~14:20	DEEP LEARNING MODEL FOR PREDICTING IMPACT RESPONSE OF THE SPACECRAFT SOFT LANDING ON THE COMPLEX AIRBAG SYSTEM **Xinyi Shen** (Peking University, China) Corresponding Author Caishan Liu (Peking University, China)
MoMS0508	14:20~14:40	DATA-DRIVEN IDENTIFICATION OF NONLINEAR NORMAL MODES WITH INVARIANT MANIFOLDS **Shanwu Li** (Michigan Technological University, USA) Corresponding Author Shanwu Li (Michigan Technological University, USA)
MoMS0509	14:40~15:00	TRANSFORMER-BASED EMULATOR AND DEEP REINFORCEMENT LEARNING FOR ACTIVE FLOW CONTROL IN 2D CYLINDER AND 3D AIRFOIL WAKES **ZHANG MENG** (Pusan National University, Korea, Republic of) Corresponding Author HeeChang LIM (Pusan National University, Korea, Republic of)

MS02	Soft matter, theory meets experiment	
Moderator	**Junsoo Kim** (Northwestern University, USA) / **Zheng Jia** (Zhejiang University, China)	
Room	Room 505, 5F	
MoMS0205	13:20~13:40	HIGH-THROUGHPUT RUPTURE EXPERIMENT OF SOFT MATERIALS **Tongqing Lu** (Xi'an Jiaotong University, China) Corresponding Author Tongqing Lu (Xi'an Jiaotong University, China)
MoMS0206	13:40~14:00	FRACTURE-RESISTANT SOFT MATERIALS BY TOPOLOGY ENGINEERING **Junsoo Kim** (Northwestern University, USA) Corresponding Author Junsoo Kim (Northwestern University, USA)
MoMS0207	14:00~14:20	CAVITATION AND FRACTURE IN CONFINED ELASTOMER LAYERS **Rui Huang** (University of Texas at Austin, USA) Corresponding Author Rui Huang (University of Texas at Austin, USA)
MoMS0208	14:20~14:40	FRACTURE MECHANICS OF HETEROGENEOUS SOFT MATERIALS **Zhengjin Wang** (Xi'an Jiaotong University, China) Corresponding Author Zhengjin Wang (Xi'an Jiaotong University, China)
MoMS0209	14:40~15:00	SIZE-DEPENDENT FRACTURE OF STRETCHABLE FIBER-NETWORK REINFORCED COMPOSITES **Xiao Li** (Xi'an Jiaotong University, China) Corresponding Author Zhengjin Wang (Xi'an Jiaotong University, China)
MoMS0210	15:00~15:20	FRACTURE OF VISCOELASTIC LIQUID CRYSTAL ELASTOMERS **Lihua Jin** (University of California, Los Angeles, USA) Corresponding Author Lihua Jin (University of California, Los Angeles, USA)
MoMS0211	15:20~15:40	90 DEGREE PEELING OF ELASTIC THIN FILMS FROM ELASTIC SOFT SUBSTRATES **Hao Long** (Peking University, China) Corresponding Author Yueguang We (Peking University, China)
MoMS0212	15:40~16:00	ANOMALOUS FRACTURE BEHAVIOR OF SOFT LAYERED MATERIALS **Zheng Jia** (Zhejiang University, China) Corresponding Author Zheng Jia (Zhejiang University, China)

FM09	Thin film flows	
Moderator	**Georg F. DIETZE** (CNRS - Université Paris-Saclay, France) / **zijing ding** (Harbin Institute of Technology, China)	
Room	Room 506, 5F	
MoFM0901	13:20~13:40	REVISITING VISCOELASTIC FILM FLOWS ON SLIPPERY BOUNDARIES: LINEAR & NONLINEAR WAVES **zijing ding** (Harbin Institute of Technology, China) Corresponding Author zijing ding (Harbin Institute of Technology, China)
MoFM0902	13:40~14:00	STABILITY OF A SHEAR-IMPOSED HEATED FALLING FILM DOWN A SLIPPERY INCLINED PLANE **Arnab Choudhury** (Indian Institute of Technology Delhi, India) Corresponding Author Arnab Choudhury (Indian Institute of Technology Delhi, India)
MoFM0903	14:00~14:20	IMBIBITION VERSUS TRANSPORT OF THIN FILM FLOW IN A MESOPORE **Philippe Beltrame** (Avignon Université, France) Corresponding Author Philippe Beltrame (Avignon Université, France)
MoFM0904	14:20~14:40	INSTABILITIES OF LIQUID-LINED FLEXIBLE TUBES WITH INSOLUBLE SURFACTANT **Yazhou Chen** (Tsinghua University, China) Corresponding Author Jie Peng (AML, Department of Engineering Mechanics, Tsinghua University, China)
MoFM0905	14:40~15:00	AXISYMMETRIC LIQUID FILM FLOW ALONG A CONICAL SURFACE **Longmin Tang** (University of Chinese Academy of Science, China) Corresponding Author Guangzhao Zhou (University of Chinese Academy of Sciences, China)
MoFM0906	15:00~15:20	THREE DIMENSIONAL FREEZING OF A RIVULET **Hélie de Miramon** (Ladhyx, France) Corresponding Author Hélie de Miramon (Ladhyx, France)

Oral Presentation 2

FM15	Turbulence	
Moderator	Ruiyu Li (Xi'an Jiaotong University, China) / Bin Zang (University of Bristol, United Kingdom)	
Room	Auditorium, 5F	
MoFM1507	16:20~16:40	EXTENSIVE PARAMETER SURVEY FOR VERIFYING FEASIBILITY OF TURBULENCE MODEL BY MACHINE LEARNING **Satoshi Matsumoto** (Osaka University, Japan) Corresponding Author Satoshi Matsumoto (Osaka University, Japan)
MoFM1508	16:40~17:00	FLOW FIELD RECONSTRUCTION METHOD BASED ON DATA FUSION OF CFD SOLUTIONS AND EXPERIMENTAL DISCRETE DATA **Ruiyu Li** (Xi'an Jiaotong University, China) Corresponding Author Ruiyu Li (Xi'an Jiaotong University, China)
MoFM1509	17:00~17:20	TURBULENCE SUBGRID CLOSURE FOR THE LATTICE BOLTZMANN METHOD VIA ARTIFICIAL NEURAL NETWORKS **Giulio Ortali** (Eindhoven University of Technology, Netherlands) Corresponding Author Giulio Ortali (Eindhoven University of Technology, Netherlands)
MoFM1510	17:20~17:40	SPATIO-TEMPORAL PREDICTION OF COMPLEX FLOW PATTERNS USING VECTOR QUANTISED VARIATIONAL AUTOENCODER AND PROPER ORTHOGONAL DECOMPOSITION **Bin Zang** (University of Bristol, United Kingdom) Corresponding Author Bin Zang (University of Bristol, United Kingdom)
MoFM1511	17:40~18:00	PREDICTION OF FLOW AND ELASTIC STRESSES IN A VISCOELASTIC TURBULENT CHANNEL FLOW USING CONVOLUTIONAL NEURAL NETWORKS **Arivazhagan Geetha Balasubramanian** (KTH Royal Institute of Technology, Sweden) Corresponding Author Arivazhagan Geetha Balasubramanian (KTH Royal Institute of Technology, Sweden)
MoFM1512	18:00~18:20	THREE-DIMENSIONAL SPATIOTEMPORAL WIND FIELD FLOW RECONSTRUCTION BASED ON LIDAR AND PINNS **Yuanqing Chen** (Southern University of Science and Technology, China) Corresponding Author Minping Wan (Southern University of Science and Technology, China)
MoFM1513	18:20~18:40	OPTIMAL SPATIAL CONFIGURATION OF LIMITED MEASUREMENT LOCATIONS FOR FLOW RECONSTRUCTION **Ka Ip Justin Edmund Sun** (The Hong Kong University of Science and Technology, Hong Kong SAR, China) Corresponding Author Lin Fu (The Hong Kong University of Science and Technology, Hong Kong SAR, China)

FS05	Fluid structure interactions	
Moderator	Jonghyun Ha (Ajou University, Korea, Republic of) / Ikhyun Kim (Keimyung University, Korea, Republic of)	
Room	Room 211, 2F	
MoFS0509	16:20~16:40	ON THE SLAMMING OF A SNAPPING FLEXIBLE SHELL TO LIQUID SURFACE **Akihito Kiyama** (Saitama University, Japan) Corresponding Author Akihito Kiyama (Saitama University, Japan)
MoFS0510	16:40~17:00	INFLUENCES OF SHOCK WAVE INDUCED DYE DEGRADATION EFFICIENCY OF CRO3/FEW LAYERED G-C3N4 (CR/FCN) NANO STRUCTURED COMPOSITE **Sivaprakash Paramasivam** (Keimyung University, Korea, Republic of) Corresponding Author Ikhyun Kim (Keimyung University, Korea, Republic of)
MoFS0511	17:00~17:20	SLEEVE-TYPE NEGATIVE STIFFNESS METAMATERIAL WITH SHEAR THICKENING FLUID: ENHANCED & MULTI-STABLE IMPACT DAMPING **Yiran WU** (Hong Kong University of Science and Technology, China) Corresponding Author Jinglei YANG (Hong Kong University of Science and Technology, China)
MoFS0512	17:20~17:40	CAPILLARY AGGREGATION OF FIBROUS MEDIA VIA VISCOUS DRAINAGE **Seokmin Moon** (Ajou University, Korea, Republic of) Corresponding Author Jonghyun Ha (Ajou University, Korea, Republic of)
MoFS0513	17:40~18:00	BRINKMAN DOUBLE-LAYER MODEL FOR FLOW AT THE FREE-POROUS INTERFACE **Jinliang Kang** (Tsinghua University, China) Corresponding Author Moran Wang (Tsinghua University, China)
MoFS0514	18:00~18:20	SIMULATIONS OF POROUS MEDIA FLOW WITH FRACTURING **Federico Dalla Barba** (University of Padova, Italy) Corresponding Author Federico Dalla Barba (University of Padova, Italy)
MoFS0515	18:20~18:40	FLOATING ANISOTROPIC PARTICLES **Amir Gat** (Technion - Israel Institute of Technology, Israel) Corresponding Author Avital Reizman Mossad HaTechnion (Technion - Israel Institute of Technology, Israel)

FS09	Reduced order modeling of fluids and solids	
Moderator	Majdi AZAIEZ (Bordeaux INP, France) / Daniel Wilke (University of Pretoria, South Africa)	
Room	Room 214, 2F	
MoFS0901 (INVITED)	16:20~16:50	NON-INTRUSIVE REDUCED ORDER MODELING FOR UNCERTAINTY QUANTIFICATION OF FLUID-STRUCTURE INTERACTION PROBLEMS **Tiantian Xu** (Yonsei University, Korea, Republic of) Corresponding Author Jung-Il Choi (Yonsei University, Korea, Republic of)
MoFS0902 (INVITED)	16:50~17:20	DENOISING 4D FLOW MRI DATA THROUGH SINGULAR VALUE DECOMPOSITION WITH A SPLIT-AND-OVERLAP METHOD **Seungmin Kang** (Hanyang University, Korea, Republic of) Corresponding Author Simon Song (Hanyang University, Korea, Republic of)
MoFS0903	17:20~17:40	THREE DIMENSIONAL MELTING OF WALL MOUNTED ICE IN UNIFORM SHEAR FLOW **Thuy Duong Dang** (University College London, United Kingdom) Corresponding Author Thuy Duong Dang (University College London, United Kingdom)
MoFS0904	17:40~18:00	ONLY GRADIENTS AS A FUSION STRATEGY FOR MULTIFIDELITY SURROGATE MODELLING **Daniel Wilke** (University of Pretoria, South Africa) Corresponding Author Daniel Wilke (University of Pretoria, South Africa)
MoFS0905	18:00~18:20	STABILITY ANALYSIS OF AXIALLY MOVING PIPES WITH INTERNAL FLUID FLOW **Himanshu Giria** (IIT Kanpur, India) Corresponding Author Ishan Sharma (Indian Institute of Technology Kanpur, India)

FS08	Education in mechanics	
Moderator	Vikram Pakrashi (University College Dublin, Ireland) / Federico Bosi (University College London, United Kingdom)	
Room	Room 217, 2F	
MoFS0809 (INVITED)	16:20~16:50	PLAYING WITH MECHANICAL TOY STRUCTURES AND SOLIDS **Davide Bigoni** (University of Trento, Italy) Corresponding Author Davide Bigoni (University of Trento, Italy)
MoFS0810 (INVITED)	16:50~17:20	MAKING INTERACTIVE 3D TEACHING MATERIALS ACCESSIBLE FOR EDUCATORS **Kevin Nolan** (University College Dublin, Ireland) Corresponding Author Kevin Nolan (University College Dublin, Ireland)
MoFS0811	17:20~17:40	FLUX GAUGE-INVARIANCE CONDITION: TRADITIONAL VS GEOMETRIC MECHANICS **Salvatore Federico** (The University of Calgary, Canada) Corresponding Author Salvatore Federico (The University of Calgary, Canada)
MoFS0812	17:40~18:00	MECHANICS OF TENSION-INDUCED MEMBRANE WRINKLING AND BEYOND **Fan Xu** (Fudan University, China) Corresponding Author Fan Xu (Fudan University, China)
MoFS0813	18:00~18:20	ATOMIX-REVISITED: SEE A GRAIN BOUNDARY SLIDE **Mattia Bacca** (UBC, Canada) Corresponding Author Mattia Bacca (UBC, Canada)
MoFS0814	18:20~18:40	ACTIVE LEARNING FOR DYNAMICS OF STRUCTURES **Francesco Dal Corso** (University of Trento, Italy) Corresponding Author Francesco Dal Corso (University of Trento, Italy)

FS02	Emerging experimental techniques across the length and time scales	
Moderator	Kyung Chun Kim (Pusan National University, Korea, Republic of) / Francois HILD (ENS PARIS-SACLAY, France)	
Room	Room 219, 2F	
MoFS0201 (INVITED)	16:20~16:50	TEMPORAL RESPONSE DELAY OF TEMPERATURE SENSITIVE PAINT **Satoshi SOMEYA** (AIST, Japan) Corresponding Author Satoshi SOMEYA (AIST, Japan)
MoFS0202 (INVITED)	16:50~17:20	SKIN FRICTION EXTRACTED FROM PRESSURE AND TEMPERATURE SENSITIVE PAINTS **Tianshu Liu** (Western Michigan University, USA) Corresponding Author Tianshu Liu (Western Michigan University, USA)
MoFS0203	17:20~17:40	OPTICAL COHERENCE TOMOGRAPHY (OCT) IN FLUID MECHANICS: SCIENCE AND ART **Kasra Amini** (KTH Royal Institute of Technology, Sweden) Corresponding Author Kasra Amini (KTH Royal Institute of Technology, Sweden)
MoFS0204	17:40~18:00	LIQUID-DRIVEN GRANULAR MOTIONS AND CHANNEL BANK EROSION IN REFRACTIVE-INDEX-MATCHED TURBULENT BED-LOAD EXPERIMENTS **Wei-jay Ni** (National Taiwan University, China-Taipei) Corresponding Author Herve Capart (Department of Civil Engineering and Hydrotech Research Institute, National Taiwan University, Taiwan, China-Taipei)
MoFS0205	18:00~18:20	SIMULTANEOUS TIME-RESOLVED THREE-DIMENSIONAL MEASUREMENT OF LIQUID AND BUBBLES IN A TURBULENT BUBBLY JET WITH A MONO-DISPERSED BUBBLE GENERATOR **Hyunduk Seo** (Pusan National University, Korea, Republic of) Corresponding Author Kyung Chun Kim (Pusan National University, Korea, Republic of)
MoFS0206	18:20~18:40	PHYSICS INFORMED NEURAL NETWORKS FOR 3D FLOW FIELD RECONSTRUCTION **Hyungmin Shin** (University of Göttingen, Germany) Corresponding Author Andreas Schröder (German Aerospace Center, Germany)

SM01	Biomechanics and biomaterials	
Moderator	M Taher Saif (University of Illinois at Urbana-Champaign, USA)	
Room	Room 306A, 3F	
MoSM0107	16:20~16:40	FUNCTIONS OF PROLYL HYDROXYLATION IN ELASTIN **Anna Tarakanova** (University of Connecticut, USA) Corresponding Author Anna Tarakanova (University of Connecticut, USA)
MoSM0108	16:40~17:00	FRACTURE TOUGHNESS ANALYSIS OF HELICAL FIBER-REINFORCED BIOCOMPOSITES **Yuan Gao** (Hebei University of Technology, China) Corresponding Author Xiqiao Feng (Tsinghua University, China)
MoSM0109	17:00~17:20	BIOMIMETIC DESIGN AND APPLICATION OF MULTIFUNCTIONAL FLEXIBLE UNDERWATER ACOUSTIC METAMATERIAL **Ye Dingwei** (Beijing Institute of Technology, China) Corresponding Author Chao Wan (Beijing Institute of Technology, China)
MoSM0110	17:20~17:40	INVESTIGATING THE MECHANISMS OF PATELLA OSTEOCHONDRAL ALLOGRAFT TRANSPLANT FAILURE USING FINITE ELEMENT METHODS **Michael Andres Hernández Lamberty** (University of Michigan, USA) Corresponding Author Michael Andres Hernández Lamberty (University of Michigan, USA)
MoSM0111	17:40~18:00	MULTI-SCALE BIOMECHANICS OF VENUS FLYTRAP CLOSURE **Jeongeun Ryu** (University of Illinois Urbana-Champaign, USA) Corresponding Author Jeongeun Ryu (University of Illinois Urbana-Champaign, USA)
MoSM0112	18:00~18:20	THE MECHANICAL SECRETS OF THE SQUIRTING CUCUMBER **Finn Box** (University of Manchester, United Kingdom) Corresponding Author Finn Box (University of Manchester, United Kingdom)

SM14	Computational solid mechanics	
Moderator	Tim Hageman (University of Oxford, United Kingdom) / Niels Leergaard Pedersen (Technical University of Denmark, DTU, Denmark)	
Room	Room 306B, 3F	
MoSM1407	16:20~16:40	NUMERICAL MODELLING OF THERMO-HYDRO-MECHANICAL FRACTURE THROUGH ICE-SHEETS **Tim Hageman** (University of Oxford, United Kingdom) Corresponding Author Tim Hageman (University of Oxford, United Kingdom)
MoSM1408	16:40~17:00	ON OPTIMAL BOLT THREAD DESIGN **Niels Leergaard Pedersen** (Technical University of Denmark, DTU, Denmark) Corresponding Author Niels Leergaard Pedersen (Technical University of Denmark, DTU, Denmark)
MoSM1409	17:00~17:20	AN APPROXIMATE APPROACH TO SOLVE FULL FIELD SIMULATIONS OF LINEAR COMPOSITE STRUCTURES AT LOW COSTS **Ali KETATA** (Safran Tech, France) Corresponding Author Ali KETATA (Safran Tech, France)
MoSM1410	17:20~17:40	A TWIO-LEVEL MODEL FOR THE DYNAMIC FRACTURE PROPAGATION IN FIBRE-REINFORCED CONCRETE **Rena C YU** (University of Castilla-La Mancha, Spain) Corresponding Author Rena C YU (University of Castilla-La Mancha, Spain)
MoSM1411	17:40~18:00	CONSTITUTIVE MODELS FOR GEOTECHNICAL AND GEOSCIENTIFIC APPLICATIONS WITH MFRONT AND OPENGEOSYS **Mehran Ghasabeh** (Technische Universität Bergakademie Freiberg, Germany) Corresponding Author Mehran Ghasabeh (Technische Universität Bergakademie Freiberg, Germany)
MoSM1412	18:00~18:20	SHARP CONTACT FRONT TRACKING USING THE EXTREME MESH DEFORMATION PARADIGM (X-MESH) **Benoît Tien Phuc Lé** (École Centrale de Nantes, France) Corresponding Author Benoît Tien Phuc Lé (École Centrale de Nantes, France)

SM13	Stability and instability of materials and structures	
Moderator	Diego Misseroni (University of Trento, Italy) / Giovanni Noselli (SISSA - International School for Advanced Studies, Italy)	
Room	Room 314, 3F	
MoSM1308	16:20~16:40	INTRINSIC INCREMENTAL DISCRETE MECHANICS **Jean LERBET** (Université d'Evry Paris-Saclay, France) Corresponding Author Jean LERBET (Université d'Evry Paris-Saclay, France)
MoSM1309	16:40~17:00	BUCKLING OF HYPERELASTIC SOLIDS DUE TO TRANSVERSE COMPRESSION BY FLAT, RIGID AND FRICTIONLESS PUNCHES **Francesco Dal Corso** (University of Trento, Italy) Corresponding Author Francesco Dal Corso (University of Trento, Italy)
MoSM1310	17:00~17:20	CIRCULARITY BETWEEN INSTABILITY AND AUXETICITY IN ELASTIC CONTINUA AND STRUCTURES **Massimiliano Fraldi** (University of Napoli Federico II, Italy) Corresponding Author Massimiliano Fraldi (University of Napoli Federico II, Italy)
MoSM1311	17:20~17:40	ELASTIC PRECURSORS OF BRITTLE FRACTURE IN SOFT SOLIDS **Davide Riccobelli** (Politecnico di Milano, Italy) Corresponding Author Lev Truskinovsky (École supérieure de physique et de chimie industrielles de la ville de Paris, France)
MoSM1312	17:40~18:00	BOUNDARY LAYER BUCKLING OF CONICAL SHELLS IN COMPRESSION **John Biggins** (Cambridge University, United Kingdom) Corresponding Author John Biggins (Cambridge University, United Kingdom)
MoSM1313	18:00~18:20	PUNCTURE MECHANICS: NEEDLE INSERTION AS A SNAP-THROUGH INSTABILITY MEDIATED BY FRICTION **Mattia Bacca** (UBC, Canada) Corresponding Author Mattia Bacca (UBC, Canada)

SM15	Vibrations and control of structures	
Moderator	Guang Meng (Shanghai Jiao Tong University, China) / Chunyan Zhou (Beijing Institute of Technology, China)	
Room	Room 315, 3F	
MoSM1501	16:20~16:40	VIBRATION NOISE REDUCTION CONTROL USING MULTI-COMPONENT AND JOINT CONNECTION **Jun Hwan Kim** (Hanyang University, Korea, Republic of) Corresponding Author Gil Ho Yoon (Hanyang University, Korea, Republic of)
MoSM1502	16:40~17:00	VIBRATION SUPPRESSION OF PIEZOELECTRIC METASTRUCTURES WITH VARYING NONLINEAR COEFFICIENTS **Lingyun Gong** (Shanghai Jiao Tong University, China) Corresponding Author Penglin Gao (Shanghai Jiao Tong University, China)
MoSM1503	17:00~17:20	A SEMI-ACTIVE VIBRATION ISOLATOR WITH A NEW VARIABLE-STIFFNESS MECHANISM **Chunyan Zhou** (Beijing Institute of Technology, China) Corresponding Author Chunyan Zhou (Beijing Institute of Technology, China)
MoSM1504	17:20~17:40	AN IMPROVED DYNAMIC ANTI-RESONANT VIBRATION ISOLATOR USING NEGATIVE STIFFNESS MECHANISMS **Jialei Deng** (Shanghai Jiao Tong University, China) Corresponding Author Jialei Deng (Shanghai Jiao Tong University, China)
MoSM1505	17:40~18:00	NONLINEAR DYNAMIC ANALYSIS OF AN ADJUSTABLE HORIZONTAL THREE-AXIS VIBRATION ISOLATION SYSTEM WITH QUASI-ZERO STIFFNESS **Xiaoying Hu** (Beijing Institute of Technology, China) Corresponding Author Chunyan Zhou (Beijing Institute of Technology, China)

SM02	Tribology-contact and friction	
Moderator	Marco Paggi (IMT School for Advanced Studies Lucca, Italy) / Ramin Aghababaei (Aarhus University, Denmark)	
Room	Room 320A, 3F	
MoSM0201	16:20~16:40	THE EFFECT OF FRICTION ON CONTACT MECHANICS OF SOFT POLYMERIC SHELLS **Ramin Aghababaei** (Aarhus University, Denmark) Corresponding Author Ramin Aghababaei (Aarhus University, Denmark)
MoSM0202	16:40~17:00	A DOUBLE-HERTZ MODEL FOR THE ROLLING ADHESION OF SPHERES **Zhao-Yang Ma** (Tianjin University, China) Corresponding Author Gan-Yun Huang (Tianjin University, China)
MoSM0203	17:00~17:20	BEYOND TRADITIONAL CONTACT MODELS: FULLY EULERIAN PHASE-FIELD APPROACH FOR SOLID-SOLID CONTACT **Flavio Lorez** (ETH Zürich, Switzerland) Corresponding Author Flavio Lorez (ETH Zürich, Switzerland)
MoSM0204	17:20~17:40	INCORPORATING FRICTION INTO THIRD MEDIUM CONTACT USING A PLASTICITY-INSPIRED FRAMEWORK **Andreas Henrik Frederiksen** (DTU, Denmark) Corresponding Author Andreas Henrik Frederiksen (DTU, Denmark)
MoSM0205	17:40~18:00	INFLUENCE OF CONTACT CONSTITUTIVE EQUATIONS ON THE NONLINEAR DYNAMIC RESPONSE OF STRUCTURES **Hossein Soleimani** (Technical University of Denmark, Denmark) Corresponding Author Hossein Soleimani (Technical University of Denmark, Denmark)

SM18	Nonlinear dynamics for design	
Moderator	Stefano Lenci (Polytechnic University of Marche, Italy) / Jaroslaw Latalski (Lublin University of Technology Poland, Poland)	
Room	Room 320B, 3F	
MoSM1809	16:20~16:40	STOCHASTIC RESONANCE IN TRI-STABLE ENERGY HARVESTING SYSTEM UNDER RANDOM ROTATIONAL VIBRATION **Yanfei Jin** (Beijing Institute of Technology, China) Corresponding Author Yanfei Jin (Beijing Institute of Technology, China)
MoSM1810	16:40~17:00	NONLINEAR MULTISTABLE SHELL DESIGN FOR ENERGY HARVESTING **Jerzy Warminski** (Lublin University of Technology, Poland) Corresponding Author Jerzy Warminski (Lublin University of Technology, Poland)
MoSM1811	17:00~17:20	EXPLORING THE POTENTIAL ENERGY LANDSCAPE OF BISTABLE ENERGY HARVESTERS BONDED WITH MFC ACTUATORS **NAGESWARA RAO BHAIRAVAVAJJULA** (Indian Institute of Technology Madras, India) Corresponding Author Danish Bashir (Indian Institute of Technology Madras, India)
MoSM1812	17:20~17:40	NONLINEAR DYNAMICS OF BISTABLE CANTILEVER SHELL AND ENERGY HARVESTING FROM MFC PATCH **Lukasz Kloda** (Lublin University of Technology, Poland) Corresponding Author Lukasz Kloda (Lublin University of Technology, Poland)
MoSM1813	17:40~18:00	TRANSIENT AMPLIFICATION OF BROKEN SYMMETRY IN ELASTIC SNAP-THROUGH **Dominic Vella** (University of Oxford, United Kingdom) Corresponding Author Dominic Vella (University of Oxford, United Kingdom)
MoSM1814	18:00~18:20	NONLINEAR BEHAVIOURS OF A BEAM AROUND ONE OF ITS BUCKLING MODES **Hasnaa Kibach** (Univ Lyon, ENTPE, France) Corresponding Author Hasnaa Kibach (Univ Lyon, ENTPE, France)
MoSM1815	18:20~18:40	BISTABLE SHOCK ISOLATORS UNDER HALF-SINE SHOCK **Jinhong Noh** (Korea Advanced Institute of Science and Technology, Korea, Republic of) Corresponding Author Yong-Jin Yoon (Department of Mechanical Engineering, Korea Advanced Institute of Science and Technology, Korea, Republic of)

SM16	Soft materials and extremely deformable structures	
Moderator	Joo-Won HONG (ESPCI - PSL / CNRS, France) / Jizhou Song (Zhejiang University, China)	
Room	Room 321A, 3F	
MoSM1601	16:20~16:40	DEPLOYING COMPLEX SHAPES USING KIRIGAMI **Joo-Won HONG** (ESPCI - PSL / CNRS, France) Corresponding Author Joo-Won HONG (ESPCI - PSL / CNRS, France)
MoSM1602	16:40~17:00	A MULTIFUNCTIONAL FLEXIBLE TACTILE SENSOR BASED ON RESISTIVE EFFECT FOR SIMULTANEOUS SENSING OF PRESSURE AND TEMPERATURE **Jizhou Song** (Zhejiang University, China) Corresponding Author Jizhou Song (Zhejiang University, China)
MoSM1603	17:00~17:20	MECHANISM OF CURLING BEHAVIOR IN KNITTED FABRICS **Kotone Tajiri** (Keio Univ., Japan) Corresponding Author Tomohiko Sano (Keio University, Japan)
MoSM1604	17:20~17:40	SOFT PNEUMATIC ACTUATOR DESIGN USING NONLINEAR TOPOLOGY OPTIMIZATION **Sumit Mehta** (Technical University of Denmark, Denmark) Corresponding Author Sumit Mehta (Technical University of Denmark, Denmark)
MoSM1605	17:40~18:00	A VISCOELASTIC FILM PEELING MODEL AND ITS APPLICATION FOR TRANSFER PRINTING TECHNOLOGY **Hanbin Yin** (Tsinghua University, China) Corresponding Author Xue Feng (Tsinghua University, China)
MoSM1606	18:00~18:20	MECHANICAL BEHAVIOUR AND CONSTITUTIVE MODEL OF ENERGY-DISSIPATING LIQUID CRYSTAL ELASTOMERS UNDER HIGH STRAIN RATE LOADING **Xin Wang** (China Academy of Aerospace Science and Innovation, China) Corresponding Author Pengfei Wang (China Academy of Aerospace Science and Innovation, China)
MoSM1607	18:20~18:40	ANALYTICAL MODELLING OF ORIGAMI-INSPIRED METAMATERIALS **Antonio Jian Schiavone** (University of Cambridge, United Kingdom) Corresponding Author Antonio Jian Schiavone (University of Cambridge, United Kingdom)

SM03	Elasticity	
Moderator	Santosh Kapuria (Indian Institute of Technology Delhi, India) /Ji Wang (Ningbo University, China)	
Room	Room 321B, 3F	
MoSM0301 (INVITED)	16:20~16:50	FUNDAMENTAL SOLUTION OF PENNY-SHAPED CRACK PROBLEM FOR THERMO-ELECTRO-MAGNETO-ELASTIC MEDIA **Weiqiu CHEN** (Zhejiang University, China) Corresponding Author Weiqiu CHEN (Zhejiang University, China)
MoSM0302 (INVITED)	16:50~17:20	MODELING THE ANISOTROPIC ELASTIC PROPERTIES OF SILICON CRYSTAL AGGREGATES BASED ON A SELF-CONSISTENT SINGULAR APPROXIMATION **Holm Altenbach** (Otto-von-Guericke-Universität Magdeburg, Germany) Corresponding Author Holm Altenbach (Otto-von-Guericke-Universität Magdeburg, Germany)
MoSM0303	17:20~17:40	WAVE FEATURES OF NONLOCAL MULTIFERROIC LAMINATED COMPOSITES WITH IMPERFECT INTERFACES **Hsin-Yi Kuo** (National Yang Ming Chiao Tung University, China-Taipei) Corresponding Author Hsin-Yi Kuo (National Yang Ming Chiao Tung University, China-Taipei)
MoSM0304	17:40~18:00	ELASTICITY SOLUTION FOR LAMB WAVE PROPAGATION ACTUATED AND SENSED BY FLEXOELECTRIC TRANSDUCERS **SURAJ KUMAR ROUT** (Indian Institute of Technology Delhi, India) Corresponding Author SURAJ KUMAR ROUT (Indian Institute of Technology Delhi, India)
MoSM0305	18:00~18:20	WHY GRAPHENE IN DISPERSED FORM HAS LOW STRENGTHENING EFFICIENCY IN NANOCOMPOSITES? A NEW MICROMECHANICS PERSPECTIVE **CHEN Xing-wei** (Tongji University, China) Corresponding Author CHEN Xing-wei (Tongji University, China)
MoSM0306	18:20~18:40	EXACT SOLUTION FOR 3D DISPERSION CURVES IN A GENERALLY ANISOTROPIC VISCOELASTIC COMPOSITE AND VARIATIONS IN WAVE PROPERTIES CAUSED BY DELAMINATION **Feng Zhu** (Nanjing University of Aeronautics and Astronautics, China) Corresponding Author Feng Zhu (Nanjing University of Aeronautics and Astronautics, China)

SM04	Damage & fracture mechanics	
Moderator	Xiang Guo (Tianjin University, China) / Djimedo KONDO (Sorbonne University, France)	
Room	Room 322A, 3F	
MoSM0408	16:20~16:40	THE EFFECT OF PLASTIC ANISOTROPY AND TENSION COMPRESSION-ASYMMETRY ON VOID GROWTH IN DUCTILE MATERIALS WITH REALISTIC POROUS MICROSTRUCTURES **Guadalupe Vadillo Martin** (University Carlos III of Madrid, Spain) Corresponding Author Guadalupe Vadillo Martin (University Carlos III of Madrid, Spain)
MoSM0409	16:40~17:00	CHARACTERIZING VOID NUCLEATION IN DUCTILE FRACTURE USING ACOUSTIC EMISSION **Subham Chakraborty** (Indian Institute of Technology Madras, India) Corresponding Author Subham Chakraborty (Indian Institute of Technology Madras, India)
MoSM0410	17:00~17:20	EXPLORING HYDRIDE-ENHANCED STRAIN LOCALIZATION IN ZIRCONIUM ALLOYS VIA CRYSTAL PLASTICITY FINITE ELEMENT METHOD **Xiang Guo** (Tianjin University, China) Corresponding Author Xiang Guo (Tianjin University, China)
MoSM0411	17:20~17:40	FRACTURE OF DUCTILE MATERIALS AT EXTREMELY LOW TEMPERATURES **Błażej Tomasz Skoczeń** (Cracow University of Technology, Poland) Corresponding Author Błażej Tomasz Skoczeń (Cracow University of Technology, Poland)
MoSM0412	17:40~18:00	PARALLEL-IN-TIME FATIGUE DAMAGE SIMULATION **Amelie Fau** (ENS Paris-Saclay, France) Corresponding Author Amelie Fau (ENS Paris-Saclay, France)

FM08	Flow instability and transition	
Moderator	**Masato Nagata** (Kyoto University, Japan) / **Oleg Olegovich Ivanov** (Lomonosov Moscow State University, Russia)	
Room	Room 322B, 3F	
MoFM0808	16:20~16:40	TAYLOR-COUETTE FLOW IN THE NARROW-GAP LIMIT **Masato Nagata** (Kyoto University, Japan) Corresponding Author Masato Nagata (Kyoto University, Japan)
MoFM0809	16:40~17:00	NOISE INFLUENCE ON THE FIRST INSTABILITY IN THE SPHERICAL COUETTE FLOW **Oleg Olegovich Ivanov** (Lomonosov Moscow State University, Russia) Corresponding Author Dmitry Zhilenko (Lomonosov Moscow state university, Russia)
MoFM0810	17:00~17:20	BIFURCATIONS IN SPHERICAL COUETTE FLOWS **Ananthu J P** (Indian Institute of Technology Gandhinagar, India) Corresponding Author Ananthu J P (Indian Institute of Technology Gandhinagar, India)
MoFM0811	17:20~17:40	PLANE COUETTE FLOW FROM FEATURELESS TURBULENCE TO PATTERN **Masaki Shimizu** (Osaka Univ., Japan) Corresponding Author Masaki Shimizu (Osaka Univ., Japan)
MoFM0812	17:40~18:00	LINEAR STABILITY ANALYSIS OF OBLIQUE COUETTE-POISEUILLE FLOWS **George Ilhwan Park** (University of Pennsylvania, USA) Corresponding Author George Ilhwan Park (University of Pennsylvania, USA)
MoFM0813	18:00~18:20	OPTIMAL TRANSITION IN START-UP COUETTE FLOW **Zhiwei Song** (Harbin Institute of Technology, China) Corresponding Author zijing ding (Harbin Institute of Technology, China)
MoFM0814	18:20~18:40	OPTIMAL GROWTH OF INSTABILITIES IN PULSATING TAYLOR-COUETTE FLOW **Harvansh Dandelia** (Indian Institute of Technology Gandhinagar, India) Corresponding Author Harvansh Dandelia (Indian Institute of Technology Gandhinagar, India)

FM06	Drops, bubbles and interfaces	
Moderator	**Stephane Zaleski** (Sorbonne Université, France) / **Wladimir SARLIN** (LadHyX, France)	
Room	Room 323A, 3F	
MoFM0605	16:20~16:40	SPREADING DYNAMICS OF FIBRE-LADEN DROPS IMPACTING ON A SOLID SURFACE **Lisa Sophie Bauer** (University, Germany) Corresponding Author Lisa Sophie Bauer (University, Germany)
MoFM0606	16:40~17:00	NUMERICAL STUDY OF A GAS-IN-LIQUID COMPOUND DROPLET IMPACTING ON A CYLINDRICAL TARGET **Linkai Yang** (University of Chinese Academy of Sciences, China) Corresponding Author Guangzhao Zhou (University of Chinese Academy of Science, China)
MoFM0607	17:00~17:20	DROPLET IMPACT ON DOUBLY RE-ENTRANT PILLARS **Nan Gao** (University of Birmingham, United Kingdom) Corresponding Author Nan Gao (University of Birmingham, United Kingdom)
MoFM0608	17:20~17:40	HEATED WATER DROPLETS IMPACTING ON ICE **Wladimir SARLIN** (LadHyX, France) Corresponding Author Wladimir SARLIN (LadHyX, France)
MoFM0609	17:40~18:00	HIGH SPEED SURFACE TEMPERATURE MEASUREMENT DURING DROP IMPACT ONTO HEATED SURFACE UNDER DEPRESSURIZED ENVIRONMENT **Ryuta Hatakenaka** (Japan Aerospace Exploration Agency, Japan) Corresponding Author Ryuta Hatakenaka (Japan Aerospace Exploration Agency, Japan)
MoFM0610	18:00~18:20	INFLUENCE OF GEOMETRY AND IMPACT SPEED ON THE AIR TRAPPING FOR A SOLID IMPACT ON A LIQUID. **Jean-Bastien Carrat** (Lavrentyev Institute of Hydrodynamics, SB RAS, Russia) Corresponding Author Jean-Bastien Carrat (Lavrentyev Institute of Hydrodynamics, SB RAS, Russia)

FM05	Convection	
Moderator	**Detlef Lohse** (University of Twente, Netherlands) / **Heng-Dong Xi** (Northwestern Polytechnical University, China)	
Room	Room 323B, 3F	
MoFM0501 (INVITED)	16:20~16:50	TURBULENCE AND TRANSITIONS IN RAYLEIGH-BéNARD CONVECTION AT HIGH RAYLEIGH NUMBERS **Francesca Chilla** (Ecole Normale Supérieure de Lyon, France) Corresponding Author Francesca Chilla (Ecole Normale Supérieure de Lyon, France)
MoFM0502 (INVITED)	16:50~17:20	CONTROLLING THE REVERSAL OF THE LARGE-SCALE CIRCULATION IN TURBULENT RAYLEIGH–BENARD CONVECTION **Heng-Dong Xi** (Northwestern Polytechnical University, China) Corresponding Author Heng-Dong Xi (Northwestern Polytechnical University, China)
MoFM0503	17:20~17:40	TRANSITION TO ULTIMATE TAYLOR-COUETTE TURBULENCE **Detlef Lohse** (University of Twente, Netherlands) Corresponding Author Detlef Lohse (University of Twente, Netherlands)
MoFM0504	17:40~18:00	FLOW REVERSAL AND MULTIPLE STATES IN TURBULENT RAYLEIGH-BENARD CONVECTION WITH PARTIALLY ISOTHERMAL PLATES **Jin Hu** (Zhejiang University, China) Corresponding Author Zhenhua Xia(Zhejiang University; China)
MoFM0505	18:00~18:20	TURBULENT RAYLEIGH-BéNARD CONVECTION WITH ASYMMETRIC ROUGH BOUNDARIES **Lu Zhang** (Southern University of Science and Technology, China) Corresponding Author Ke-Qing Xia (Southern University of Science and Technology, China)
MoFM0506	18:20~18:40	HEAT TRANSFER IN RAYLEIGH-BéNARD CONVECTION WITH CURVED SURFACES **Yihang Liu** (Shanghai University of Electric Power, China) Corresponding Author Ping Wei(Tongji University, China)

FM13	Non-Newtonian and complex fluids	
Moderator	**Anke Lindner** (PMMH-ESPCI; CNRS, France) / **Prabhu Nott** (Indian Institute of Science, India)	
Room	Room 324A, 3F	
MoFM1301	16:20~16:40	LINEAR STABILITY OF A GENERALIZED NEWTONIAN FLUID FLOWING DOWN AN INCLINE: UNIFYING THE ROLL-WAVES **Simon Dagois-Bohy** (LMFA UMR 5509, France) Corresponding Author Simon Dagois-Bohy (LMFA UMR 5509, France)
MoFM1302	16:40~17:00	AEROBREAKUP OF A POLYMERIC DROPLET BY SHOCK-INDUCED AIRFLOWS **Aloke Kumar** (Indian Institute of Science of Bengaluru, India) Corresponding Author Aloke Kumar (Indian Institute of Science of Bengaluru, India)
MoFM1303	17:00~17:20	EFFECTS OF INCOMPATIBLE DISTORTION RATES IN FLUID DYNAMICS **AKYL SHAKIR** (Okinawa Institute of Science and Technology (OIST), Japan) Corresponding Author AKYL SHAKIR (Okinawa Institute of Science and Technology (OIST), Japan)
MoFM1304	17:20~17:40	CONTROLLING THE SHEAR AND EXTENSIONAL RHEOLOGY OF SEMIFLEXIBLE POLYELECTROLYTE SOLUTIONS THROUGH ADDITION OF SALT **HYEOKGYUN MOON** (Sungkyunkwan University, Korea, Republic of) Corresponding Author Jinkee Lee (Sungkyunkwan University, Korea, Republic of)

FM02	Boundary layers	
Moderator	Xuesong Wu (Imperial College London, United Kingdom) / Daniel Rodriguez (Universidad Politecnica de Madrid, Spain)	
Room	Room 324B, 3F	
MoFM0201	16:20~16:40	RECEPTIVITY OF A FLAT PLATE WITH ROUNDED LEADING EDGE **Paul Hammerton** (University of East Anglia, United Kingdom) Corresponding Author Paul Hammerton (University of East Anglia, United Kingdom)
MoFM0202	16:40~17:00	UPSTREAM RECEPTIVITY OF INCOMPRESSIBLE FLUID ON ELLIPTICAL LEADING EDGE PLATE **Congrui Yang** (Peking Univ, China) Corresponding Author Cunbiao Lee (State Key Laboratory for Turbulence and Complex Systems, Collge of Engineering, Peking University, China)
MoFM0203	17:00~17:20	EXPERIMENTAL STUDY OF BOUNDARY LAYER DISTURBANCES FORMED DURING THE INTERACTION OF LOCALIZED FREE FLOW VORTEXES WITH A BLUNTED FRONT EDGE OF A STRAIGHT WING **Mikhail Mikhailovich Katasonov** (Khristianovich Institute of Theoretical and Applied Mechanics SB RAS, Russia) Corresponding Author Mikhail Mikhailovich Katasonov (Khristianovich Institute of Theoretical and Applied Mechanics SB RAS, Russia)
MoFM0204	17:20~17:40	RECEPTIVITY OF TRAVELING CROSSFLOW MODE IN A HYPERSONIC SWEPT-PLATE BOUNDARY LAYER **Caihong Su** (Tianjin University, China) Corresponding Author Caihong Su (Tianjin University, China)
MoFM0205	17:40~18:00	RECEPTIVITY TO SLOW ACOUSTIC WAVE OF THE SUPERSONIC BOUNDARY LAYER SUBJECT TO SPANWISE-PERIODIC SURFACE HEATING **sheng yang** (Tianjin University, China) Corresponding Author Xuesong Wu (Imperial College London, United Kingdom)
MoFM0206	18:00~18:20	SLIP EFFECTS ON SUPERSONIC BOUNDARY-LAYER RECEPTIVITY OVER A FLAT PLATE **Chenyue Wang** (Tianjin University, China) Corresponding Author Jie Chen (Tianjin University, China)

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FM01	Biological fluid mechanics	
Moderator	Anne Juel (University of Manchester, United Kingdom) / Ramiro Godoy-Diana (ESPCI Paris; CNRS, France)	
Room	Room 325A, 3F	
MoFM0107	16:20~16:40	FALL IN ARTERIAL WALL SHEAR STRESS ELICITED BY HAND-TRANSMITTED VIBRATIONS: DIRECT EVIDENCE OF NEUROGENIC ACTIVITY INVOLVEMENT **Christophe NOEL** (INRS, France) Corresponding Author Christophe NOEL (INRS, France)
MoFM0108	16:40~17:00	CYTOPLASMIC VISCOSITY IS A POTENTIAL BIOMARKER FOR METASTATIC BREAST CANCER CELLS **Jean-François Berret** (Université Paris Cité, France) Corresponding Author Jean-François Berret (Université Paris Cité, France)
MoFM0109	17:00~17:20	DYNAMICS OF MULTICOMPONENT VESICLES IN SHEAR FLOW **Vivek Narsimhan** (Purdue University, USA) Corresponding Author Vivek Narsimhan (Purdue University, USA)
MoFM0110	17:20~17:40	NUMERICAL ANALYSIS ON THE BEHAVIOR OF RED BLOOD CELLS IN THE BLOOD FLOW WITH STREAMLINE CURVATURE **Yu Terada** (Univ. Tokyo, Japan) Corresponding Author Shu Takagi (The University of Tokyo, Japan)
MoFM0111	17:40~18:00	AI-BASED DEPTH LOCALIZATION OF ERYTHROCYTES USING DIGITAL IN-LINE HOLOGRAPHIC MICROSCOPY **Jihwan Kim** (Pohang University of Science and Technology, Korea, Republic of) Corresponding Author Sangjoon Lee (POSTECH, Korea, Republic of)
MoFM0112	18:00~18:20	EFFECTS OF LEADING-EDGE TUBERCLES ON THE AERODYNAMIC CHARACTERISTICS OF A PARAGLIDER CANOPY **Jeonghan Shin** (Ulsan National Institute of Science & Technology, Korea, Republic of) Corresponding Author Jooha Kim (UNIST, Korea, Republic of)
MoFM0113	18:20~18:40	ANALYZING THE DYNAMIC MOTION OF HONEYBEE WINGS DURING TAKEOFF: A STUDY OF HINGED WING MECHANICS **Jialei Song** (Dongguan University of Technology, China) Corresponding Author Jialei Song (Dongguan University of Technology, China)

FM07	Multiphase and particle-laden flows	
Moderator	Andrea Bondesan (University of Parma, Italy) / Juliana B. R. Loureiro (Federal University of Rio de Janeiro, Brazil)	
Room	Room 325B, 3F	
MoFM0708	16:20~16:40	CFD-DEM SIMULATION OF PARTICLE-LADEN FLOW THROUGH A CHANNEL-CAVITY **Minh Tam Nguyen** (Kumoh National Institute of Technology, Korea, Republic of) Corresponding Author Dongjoo Kim (Kumoh National Institute of Technology, Korea, Republic of)
MoFM0709	16:40~17:00	A THREE-LAYER MODEL FOR THE DAM-BREAK FLOW OF PARTICULATE SUSPENSIONS DRIVEN BY SEDIMENTATION **Andrea Bondesan** (University of Parma, Italy) Corresponding Author Andrea Bondesan (University of Parma, Italy)
MoFM0710	17:00~17:20	COMPUTATIONAL SIMULATION OF IN-FLIGHT ELECTROTHERMAL ICE PROTECTION SYSTEMS IN AIR-MIXED DROPLET FLOW FIELD **ESMAEIL ESMAEILIFAR** (Gyeongsang National University, Korea, Republic of) Corresponding Author Rho Shin Myong (Gyeongsang National University, Korea, Republic of)
MoFM0711	17:20~17:40	INFLUENCE OF AC VANE ANGLE AND AIR-PURIFIER ON INDOOR AIRBORNE VIRAL TRANSMISSION **Nandakumar Chandran Kunnamkumarath** (Pusan National University, Korea, Republic of) Corresponding Author Man Yeong Ha (Pusan National University, Korea, Republic of)
MoFM0712	17:20~17:40	LARGE HEAVY PARTICLES IN WALL BOUNDED TURBULENCE **Juliana B. R. Loureiro** (Federal University of Rio de Janeiro, Brazil) Corresponding Author Robert Jäckel (Federal University of Rio de Janeiro, Brazil)
MoFM0713	18:00~18:20	SUPPRESSION OF COFFEE-RING EFFECT BY PATTERNED WETTABILITY: LATTICE BOLTZMANN STUDY **Heemin Lee** (Yonsei Univ., Korea, Republic of) Corresponding Author Joon Sang Lee (Yonsei Univ., Korea, Republic of)

FM07	Multiphase and particle-laden flows	
Moderator	Manuel Garcia-Villalba (TU Wien, Austria) / Outi Tammisola (KTH Royal institute of Technology, Sweden)	
Room	Room 325C, 3F	
MoFM0714	16:20~16:40	PARTICLE-RESOLVED SIMULATIONS OF GRAVITY-DRIVEN SETTLING OF MANY SPHERICAL PARTICLES WITHOUT VERTICAL PERIODICITY **Manuel Garcia-Villalba** (TU Wien, Austria) Corresponding Author Manuel Garcia-Villalba (TU Wien, Austria)
MoFM0715	16:40~17:00	ONSET OF CONVECTION CELLS IN A HORIZONTALLY ROTATING CYLINDER PARTIALLY FILLED WITH LIQUID **Daiki Watanabe** (Osaka Univ., Japan) Corresponding Author Daiki Watanabe (Osaka Univ., Japan)
MoFM0716	17:00~17:20	ANGULAR DYNAMICS OF SPHEROIDS IN A LINEAR SHEAR FLOW: EFFECT OF SLIP-INDUCED FLUID-INERTIAL TORQUE **Zhiwen Cui** (Tsinghua University, China) Corresponding Author Lihao ZHAO (Tsinghua University, China)
MoFM0717	17:20~17:40	NUMERICAL STUDY OF PARTICLE SUSPENSION IN ELASTOVISCOPLASTIC DUCT FLOWS **Outi Tammisola** (KTH Royal institute of Technology, Sweden) Corresponding Author Outi Tammisola (KTH Royal institute of Technology, Sweden)
MoFM0718	17:40~18:00	TRANSIENT DYNAMICS OF SETTLING PARTICLES IN THE PRESENCE OF AN INTERFACE **Simone Tandurella** (Okinawa Institute of Science and Technology, Japan) Corresponding Author Marco Edoardo Rosti (Okinawa Institute of Science and Technology Graduate University, Japan)
MoFM0719	18:00~18:20	THE EFFECTS OF BASSET HISTORY ON PARTICLES SETTLING UNDER GRAVITY IN UNSTEADY STOKES FLOW **Tomek Jaroslawski** (Stanford, USA) Corresponding Author Tomek Jaroslawski (Stanford, USA)

FM14	Computational fluid dynamics	
Moderator	Ratnesh Kumar Shukla (Indian Institute of Science, India) / Sanghun Choi (Kyungpook National University, Korea, Republic of)	
Room	Room 325D, 3F	
MoFM1401	16:20~16:40	PHYSICS-AWARE MACHINE LEARNING FOR COMPUTATIONAL FLUID DYNAMICS SURROGATE MODEL TO ESTIMATE VENTILATION PERFORMANCE **Sanghun Choi** (Kyungpook National University, Korea, Republic of) Corresponding Author Sanghun Choi (Kyungpook National University, Korea, Republic of)
MoFM1402	16:40~17:00	A DATA-DRIVEN OPTIMAL STENCIL SELECTION AND ORDER DETECTION TECHNIQUE FOR HIGH-ORDER DISCONTINUITY-CAPTURING FINITE-VOLUME METHOD **Ratnesh Kumar Shukla** (Indian Institute of Science, India) Corresponding Author Ratnesh Kumar Shukla (Indian Institute of Science, India)
MoFM1403	17:00~17:20	LUNG'S 1D AIRWAY SURROGATE MODELLING USING GRAPH NEURAL NETWORKS **Tam Minh Tran** (Kyungpook National University, Korea, Republic of) Corresponding Author Sanghun Choi (Kyungpook National University, Korea, Republic of)
MoFM1404	17:20~17:40	DEEP LEARNING-BASED CONTROL WITH EXPERIMENTAL DATA FOR A THERMOELECTRIC HEAT-EXCHANGING MODULE **Lee Seok Yong** (Kyungpook National University, Korea, Republic of) Corresponding Author Sanghun Choi (Kyungpook National University, Korea, Republic of)
MoFM1405	17:40~18:00	MACHINE LEARNING TECHNIQUES FOR PREDICTION OF AIRFOIL PERFORMANCE AT LOW REYNOLDS NUMBER REGIME **Amrita Pathak** (Indian Institute of Technology Guwahati, India) Corresponding Author Amrita Pathak (Indian Institute of Technology Guwahati, India)

MS08	Fluid mechanical challenges for sustainability & climate change	
Moderator	Graham Hughes (Imperial College London, United Kingdom)	
Room	Room 503, 5F	
MoMS0805	16:20~16:40	MOTION-TO-WAKE MODELLING OF FLOATING WIND TURBINE WAKES **Zhaobin Li** (Institute of Mechanics, Chinese Academy of Sciences, China) Corresponding Author Xiaolei Yang (Institute of Mechanics, Chinese Academy of Sciences, China)
MoMS0806	16:40~17:00	A NUMERICAL STUDY ON A SAMARA-TYPE FALLING SEED **Alberto Lolli** (Scuola Superiore Sant'Anna, Italy) Corresponding Author Alberto Lolli (Scuola Superiore Sant'Anna, Italy)
MoMS0807	17:00~17:20	WIND-TUNNEL ANALYSIS OF YAW-CONTROL STRATEGIES FOR A MULTI-COLUMN WIND FARM **Derek Micheletto** (KTH Royal Institute of Technology, Sweden) Corresponding Author Derek Micheletto (KTH Royal Institute of Technology, Sweden)
MoMS0808	17:20~17:40	UPTAKE MODELING AND TRANSPORT OF CO2 DURING CEMENT CARBONATION **Melany L. Hunt** (California Institute of Technology, USA) Corresponding Author Melany L. Hunt (California Institute of Technology, USA)
MoMS0809	17:40~18:00	INFLUENCE OF INFLOW INTEGRAL SCALE ON THE ENERGY EXTRACTION AND WAKE EVOLUTION OF AN ACTUATOR DISK **Xiaolei Yang** (Institute of Mechanics, Chinese Academy of Sciences, China) Corresponding Author Xiaolei Yang (Institute of Mechanics, Chinese Academy of Sciences, China)
MoMS0810	18:00~18:20	COMPARISON OF KINETIC MECHANISM PREDICTIONS OF IGNITION DELAY TIME AT HIGH PRESSURE FOR PARTIALLY-CRACKED AMMONIA **Florian HURAULT** (University of Orléans, France) Corresponding Author Florian HURAULT (University of Orléans, France)

MS01	Chemo-mechanics and materials for energy conversion and storage	
Moderator	Hanqing Jiang (Westlake University, China) / Robert M. McMeeking (University of California, USA)	
Room	Room 504, 5F	
MoMS0105	16:20~16:40	UNRAVELING THE MECHANISM OF DEFORMATION-INDUCED SHORT-CIRCUIT IN LI-ION BATTERIES THROUGH IN-SITU LAMINOGRAPHY INDENTATION **Thomas Tancogne-Dejean** (ETH Zurich, Switzerland) Corresponding Author Dirk Mohr (ETH Zurich, Switzerland)
MoMS0106	16:40~17:00	CHEMO-MECHANICS OF THE DYNAMIC EVOLUTION OF ISOLATED Li FILAMENTS IN SOLID-STATE ELECTROLYTES **Rong Xu** (Xi'an Jiaotong University, China) Corresponding Author Rong Xu (Xi'an Jiaotong University, China)
MoMS0107	17:00~17:20	PHASE-FIELD FORMULATION FOR PREDICTING VOID EVOLUTION AT THE Li--ELECTROLYTE INTERFACE IN ALL-SOLID-STATE BATTERIES **Ying Zhao** (Tongji University, China) Corresponding Author Ying Zhao (Tongji University, China)
MoMS0108	17:20~17:40	CRACKING OF NWO SINGLE CRYSTALS IN HIGH POWER LI ION BATTERIES **Shrinidhi Shrikant Pandurangi** (University of Cambridge, United Kingdom) Corresponding Author Shrinidhi Shrikant Pandurangi (University of Cambridge, United Kingdom)
MoMS0109	17:40~18:00	PHASE-FIELD MODELING OF STORAGE PARTICLE DELAMINATION AND ELECTROLYTE CRACKING IN CATHODES OF SOLID STATE BATTERIES **Tao Zhang** (South China University of Technology, China) Corresponding Author Tao Zhang (South China University of Technology, China)
MoMS0110	18:00~18:20	DEFORMATION BEHAVIOR AND FRACTURE MECHANISM IN NANOSCALE LITHIATED SILICON AND SULFUR ELECTRODES **Bin Ding** (Beihang University, China) Corresponding Author Bin Ding (Beihang University, China)

MS02	Soft matter, theory meets experiment	
Moderator	Sameh Tawfick (University of Illinois, USA) /Junpyo Kwon (Max Planck Institute of Colloids and Interfaces, Germany)	
Room	Room 505, 5F	
MoMS0213	16:20~16:40	INVESTIGATION OF FORCE COMPONENTS IN TWISTED AND COILED POLYMER ACTUATORS AND THEIR APPLICATIONS IN SOFT ROBOTICS **Jeongmin Kim** (University of Illinois - Urbana Champaign, USA) Corresponding Author Sameh Tawfick (University of Illinois, USA)
MoMS0214	16:40~17:00	A SELF-POWERED DIELECTRIC ELASTOMER DEFORMATION SENSOR WITH STRETCHABLE ELECTRET **Yanyu Li** (Xi'an Jiaotong University, China) Corresponding Author Minglong Xu (Xi'an Jiaotong University, China)
MoMS0215	17:00~17:20	FLUID TRANSPORT DRIVEN BY LOAD-INDUCED SUBSTRATE DEFORMATIONS **Junpyo Kwon** (Max Planck Institute of Colloids and Interfaces, Germany) Corresponding Author Junpyo Kwon (Max Planck Institute of Colloids and Interfaces, Germany)
MoMS0216	17:20~17:40	A LUMPED AND INVERSE MODELLING FOR THE PRE-STRAINED CIRCULAR DIELECTRIC ELASTOMER AND ITS APPLICATION **Haopeng Liang** (National University of Defense Technology, China) Corresponding Author Yong Zhao (College of Aerospace Science and Engineering, National University of Defense Technology, China)
MoMS0217	17:40~18:00	HARD-MAGNETIC SOFT METAMATERIALS FOR ACTIVE AND REMOTE MANIPULATION OF ELASTIC WAVES **Quan Zhang** (University of Galway, Ireland) Corresponding Author Quan Zhang (University of Galway, Ireland)

FM09	Thin film flows	
Moderator	Georg F. DIETZE (CNRS - Université Paris-Saclay, France) / Omar Kamal Matar (Imperial College London, United Kingdom)	
Room	Room 506, 5F	
MoFM0907 (INVITED)	16:20~16:50	DYNAMICS OF DRIVEN THIN LIQUID FILMS **Omar Kamal Matar** (Imperial College London, United Kingdom) Corresponding Author Omar Kamal Matar (Imperial College London, United Kingdom)
MoFM0908 (INVITED)	16:50~17:20	SURFACE TURBULENCE IN GRAVITY-DRIVEN FILMS **Andreas Wierschem** (Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany Corresponding Author Andreas Wierschem (Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany
MoFM0909	17:20~17:40	PARTICULAR KAPITZA INSTABILITY **Anubhab Roy** (Indian Institute of Technology Madras, India) Corresponding Author Anubhab Roy (Indian Institute of Technology Madras, India)
MoFM0910	17:40~18:00	PULSE INTERACTIONS DRIVEN BY EXCITED HIDDEN MODES **Marc Pradas** (The Open University, United Kingdom) Corresponding Author Marc Pradas (The Open University, United Kingdom)
MoFM0911	18:00~18:20	INVESTIGATION OF SURFACE TOPOLOGICAL STRUCTURE ON STABILITY OF CYLINDRICAL FALLING FILMS **Weiyang Jiang** (Harbin Institute of Technology, China) Corresponding Author zijing ding (Harbin Institute of Technology, China)
MoFM0912	18:20~18:40	PLUG FORMATION AND PROPAGATION IN FALLING VISCOUS FILMS INSIDE TUBES: MODELING THE IMPACT OF SURFACTANT AND SLIP **H. Reed Ogrosky** (Virginia Commonwealth University, USA) Corresponding Author H. Reed Ogrosky (Virginia Commonwealth University, USA)

Time	Room	Code	Program	
Tuesday, August 27, 2024				
07:30 ~	Registration			
08:00 ~ 09:30	Sectional Lectures 1			118p
	Auditorium, 5F	Fluids	Sectional Lecture	118p
	Convention Hall, 5F	Fluids	Sectional Lecture	118p
	Grand Ballroom B, 3F	Solids	Sectional Lecture	119p
	Room 211, 2F	Solids	Sectional Lecture	119p
09:30 ~ 09:50	Coffee Break			
09:50 ~ 11:20	Oral Presentation 3			120p
	Auditorium, 5F	FM15	Turbulence	120p
	Room 211, 2F	FS05	Fluid structure interactions	120p
	Room 214, 2F	FS01	Acoustics	121p
	Room 217, 2F	FS08	Education in mechanics	121p
	Room 219, 2F	FS07	Optimization for solids and fluids	122p
	Room 306A, 3F	SM02	Tribology-contact and friction	122p
	Room 306B, 3F	SM14	Computational solid mechanics	123p
	Room 314, 3F	SM05	Geomechanics and geophysics	123p
	Room 315, 3F	SM15	Vibrations and control of structures	124p
	Room 320A, 3F	SM17	Metamaterials architectured materials and topology optimization	124p
	Room 320B, 3F	SM18	Nonlinear dynamics for design	125p
	Room 321A, 3F	SM16	Soft materials and extremely deformable structures	125p
	Room 321B, 3F	SM03	Elasticity	126p
	Room 322A, 3F	FM18	Electro- and magneto-hydrodynamics	126p
	Room 322B, 3F	FM08	Flow instability and transition	127p
	Room 323A, 3F	FM06	Drops, bubbles and interfaces	127p
	Room 323B, 3F	FM01	Biological fluid mechanics	128p
	Room 324A, 3F	FM04	Compressible flow	128p
	Room 324B, 3F	FM02	Boundary layers	129p
	Room 325A, 3F	FM13	Non-Newtonian and complex fluids	129p
	Room 325B, 3F	FM07	Multiphase and particle-laden flows	130p
	Room 325C, 3F	FM16	Vortex dynamics	130p
	Room 325D, 3F	FM14	Computational fluid dynamics	131p
	Room 503, 5F	SM09	Additive manufacturing	131p
	Room 504, 5F	SM07	Multi-component, composites and hierarchical materials	132p
	Room 505, 5F	SM11	Nanostructures and MEMS	132p
	Room 506, 5F	FM09	Thin film flows	133p
11:20 ~ 12:20	Short Oral Presentation A			134p
	Auditorium, 5F	FM15	Turbulence	134p
	Room 211, 2F	FS05	Fluid structure interactions	135p
	Room 214, 2F	FS01	Acoustics	136p
	Room 217, 2F	FS08	Education in mechanics	136p

Time	Room	Code	Program	
	Room 219, 2F	FS07	Optimization for solids and fluids	137p
	Room 306A, 3F	SM02	Tribology-contact and friction	137p
	Room 306B, 3F	SM14	Computational solid mechanics	138,139p
	Room 314, 3F	SM05	Geomechanics and geophysics	140p
	Room 315, 3F	SM15	Vibrations and control of structures	141p
	Room 320A, 3F	SM17	Metamaterials architectured materials and topology optimization	142,143p
	Room 320B, 3F	SM18	Nonlinear dynamics for design	144,145p
	Room 321A, 3F	SM16	Soft materials and extremely deformable structures	146,147p
	Room 321B, 3F	SM03	Elasticity	148p
	Room 322A, 3F	FM18	Electro- and magneto-hydrodynamics	149p
	Room 322B, 3F	FM08	Flow instability and transition	150,151p
11:20 ~ 12:20	Room 323A, 3F	FM06	Drops, bubbles and interfaces	152,153p
	Room 323B, 3F	FM01	Biological fluid mechanics	154,155p
	Room 324A, 3F	FM04	Compressible flow	156,157p
	Room 324B, 3F	FM02	Boundary layers	158p
	Room 325A, 3F	FM13	Non-Newtonian and complex fluids	159p
	Room 325B, 3F	FM07	Multiphase and particle-laden flows	160,161p
	Room 325C, 3F	FM16	Vortex dynamics	162p
	Room 325D, 3F	FM14	Computational fluid dynamics	162,163p
	Room 503, 5F	SM09	Additive manufacturing	164p
	Room 504, 5F	SM07	Multi-component, composites and hierarchical materials	165,166p
	Room 505, 5F	SM11	Nanostructures and MEMS	167p
	Room 506, 5F	SM04	Damage & fracture mechanics	168,169p
12:20 ~ 13:10	Poster Sessions 1			
13:10 ~ 14:10	Lunch & Special Sessions			
	Oral Presentation 4			170p
	Auditorium, 5F	FM15	Turbulence	170p
	Room 211, 2F	FS05	Fluid structure interactions	171p
	Room 214, 2F	FS06	Granular materials and flows	172p
	Room 217, 2F	FS01	Acoustics	173p
	Room 219, 2F	FS07	Optimization for solids and fluids	174p
	Room 306A, 3F	FM11	Low Reynolds number flows and suspension	175p
	Room 306B, 3F	SM14	Computational solid mechanics	176p
14:10 ~ 16:50	Room 314, 3F	SM13	Stability and instability of materials and structures	177p
	Room 315, 3F	SM06	Impact mechanics and wave propagation	178p
	Room 320A, 3F	SM17	Metamaterials architectured materials and topology optimization	179p
	Room 320B, 3F	SM12	Plasticity, viscoplasticity and creep	180p
	Room 321A, 3F	SM16	Soft materials and extremely deformable structures	181p
	Room 321B, 3F	FM10	Geophysical and environmental fluid dynamics	182p
	Room 322A, 3F	SM04	Damage & fracture mechanics	183p
	Room 322B, 3F	FM08	Flow instability and transition	184p

Time	Room	Code	Program	
	Room 323A, 3F	FM06	Drops, bubbles and interfaces	185p
	Room 323B, 3F	FM05	Convection	186p
	Room 324A, 3F	FM04	Compressible flow	187p
	Room 324B, 3F	FM02	Boundary layers	188p
	Room 325A, 3F	FM13	Non-Newtonian and complex fluids	189p
	Room 325B, 3F	FM16	Vortex dynamics	190p
14:10 ~ 16:50	Room 325C, 3F	FM18	Electro- and magneto-hydrodynamics	191p
	Room 325D, 3F	FM14	Computational fluid dynamics	192p
	Room 503, 5F	MS03	Nonlinear mechanical models for biological and bioinspired materials	193p
	Room 504, 5F	MS01	Chemo-mechanics and materials for energy conversion and storage	194p
	Room 505, 5F	MS02	Soft matter, theory meets experiment	195p
	Room 506, 5F	SM11	Nanostructures and MEMS	196p
16:50 ~ 17:10	Coffee Break			
	Oral Presentation 5			197p
	Auditorium, 5F	FM15	Turbulence	197p
	Room 211, 2F	FS05	Fluid structure interactions	198p
	Room 214, 2F	FS06	Granular materials and flows	199p
	Room 217, 2F	FS03	Nonlinear dynamics and pattern formation	200p
	Room 219, 2F	FM17	Waves in fluids	201p
	Room 306A, 3F	SM02	Tribology-contact and friction	202p
	Room 306B, 3F	SM14	Computational solid mechanics	203p
	Room 314, 3F	SM05	Geomechanics and geophysics	204p
	Room 315, 3F	SM06	Impact mechanics and wave propagation	205p
	Room 320A, 3F	SM17	Metamaterials architectured materials and topology optimization	205p
	Room 320B, 3F	SM12	Plasticity, viscoplasticity and creep	206p
	Room 321A, 3F	SM16	Soft materials and extremely deformable structures	206p
17:10 ~ 19:10	Room 321B, 3F	FM10	Geophysical and environmental fluid dynamics	207p
	Room 322A, 3F	SM04	Damage & fracture mechanics	208p
	Room 322B, 3F	FM08	Flow instability and transition	209p
	Room 323A, 3F	FM06	Drops, bubbles and interfaces	210p
	Room 323B, 3F	FM05	Convection	211p
	Room 324A, 3F	FM04	Compressible flow	212p
	Room 324B, 3F	FM02	Boundary layers	213p
	Room 325A, 3F	FM13	Non-Newtonian and complex fluids	214p
	Room 325B, 3F	FM07	Multiphase and particle-laden flows	215p
	Room 325C, 3F	FM06	Drops, bubbles and interfaces	215p
	Room 325D, 3F	FM14	Computational fluid dynamics	216p
	Room 503, 5F	MS06	Fluid dynamics of disease transmission	216p
	Room 504, 5F	MS07	Non-reacting and reacting fluid dynamics for sustainable propulsion systems	217p
	Room 505, 5F	MS05	Data-driven mechanics and artificial intelligence	218p
	Room 506, 5F	SM09	Additive manufacturing	219p

Tue. (Aug. 27)

Sectional Lectures 1		
Fluids	Sectional Lecture	
Moderator	Gareth H. McKinley (MIT, USA)	
Room	Auditorium, 5F	
TuSLFM01	08:00~08:45	MACHINE-LEARNING-BASED LARGE EDDY SIMULATION OF TURBULENT FLOW **Haecheon Choi** (Seoul National University, Korea, Republic of) Corresponding Author Haecheon Choi (Seoul National University, Korea, Republic of)
TuSLFM02	08:45~09:30	Damage and rupture of capsules in flow: what to learn from numerical models and microrheometric experiments? **Anne-Virginie Salsac** (CNRS - Université de Technologie de Compiègne, France)
Moderator	Shu Takagi (The University of Tokyo, Japan)	
Room	Convention Hall, 5F	
TuSLFM03	08:00~08:45	DYNAMICS OF RIGID AND FLEXIBLE FIBERS IN COMPLEX FLOWS **Anke Lindner** (PMMH-ESPCI; CNRS, France) Corresponding Author Anke Lindner (PMMH-ESPCI; CNRS, France)
TuSLFM04	08:45~09:30	FLUIDS AND BIOPHYSICS OF DISEASE TRANSMISSION **L. Bourouiba** (MIT, USA) Corresponding Author L. Bourouiba (MIT, USA)

Solids	Sectional Lecture	
Moderator	Yoon Young Kim (Sookmyung Women's University, Korea, Republic of)	
Room	Grand Ballroom B, 3F	
TuSLSM01	08:00~08:45	A NEW WAY TO TRACK FRONTS WITH EXTREME MESH DEFORMATION (X-MESH) **Nicolas MOES** (Université Catholique de Louvain, Belgium) Corresponding Author Nicolas MOES (Université Catholique de Louvain, Belgium)
TuSLSM02	08:45~09:30	MICROMECHANICAL MODELLING AT ELEVATED TEMPERATURE - A PERSONAL PERSPECTIVE **Alan Charles Francis Cocks** (University of Oxford, United Kingdom) Corresponding Author Alan Charles Francis Cocks (University of Oxford, United Kingdom)
Moderator	Alberto Corigliano (Politecnico di Milano, Italy)	
Room	Room 211, 2F	
TuSLSM03	08:00~08:45	SOFT TISSUE CHARACTERIZATION AND MODELING - MATERIAL PROPERTIES, STRUCTURAL CONSIDERATIONS, INVERSE METHODS, AND DIGITAL TWINS **Ellen M Arruda** (University of Michigan, USA) Corresponding Author Ellen M Arruda (University of Michigan, USA)
TuSLSM04	08:45~09:30	ADDITIVE MANUFACTURING: DESIGN, PRODUCTION, MODELING, COMPUTATIONS **Ferdinando Auricchio** (University of Pavia, Italy) Corresponding Author Ferdinando Auricchio (University of Pavia, Italy)

Oral Presentation 3

FM15	Turbulence	
Moderator	Koji Fukudome (Kanazawa Institute of Technology, Japan) / Colm-cille Patrick Caulfield (University of Cambridge, United Kingdom)	
Room	Auditorium, 5F	
TuFM1514 (INVITED)	09:50~10:20	EVIDENCE FOR LAYERED ANISOTROPIC STRATIFIED TURBULENCE IN A FREELY EVOLVING HORIZONTAL SHEAR FLOW **Colm-cille Patrick Caulfield** (University of Cambridge, United Kingdom) Corresponding Author Colm-cille Patrick Caulfield (University of Cambridge, United Kingdom)
TuFM1515	10:20~10:40	HEAT TRANSFER AND FLOW CHARACTERISTICS OF TURBULENT PLANE POISEUILLE FLOW AT LOW REYNOLDS NUMBER UNDER THERMAL STRATIFICATION **Koji Fukudome** (Kanazawa Institute of Technology, Japan) Corresponding Author Koji Fukudome (Kanazawa Institute of Technology, Japan)
TuFM1516	10:40~11:00	CURVATURE-BASED ENERGY SPECTRA FROM NEURAL REPRESENTATIONS OF TURBULENT RAYLEIGH-BENARD CONVECTION **Michael Mommert** (German Aerospace Center (DLR), Germany) Corresponding Author Michael Mommert (German Aerospace Center (DLR), Germany)
TuFM1517	11:00~11:20	LOW-DIMENSIONAL MODEL OF THE LARGE-SCALE CIRCULATION OF TURBULENT CONVECTION IN A RECTANGULAR RAYLEIGH–BéNARD CELL **Rodion Stepanov** (Institute of Continuous Media Mechanics, Russia) Corresponding Author Rodion Stepanov (Institute of Continuous Media Mechanics, Russia)
FS05	Fluid structure interactions	
Moderator	Daegyoum Kim (KAIST, Korea, Republic of) / Sunghwan Jung (Cornell University, USA)	
Room	Room 211, 2F	
TuFS0516 (INVITED)	09:50~10:20	PLANT PATHOGEN RELEASE FROM FLUID-STRUCTURE INTERACTION **Sunghwan Jung** (Cornell University, USA) Corresponding Author Sunghwan Jung (Cornell University, USA)
TuFS0517 (INVITED)	10:20~10:50	DATA-DRIVEN MODELLING FOR FLUID-STRUCTURE INTERACTION AND DYNAMIC CONTROL **Weiwei Zhang** (Northwestern Polytechnical University, China) Corresponding Author Weiwei Zhang (Northwestern Polytechnical University, China)
TuFS0518 (INVITED)	10:50~11:20	INTERMITTENT DYNAMICS AND PERFORMANCE OF A RECONFIGURABLE PROPELLER **Benjamin THIRIA** (ESPCI/Paris Cité University, France) Corresponding Author Benjamin THIRIA (ESPCI/Paris Cité University, France)

FS01	Acoustics	
Moderator	Richard Manasseh (Swinburne University of Technology, Australia) /John Sharer Allen (University of Hawaii Manoa, USA)	
Room	Room 214, 2F	
TuFS0101 (INVITED)	09:50~10:20	HIGH-FREQUENCY MODES OF TWO-DIMENSIONAL OSCILLATORS EMITTING WAVES **Richard Manasseh** (Swinburne University of Technology, Australia) Corresponding Author Richard Manasseh (Swinburne University of Technology, Australia)
TuFS0102 (INVITED)	10:20~10:50	FLOW NOISE MITIGATION IN ROTARY-WING UAVS THROUGH LEADING-EDGE PROTUBERANCES **Yisu Shin** (Ulsan National Institute of Science and Technology, Korea, Republic of) Corresponding Author Jooha Kim (UNIST, Korea, Republic of)
TuFS0103 (INVITED)	10:50~11:20	NONLINEAR WAVE PROPAGATION IN PHONONIC MEDIA WITH PERIODIC NONLINEAR INTERFACES **Kathryn Matlack** (University of Illinois at Urbana-Champaign, USA) Corresponding Author Kathryn Matlack (University of Illinois at Urbana-Champaign, USA)
FS08	Education in mechanics	
Moderator	Salvatore Federico (The University of Calgary, Canada)	
Room	Room 217, 2F	
TuFS0815 (INVITED)	09:50~10:20	USING DEMOS TO MAKE THE TEACHING AND LEARNING OF STATICS MORE DYNAMIC, ENGAGING, AND EFFECTIVE **Pedro M. Reis** (EPFL, Switzerland) Corresponding Author Pedro M. Reis (EPFL, Switzerland)
TuFS0816	10:20~10:40	NON-CENTROSYMMETRIC CUBIC LATTICES WITH AXIAL BENDING COUPLINGS ANALYZED BY THE MICROPOLAR HOMOGENIZED METHOD **Jaehyung Ju** (Shanghai Jiao Tong Universty, China) Corresponding Author Jaehyung Ju (Shanghai Jiao Tong Universty, China)
TuFS0817	10:40~11:00	CONNECTED CURRICULUM: DEMOS AND DIGITAL TOOLS FOR RESEARCH-BASED EDUCATION **Federico Bosi** (University College London, United Kingdom) Corresponding Author Federico Bosi (University College London, United Kingdom)

FS07	Optimization for solids and fluids	
Moderator	**Joe Alexandersen** (University of Southern Denmark, Denmark)	
Room	Room 219, 2F	
TuFS0701 (INVITED)	09:50~10:20	CHALLENGES IN TOPOLOGY OPTIMIZATION OF HIGH INTENSITY HEAT SINKS FOR MICROELECTRONICS APPLICATIONS **Casper Schousboe Andreasen** (Technical University of Denmark, Denmark) Corresponding Author Casper Schousboe Andreasen (Technical University of Denmark, Denmark)
TuFS0702	10:20~10:40	MULTIPHYSICS LEVEL-SET TOPOLOGY OPTIMIZATION OF HEAT EXCHANGERS FOR ELECTRIC VEHICLES BATTERY PACKS **Alexandre Guibert** (University of California San Diego, USA) Corresponding Author Hyunsun Alicia Kim (University of California San Diego, USA)
TuFS0703	10:40~11:00	TOWARDS HOMOGENISATION-BASED TOPOLOGY OPTIMISATION OF HEAT EXCHANGERS **Hao Li** (University of Southern Denmark, Denmark) Corresponding Author Hao Li (University of Southern Denmark, Denmark)
TuFS0704	11:00~11:20	FREE-SHAPE OPTIMIZATION OF PERIODIC FIN ARRAYS FOR MAXIMAL HEAT EXCHANGE BASED ON A 3D MULTI-SCALE SIMULATION APPROACH **Maarten Blommaert** (KU Leuven, Belgium) Corresponding Author Maarten Blommaert (KU Leuven, Belgium)
SM02	Tribology-contact and friction	
Moderator	**Marco Paggi** (IMT School for Advanced Studies Lucca, Italy) / **Ramin Aghababaei** (Aarhus University, Denmark)	
Room	Room 306A, 3F	
TuSM0206 (INVITED)	09:50~10:20	FROM 3D TO 2D TO 1D IN MODELING CONTACT AND ADHESION **Lars Pastewka** (University of Freiburg, Germany) Corresponding Author Lars Pastewka (University of Freiburg, Germany)
TuSM0207 (INVITED)	10:20~10:50	SOLVING CONTACT PROBLEMS WITH FFT-BASED METHODS **Qian Jane Wang** (Northwestern University, USA) Corresponding Author Qian Jane Wang (Northwestern University, USA)
TuSM0208 (INVITED)	10:50~11:20	ELASTIC CONTACT TAXONOMY AND THE IMPLICATIONS FOR PARTIAL SLIP **David Hills** (University of Oxford, United Kingdom) Corresponding Author David Hills (University of Oxford, United Kingdom)

SM14	Computational solid mechanics	
Moderator	**Yujie Wei** (Institute of Mechanics, Chinese Academy of Sciences, China) / **Daya Reddy** (University of Cape Town, South Africa)	
Room	Room 306B, 3F	
TuSM1413 (INVITED)	09:50~10:20	COMPUTATIONAL MODELLING OF UNSTABLE BRITTLE CRACK PROPAGATION **Chris Pearce** (University of Glasgow, United Kingdom) Corresponding Author Chris Pearce (University of Glasgow, United Kingdom)
TuSM1414 (INVITED)	10:20~10:50	A PROJECTED ARTIFICIAL DIFFUSION APPROACH FOR CONVECTIVE PROBLEMS **Daya Reddy** (University of Cape Town, South Africa) Corresponding Author Daya Reddy (University of Cape Town, South Africa)
TuSM1415 (INVITED)	10:50~11:20	THE MOTION OF DISLOCATIONS RESIDING ON TWIN PLANES AND PRECIPITATE-MATRIX INTERFACES **Yujie Wei** (Institute of Mechanics, Chinese Academy of Sciences, China) Corresponding Author Yujie Wei (Institute of Mechanics, Chinese Academy of Sciences, China)
SM05	Geomechanics and geophysics	
Moderator	**John Rudnicki** (Northwestern University, USA) / **Jinhyun Choo** (KAIST, Korea, Republic of)	
Room	Room 314, 3F	
TuSM0501 (INVITED)	09:50~10:20	LARGE DEFORMATION BEHAVIOR OF SOILS BASED ON CRITICAL STATE SOIL MECHANICS **Kenichi Soga** (University of California Berkeley, USA) Corresponding Author Kenichi Soga (University of California Berkeley, USA)
TuSM0502	10:20~10:40	HOMOGENIZING THE MECHANICAL RESPONSE OF POROUS MATERIALS VIA MICROSTRUCTURE-INFORMED NEURAL NETWORKS **Winston Lindqwister** (Duke University, USA) Corresponding Author Manolis Veveakis (Duke University, USA)
TuSM0503	10:40~11:00	CONSTRUCTION OF SWELLING BEDROCK MODEL BASED ON NEW DECOMPOSITION METHOD OF THE DEFORMATION GRADIENT **Keitaro Hoshi** (Tohoku university, Japan) Corresponding Author Shotaro Yamada (Tohoku university, Japan)
TuSM0504	11:00~11:20	STABILITY ANALYSIS OF 2D GRANULAR CELL MODEL **Takashi Matsushima** (University of Tsukuba, Japan) Corresponding Author Takashi Matsushima (University of Tsukuba, Japan)

SM15	Vibrations and control of structures	
Moderator	Igor Berinskii (Tel Aviv University, Israel) / Lifeng Wang (Nanjing University of Aeronautics and Astronautics, China)	
Room	Room 315, 3F	
TuSM1506	09:50~10:10	NONLINEAR DYNAMICS IN THE KRESLING ORIGAMI METASTRUCTURES **Lifeng Wang** (Nanjing University of Aeronautics and Astronautics, China) Corresponding Author Lifeng Wang (Nanjing University of Aeronautics and Astronautics, China)
TuSM1507	10:10~10:30	STATE-SPACE MODELING OF ORIGAMI DYNAMICS **Jinkyu Yang** (Seoul National University, Korea, Republic of) Corresponding Author Jinkyu Yang (Seoul National University, Korea, Republic of)
TuSM1508	10:30~10:50	STUDY ON THE EVOLUTION MECHANISM OF MULTI-POSITION RUB-IMPACT IN AERO-ENGINE DUAL-ROTOR SYSTEM **Yanhong Kang** (Tianjin University, China) Corresponding Author Shuqian Cao (Tianjin University, China)
SM17	Metamaterials architectured materials and topology optimization	
Moderator	Wei Chen (Northwestern University, USA) / Ole SIgmund (Technical University of Denmark, Denmark)	
Room	Room 320A, 3F	
TuSM1707 (INVITED)	09:50~10:20	PROGRAMMING THERMO-ACTIVE METAMATERIALS: A TOPOLOGY OPTIMIZATION APPROACH **Xiaojia Shelly Zhang** (University of Illinois at Urbana-Champaign, USA) Corresponding Author Xiaojia Shelly Zhang (University of Illinois at Urbana-Champaign, USA)
TuSM1708 (INVITED)	10:20~10:50	DISCRETE MATERIAL AND DIRECT THICKNESS OPTIMIZATION OF WIND TURBINE BLADES WITH FATIGUE CONSTRAINTS **Erik Lund** (Aalborg University, Denmark) Corresponding Author Erik Lund (Aalborg University, Denmark)
TuSM1709 (INVITED)	10:50~11:20	MULTISCALE STRUCTURAL OPTIMIZATION INCLUDING YIELD AND STABILITY CONSTRAINTS **Ole SIgmund** (Technical University of Denmark, Denmark) Corresponding Author Ole SIgmund (Technical University of Denmark, Denmark)

SM18	Nonlinear dynamics for design	
Moderator	C. Nataraj (Villanova University, USA) / Pedro Ribeiro (Fac. Eng. Un. Porto, Portugal)	
Room	Room 320B, 3F	
TuSM1816 (INVITED)	09:50~10:20	DYNAMIC TOPOLOGY OPTIMIZATION FOR FLEXIBLE MULTIBODY SYSTEMS **Haiyan Hu** (Beijing Institute of Technology, China) Corresponding Author Haiyan Hu (Beijing Institute of Technology, China)
TuSM1817	10:20~10:40	MANEUVERING WITH AN AUTONOMOUS UNICYCLE **Gabor Stepan** (Budapest University of Technology and Economics, Hungary) Corresponding Author Mate Benjamin Vizi (Budapest University of Technology and Economics, Hungary)
TuSM1818	10:40~11:00	INTERNAL RESONANCE BASED DESIGN OF A FREQUENCY MIXING NANORESONATOR **Oded Gottlieb** (Technion - Israel Institute of Technology, Israel) Corresponding Author Oded Gottlieb (Technion - Israel Institute of Technology, Israel)
SM16	Soft materials and extremely deformable structures	
Moderator	Fan Xu (Fudan University, China) / Animangsu Ghatak (Indian Institute of Technology Kanpur, India)	
Room	Room 321A, 3F	
TuSM1608 (INVITED)	09:50~10:20	ELASTO-CAPILLARY EFFECT AND ITS INFLUENCE ON SURFACE REACTION **Animangsu Ghatak** (Indian Institute of Technology Kanpur, India) Corresponding Author Animangsu Ghatak (Indian Institute of Technology Kanpur, India)
TuSM1609 (INVITED)	10:20~10:50	DYNAMICS OF SUPERSHEAR PROPAGATION OF CRACKS IN SOFT MATERIALS **David Kammer** (ETH Zurich, Switzerland) Corresponding Author David Kammer (ETH Zurich, Switzerland)
TuSM1610 (INVITED)	10:50~11:20	MORPHO-INSTABILITIES OF GROWING CURLY LEAVES AND PETALS **Fan Xu** (Fudan University, China) Corresponding Author Fan Xu (Fudan University, China)

SM03	Elasticity	
Moderator	Weiqiu CHEN (Zhejiang University, China) / Guohua Nie (Tongji University, China)	
Room	Room 321B, 3F	
TuSM0307 (INVITED)	09:50~10:20	WELL-POSEDNESS AND EXPONENTIAL STABILITY IN NONLOCAL MINDLIN'S STRAIN GRADIENT POROUS THERMOELASTICITY UNDER GREEN-NAGHDI MODELS **Vincenzo Tibullo** (Università di Salerno, Italy) Corresponding Author Vincenzo Tibullo (Università di Salerno, Italy)
TuSM0308	10:20~10:40	A UNIFIED METHOD FOR PROBLEM OF CRACK LYING ALONG THE INTERFACE OF A CIRCULAR INHOMOGENEITY IN ANISOTROPIC MEDIA **Guohua Nie** (Tongji University, China) Corresponding Author Guohua Nie (Tongji University, China)
TuSM0309	10:40~11:00	THEORETICAL STUDIES ON THE DAMPING CHARACTERISTICS OF HYBRID COMPOSITES **Dharmateja Pachipala** (Indian Institute of Technology Madras, India) Corresponding Author Arockiarajan A (Indian Institute of Technology Madras, India)
FM18	Electro- and magneto-hydrodynamics	
Moderator	Jie Zhang (Xi'an Jiaotong University, China) / Minping Wan (Southern University of Science and Technology, China)	
Room	Room 322A, 3F	
TuFM1808 (INVITED)	09:50~10:20	MAGNETIC PROUDMAN-TAYLOR CONSTRAINT EXPLAINS FLOWS INTO TANGENT CYLINDERS **Samy Lalloz** (Coventry University, United Kingdom) Corresponding Author Alban Potherat (Coventry University, United Kingdom)
TuFM1809 (INVITED)	10:20~10:50	RECENT PROGRESS ON THE STUDY OF ENERGY TRANSFER AND DISSIPATION IN MHD TURBULENCE **Minping Wan** (Southern University of Science and Technology, China) Corresponding Author Minping Wan (Southern University of Science and Technology, China)
TuFM1810 (INVITED)	10:50~11:20	EXPLORING ELECTROHYDRODYNAMICS: INSIGHTS INTO DROPLET DYNAMICS UNDER ELECTRIC FIELDS **Jinkee Lee** (Sungkyunkwan University, Korea, Republic of) Corresponding Author Jinkee Lee (Sungkyunkwan University, Korea, Republic of)

FM08	Flow instability and transition	
Moderator	Viswanathan Shankar (Indian Institute of Technology Kanpur, India) / Daniel Rodriguez (Universidad Politecnica de Madrid, Spain)	
Room	Room 322B, 3F	
TuFM0815 (INVITED)	09:50~10:20	THE NONLINEAR ONE-WAY NAVIER-STOKES APPROACH FOR BOUNDARY LAYER TRANSITION **Timothy E Colonius** (California Institute of Technology, USA) Corresponding Author Timothy E Colonius (California Institute of Technology, USA)
TuFM0816 (INVITED)	10:20~10:50	HYDRODYNAMIC AND MAGNETIC INTERPARTICLE INTERACTIONS IN A MAGNETORHEOLOGICAL FLUID **V Kumaran** (Indian Institute of Science, India) Corresponding Author V Kumaran (Indian Institute of Science, India)
TuFM0817 (INVITED)	10:50~11:20	FROM A CONTINUOUS TO A DISCONTINUOUS TRANSITION TO TURBULENCE **Björn Hof** (Institute of Science and Technology Austria, Austria) Corresponding Author Björn Hof (Institute of Science and Technology Austria, Austria)
FM06	Drops, bubbles and interfaces	
Moderator	Marco Edoardo Rosti (Okinawa Institute of Science and Technology Graduate University, Japan) / Kirti Chandra Sahu (Indian Institute of Technology Hyderabad, India)	
Room	Room 323A, 3F	
TuFM0611 (INVITED)	09:50~10:20	FRAGMENTATION AND SIZE DISTRIBUTION OF DROPLETS DESCENDING FROM VARIOUS HEIGHTS IN A HORIZONTAL AIRSTREAM **Kirti Chandra Sahu** (Indian Institute of Technology Hyderabad, India) Corresponding Author Kirti Chandra Sahu (Indian Institute of Technology Hyderabad, India)
TuFM0612	10:20~10:40	FLOW DYNAMICS OF A SOAP BUBBLE INFLATION **Saini Jatin Rao** (Indian Institute of Science, Bengaluru, India) Corresponding Author Saptarshi Basu (Indian Institute of Science, Bengaluru, India)
TuFM0613	10:40~11:00	JUMPING BEHAVIOR OF CONTAINERS FILLED WITH HOT OIL-WATER MIXTURES **Yoshiyuki Tagawa** (Tokyo University of Agriculture and Technology, Japan) Corresponding Author Yoshiyuki Tagawa (Tokyo University of Agriculture and Technology, Japan)
TuFM0614	11:00~11:20	NUMERICAL ANALYSIS OF OFF-CENTER BUBBLE PAIR DYNAMICS IN STAGNANT WATER **Yu Sin Jeong** (Pusan National University, Korea, Republic of) Corresponding Author Man Yeong Ha (Pusan National University, Korea, Republic of)

FM01	Biological fluid mechanics	
Moderator	Roberto Verzicco (Univ. Rome Tor Vergata, Italy) / Simon Mendez (CNRS, France)	
Room	Room 323B, 3F	
TuFM0114 (INVITED)	09:50~10:20	REVISITING ANGUILLIFORM SWIMMING HYDRODYNAMICS USING THE CASE OF SNAKES **Ramiro Godoy-Diana** (ESPCI Paris; CNRS, France) Corresponding Author Ramiro Godoy-Diana (ESPCI Paris; CNRS, France)
TuFM0115	10:20~10:40	NUMERICAL STUDY ON CONTROL MODELS OF TUNA FINLETS **Junduo Zhang** (Tsinghua Univ., China) Corresponding Author Junduo Zhang (Tsinghua Univ., China)
TuFM0116	10:40~11:00	HYDRODYNAMIC MECHANISMS OF SEA TURTLE FIN MOTION: INSIGHTS FROM ASYMMETRIC PITCHING IN THREE ROTATIONAL DEGREES OF FREEDOM **Guosheng He** (Beijing Institute of Technology, China) Corresponding Author Guosheng He (Beijing Institute of Technology, China)
FM04	Compressible flow	
Moderator	Daniel Livescu (Los Alamos National Laboratory, USA) / Ye Zhou (Lawrence Livermore National Lab, USA)	
Room	Room 324A, 3F	
TuFM0407 (INVITED)	09:50~10:20	VARIABLE DENSITY EFFECTS ON SUPERSONIC SPATIALLY DEVELOPING TURBULENT SHEAR LAYERS **Daniel Livescu** (Los Alamos National Laboratory, USA) Corresponding Author Daniel Livescu (Los Alamos National Laboratory, USA)
TuFM0408	10:20~10:40	OCEAN SURFACE WAVE MOTION INDUCED BY ASYMMETRIC OCEAN FLOOR MOVEMENT: IMPACT OF COMPRESSIBILITY AND SLOPE **RITIKA DAS** (Institute of Advanced Study in Science and Technology, India) Corresponding Author RITIKA DAS (Institute of Advanced Study in Science and Technology, India)
TuFM0409	10:40~11:00	A COUPLING INTERFACE METHOD FOR SIMULATION OF SHOCK-INDUCED CAVITATION INSIDE DROPLET **Zi-Zhao Yu** (University of Science and Technology of China, China) Corresponding Author Hang Ding (University of Science and Technology of China, China)
TuFM0410	11:00~11:20	A UNIFIED SHARP INTERFACE METHOD FOR SIMULATION OF COMPRESSIBLE THREE-PHASE FLOWS BASED ON CUT-CELL DYNAMIC MESH GENERATION **Zhujun Li** (University of Science and Technology, China) Corresponding Author Hang Ding (University of Science and Technology of China, China)

FM02	Boundary layers	
Moderator	Yongyun Hwang (Imperial College London, United Kingdom) / Javier Jimenez (Universidad Politecnica Madrid, Spain)	
Room	Room 324B, 3F	
TuFM0207 (INVITED)	09:50~10:20	THE EDDIES ARE ATTACHED, BUT IT'S ALL RIGHT **Javier Jimenez** (Universidad Politecnica Madrid, Spain) Corresponding Author Javier Jimenez (Universidad Politecnica Madrid, Spain)
TuFM0208	10:20~10:40	IMPORTANCE OF INDICATOR FUNCTIONS FOR ESTABLISHING NATURE OF OVERLAP OF NORMAL TURBULENT STRESSES: LOGARITHMIC OR 1/4 POWER **Hassan Nagib** (ILLINOIS TECH (IIT), USA Corresponding Author Hassan Nagib (ILLINOIS TECH (IIT), USA
TuFM0209	10:40~11:00	THE ENERGETICS AND COLOUR OF EDDY VISCOSITY FOR LINEAR MODELS IN CHANNEL FLOW **Yongyun Hwang** (Imperial College London, United Kingdom) Corresponding Author Yongyun Hwang (Imperial College London, United Kingdom)
TuFM0210	11:00~11:20	ANALYSIS OF THE SELF-SUSTAINING PROCESS OF WALL-BOUNDED TURBULENCE USING NETWORK MOTIF IDENTIFICATION **Emma Grace Lenz** (Caltech, USA) Corresponding Author Emma Grace Lenz (Caltech, USA)
FM13	Non-Newtonian and complex fluids	
Moderator	Prabhu Nott (Indian Institute of Science, India) / Anke Lindner (PMMH-ESPCI; CNRS, France)	
Room	Room 325A, 3F	
TuFM1305 (INVITED)	09:50~10:20	HARNESSING ELASTIC INSTABILITIES IN FLOWS WITH MULTIPLE STREAMS **Monica S. N. Oliveira** (University of Strathclyde, United Kingdom) Corresponding Author Monica S. N. Oliveira (University of Strathclyde, United Kingdom)
TuFM1306 (INVITED)	10:20~10:50	PREDICTIONS OF THE GENERALIZED NEWTONIAN FLUID MODEL INCORPORATING FLOW TYPE (GNFFTy) IN SIMPLE AND COMPLEX FLOWS **Rob Poole** (University of Liverpool, United Kingdom) Corresponding Author Rob Poole (University of Liverpool, United Kingdom)
TuFM1307 (INVITED)	10:50~11:20	PARTICLE LADEN COMPLEX FLUID INTERFACES: SELF-ASSEMBLY AND RHEOLOGY **Madivala G. Basavaraj** (IIT Madras, India) Corresponding Author Madivala G. Basavaraj (IIT Madras, India)

FM07	Multiphase and particle-laden flows	
Moderator	Francesco Picano (University of Padova, Italy) / Jacek Pozorski (Polish Academy of Sciences, Poland)	
Room	Room 325B, 3F	
TuFM0720 (INVITED)	09:50~10:20	SLENDER FLEXIBLE FIBERS IN TURBULENT CHANNEL FLOW **Cristian Marchioli** (University of Udine, Italy) Corresponding Author Cristian Marchioli (University of Udine, Italy)
TuFM0721	10:20~10:40	FLOW MODULATION AND PARTICLE DYNAMICS IN TURBULENT CHANNEL FLOW LADEN WITH CYLINDRICAL PARTICLES **Lian-Ping Wang** (Southern University of Science and Technology, China) Corresponding Author Lian-Ping Wang (Southern University of Science and Technology, China)
TuFM0722	10:40~11:00	NUMERICAL SIMULATIONS OF PARTICLES SETTLING IN DENSITY STRATIFIED FLUIDS **Abdullah M S H Abdal** (Imperial College London, United Kingdom) Corresponding Author Abdullah M S H Abdal (Imperial College London, United Kingdom)
TuFM0723	11:00~11:20	THREE-DIMENSIONAL RECONSTRUCTION OF DROPLETS INTERFACE TOPOLOGY AND BREAKUP TIMESCALES IN TURBULENCE **Leonel Edward Beckedorff** (Vienna University of Technology, Austria) Corresponding Author alfredo soldati (TU Wien, Austria)
FM16	Vortex dynamics	
Moderator	Melissa Green (University of Minnesota, USA) / Yong Cao (Shanghai Jiao Tong University, China)	
Room	Room 325C, 3F	
TuFM1606 (INVITED)	09:50~10:20	PHYSICS-INFORMED REFINEMENT OF TRANSITION NETWORKS FOR UNSTEADY LIFT PREDICTION **Melissa Green** (University of Minnesota, USA) Corresponding Author Melissa Green (University of Minnesota, USA)
TuFM1607	10:20~10:40	NETWORKS FOR RECONSTRUCTION OF TURBULENT WAKE BEHIND A BLUFF BODY FROM RANDOMLY DISTRIBUTED SPARSE DATA **Peixing Xie** (Shanghai Jiao Tong University, China) Corresponding Author Yong Cao (Shanghai Jiao Tong University, China)
TuFM1608	10:40~11:00	INVESTIGATION OF THE INFLUENCE OF INCOMING EXTERNAL DISTURBANCES ON THE STRUCTURE OF THE SEPARATED FLOW OF WING MODELS **Aleksandr Mikhailovich Pavlenko** (Khristianovich Institute of Theoretical and Applied Mechanics SB RAS, Russia) Corresponding Author Aleksandr Mikhailovich Pavlenko (Khristianovich Institute of Theoretical and Applied Mechanics SB RAS, Russia)
TuFM1609	11:00~11:20	AERODYNAMICS ANALYSIS OF DRAGONFLY FLAPPING WINGS BASED ON FORCE ELEMENT THEORY **Jie-Chao Lei** (Kunming University of Science and Technology, China) Corresponding Author Chien-Cheng Chang (National Taiwan University, China-Taipei)

FM14	Computational fluid dynamics	
Moderator	Adrian Lozano-Duran (MIT, USA) / Koji Fukagata (Keio University, Japan)	
Room	Room 325D, 3F	
TuFM1406 (INVITED)	09:50~10:20	BUILDING-BLOCK-FLOW MODEL FOR LARGE-EDDY SIMULATION **Adrian Lozano-Duran** (MIT, USA) Corresponding Author Adrian Lozano-Duran (MIT, USA)
TuFM1407 (INVITED)	10:20~10:50	QUANTUM COMPUTING OF FLUID DYNAMICS VIA HAMILTONIAN SIMULATION **Yue Yang** (Peking University, China) Corresponding Author Yue Yang (Peking University, China)
TuFM1408 (INVITED)	10:50~11:20	APPLICATIONS OF MACHINE LEARNING-BASED AUTOENCODER TOWARD ADVANCED FLOW CONTROL DESIGN **Koji Fukagata** (Keio University, Japan) Corresponding Author Koji Fukagata (Keio University, Japan)
SM09	Additive manufacturing	
Moderator	Jesper Hattel (Technical University of Denmark (DTU), Denmark) / Ferdinando Auricchio (University of Pavia, Italy)	
Room	Room 503, 5F	
TuSM0901 (INVITED)	09:50~10:20	INTERLINKING MULTIPHYSICS AND MULTISCALE SIMULATIONS WITH TOPOLOGY OPTIMIZATION IN ADDITIVE MANUFACTURING PROCESSES **Mohamad Bayat** (Technical University of Denmark (DTU), Denmark) Corresponding Author Mohamad Bayat (Technical University of Denmark (DTU), Denmark)
TuSM0902	10:20~10:40	ISOTROPIC CELLULAR STRUCTURE DESIGNS BASED ON TRIPLY PERIODIC MINIMAL SURFACES **Stephen Daynes** (University of Canterbury, New Zealand) Corresponding Author Stephen Daynes (University of Canterbury, New Zealand)
TuSM0903	10:40~11:00	AN ABAQUS USER SUBROUTINE IMPLEMENTATION OF CHEMO-THERMO-MECHANICAL MODELING OF DIGITAL LIGHT PROCESSING 3D PRINTING PROCESS **Hugon Lee** (KAIST, Korea, Republic of) Corresponding Author Seunghwa Ryu (KAIST, Korea, Republic of)

SM07	Multi-component, composites and hierarchical materials	
Moderator	Sung Hoon Kang (Johns Hopkins University, USA) / Wei Tan (Queen Mary University of London, United Kingdom)	
Room	Room 504, 5F	
TuSM0701 (INVITED)	09:50~10:20	BONE-INSPIRED MULTIPHASE COMPOSITES WITH SELF-ADAPTIVE BEHAVIORS **Sung Hoon Kang** (Johns Hopkins University, USA) Corresponding Author Sung Hoon Kang (Johns Hopkins University, USA)
TuSM0702	10:20~10:40	DATA-DRIVEN OPTIMISATION OF ENERGY-ABSORBING CELLULAR COMPOSITES **Wei Tan** (Queen Mary University of London, United Kingdom) Corresponding Author Wei Tan (Queen Mary University of London, United Kingdom)
TuSM0703	10:40~11:00	MOLECULAR DYNAMICS SIMULATION OF MECHANICAL BEHAVIOR OF GRADIENT HIGH-ENTROPY ALLOY **Xin Du** (Southwest Jiaotong University, China) Corresponding Author Xu Zhang (Southwest Jiaotong University, China)
SM11	Nanostructures and MEMS	
Moderator	M Taher Saif (University of Illinois at Urbana-Champaign, USA) / Manas Chandra Ray (Indian Institute of Technology Kharagpur, India)	
Room	Room 505, 5F	
TuSM1101 (INVITED)	09:50~10:20	MAGNETIC NANOCLUSTER BASED IMMUNOTHERAPY FOR CANCER METASTASIS **Gang Bao** (Rice University, USA) Corresponding Author Gang Bao (Rice University, USA)
TuSM1102 (INVITED)	10:20~10:50	FROM BRITTLENESS TO PLASTICITY: UNVEILING ELECTRON BEAM EFFECTS ON MECHANICAL BEHAVIOR OF SILICA **In-Suk Choi** (Seoul National University, Korea, Republic of) Corresponding Author In-Suk Choi (Seoul National University, Korea, Republic of)
TuSM1103 (INVITED)	10:50~11:20	GRAPHENE-METAL COMPOSITE WIRES FOR STRUCTURAL AND ELECTRICAL APPLICATIONS **Wonmo Kang** (Arizona State University, USA) Corresponding Author Wonmo Kang (Arizona State University, USA)

FM09	Thin film flows	
Moderator	Georg F. DIETZE (CNRS - Université Paris-Saclay, France) / Ranga Narayanan (Univ. Florida, USA)	
Room	Room 506, 5F	
TuFM0913 (INVITED)	09:50~10:20	RESONANT INSTABILITY IN THIN FLUID LAYERS **Ranga Narayanan** (Univ. Florida, USA) Corresponding Author Ranga Narayanan (Univ. Florida, USA)
TuFM0914	10:20~10:40	A VARIATIONAL-BASED STABILITY ANALYSIS OF BILAYER COUETTE AND FILM FLOW **Markus Scholle** (Heilbronn University, Germany) Corresponding Author Markus Scholle (Heilbronn University, Germany)
TuFM0915	10:40~11:00	INSTABILITY OF A VISCOELASTIC FILM FLOW ON AN OSCILLATING INCLINED PLANE **Yue Xiao** (Shandong University, China) Corresponding Author Yue Xiao (Shandong University, China)
TuFM0916	11:00~11:20	EFFECT OF A SOFT-GEL COATED WALL ON THE EVOLUTION OF FARADAY WAVES **Dinesh Bhagavatula** (IIT BHU, India) Corresponding Author Dinesh Bhagavatula (IIT BHU, India)

Short Oral Presentation A		
FM15	Turbulence	
Moderator	Koji Fukudome (Kanazawa Institute of Technology, Japan) / Colm-cille Patrick Caulfield (University of Cambridge, United Kingdom)	
Room	Auditorium, 5F	
TuPF1501.191	11:20~11:23	VORONOI ANALYSIS OF PARTICLE CLUSTERING IN THE TURBULENCE BOX IN THE EXPERIMENT. **Jun Feng** (China, China) Corresponding Author Jun Feng (China, China)
TuPF1502.192	11:23~11:26	REACHING SUB-KOLMOGOROV MEASUREMENTS IN A TURBULENT SWIRLING FLOW **Jean Le Bris** (CEA Saclay / Université Paris Saclay, France) Corresponding Author Jean Le Bris (CEA Saclay / Université Paris Saclay, France)
TuPF1503.193	11:26~11:29	LEARNING CAPABILITY OF MICRO-SWIMMERS EXPOSED TO COMPLEX FLUID FIELDS **Gurkan Kilicaslan** (University of Minnesota, USA) Corresponding Author Gurkan Kilicaslan (University of Minnesota, USA)
TuPF1504.194	11:29~11:32	DRAG REDUCTION IN TURBULENT BOUNDARY LAYER WITH ZIGZAG RIBLET SURFAC **ZIYE FAN** (Tianjin University, China) Corresponding Author ZIYE FAN (Tianjin University, China)
TuPF1505.195	11:32~11:35	EXPERIMENTAL STUDY FOR WAKE STRUCTURE OF POROUS SQAURE CYLINDERS WITH ANISOTROPIC PERMEABILITY **TAEWOO KIM** (Seoul National University, Korea, Republic of) Corresponding Author Taehoon Kim (Seoul National University of Science and Technology, Korea, Republic of)
TuPF1506.196	11:35~11:38	HIGH RESOLUTION DIRECT NUMERICAL SIMULATIONS OF COMPRESSIBLE ISOTHERMAL TURBULENCE WITH UP TO 8192^3 GRID POINTS **Yoshiki Sakurai** (Yokohama National University, Japan) Corresponding Author Yoshiki Sakurai (Yokohama National University, Japan)
TuPF1507.197	11:38~11:41	QSQH SYNTHETIC TURBULENCE MODEL AND ITS SOFTWARE IMPLEMENTATION **Yunjiu Yang** (Imperial College London, United Kingdom) Corresponding Author Yunjiu Yang (Imperial College London, United Kingdom)
TuPF1508.198	11:41~11:44	PRESSURIZED WATER TUNNEL DEVELOPMENT FOR STUDYING PLASTRON-INDUCED DRAG REDUCTION **Kiyeol Pyo** (Hanyang University, Korea, Republic of) Corresponding Author Simon Song (Hanyang University, Korea, Republic of)
TuPF1509.199	11:44~11:47	EXPERIMENTAL STUDY ON FLOW DISTRIBUTION OF WIRE-WRAPPED ROD BUNDLE USING MAGNETIC RESONANCE VELOCIMETRY **Sejin Oh** (Hanyang University, Korea, Republic of) Corresponding Author Simon Song (Hanyang University, Korea, Republic of)

FS05	Fluid structure interactions	
Moderator	Daegyoum Kim (KAIST, Korea, Republic of) / Sunghwan Jung (Cornell University, USA)	
Room	Room 211, 2F	
TuPX0501.226	11:20~11:23	EXPERIMENTAL STUDY OF DOUBLE CORRUGATED VARIABLE CAMBER MORPHING WING **Gautham Vigneswar P.N.** (Indian Institute of Technology Madras, India) Corresponding Author Arockiarajan A (Indian Institute of Technology Madras, India)
TuPX0502.227	11:23~11:26	FSI ANALYSIS OF BIOPROSTHETIC AORTIC VALVE **Yongwoo Kim** (Yonsei university, Korea, Republic of) Corresponding Author Keonwook Kang (Yonsei University, Korea, Republic of)
TuPX0503.228	11:26~11:29	TRANSFORMATION OF A LIMIT CYCLE OF A PANEL FLUTTER AT LOW SUPERSONIC FLOW UNDER EXTERNAL DISTURBANCE **Anastasia Shishaeva** (Lomonosov Moscow State University, Russia) Corresponding Author Anastasia Shishaeva (Lomonosov Moscow State University, Russia)
TuPX0504.229	11:29~11:32	RESOLVENT-BASED TOOL FOR WALL BOUNDED TURBULENT FLOWS OVER VISCOELASTIC COATINGS **Soumen Chakravarty** (North Carolina State University, USA) Corresponding Author Soumen Chakravarty (North Carolina State University, USA)
TuPX0505.230	11:32~11:35	MODELLING CRACK PROPAGATION IN FLUID-STRUCTURE INTERACTION PROCESS USING A NEWLY IMMERSED PERIDYNAMICS METHOD **Xiang Liu** (Wuhan University of Technology, China) Corresponding Author Iisheng Iiu (Wuhan University of Technology, China)
TuPX0506.231	11:35~11:38	FLUID-STRUCTURE INTERACTION SIMULATION FOR THE DROPLET EJECTION PROCESS OF AN INDUSTRIAL SHEAR-MODE PIEZOELECTRIC INKJET HEAD **Sanghyun Park** (Hanyang University, Korea, Republic of) Corresponding Author Je Hoon Oh (Hanyang University ERICA, Korea, Republic of)

FS01		Acoustics
Moderator		Richard Manasseh (Swinburne University of Technology, Australia) / Yisu Shin (Ulsan National Institute of Science and Technology, Korea, Republic of)
Room		Room 214, 2F
TuPX0101.214	11:20~11:23	PHYSICS INTEGRATED NEURAL NETWORK FOR DESIGN OF ACOUSTIC SCATTERER **Keonhyeok Park** (Pohang University of Science and Technology, Korea, Republic of) Corresponding Author Keonhyeok Park (Pohang University of Science and Technology, Korea, Republic of)
TuPX0102.215	11:23~11:26	ASSESSING THE IMPACT OF BONE CONDUCTION ON INTERIOR VEHICLE NOISE: A FINITE ELEMENT ANALYSIS APPROACH **Da Eun Jeong** (Sogang University, Korea, Republic of) Corresponding Author Namkeun Kim (Sogang University, Korea, Republic of)
TuPX0103.216	11:26~11:29	TRANSITION IN ACOUSTIC MODES IN A RECTANGULAR FLOW DUCT DEPENDING ON BOUDARY SURFACE IMPEDANCE VALUE **Tomonobu Goto** (Tottori University, Japan) Corresponding Author Tomonobu Goto (Tottori University, Japan)
FS08		Education in mechanics
Moderator		Salvatore Federico (The University of Calgary, Canada)
Room		Room 217, 2F
TuPX0801.239	11:20~11:23	NEGATIVE DAMPING EFFECT OF HORIZONTAL SLIPPING OF BLOCK ROCK MASS **PURUI SHI** (Liaoning Technical University, China) Corresponding Author PURUI SHI (Liaoning Technical University, China)
TuPX0802.240	11:23~11:26	A FRACTAL ANALYSIS OF CRACKS FOR TUNNEL LINING CONCRETE **Atsushi Suto** (Tohoku Institute of Technology, Japan) Corresponding Author Atsushi Suto (Tohoku Institute of Technology, Japan)
TuPX0803.241	11:26~11:29	THE PHYSICS BEHIND THE UPRIGHT LANDING OF A VANS SHOE **Hyunjun Choi** (Gachon University, Korea, Republic of) Corresponding Author Keunhwan Park (Gachon University, Korea, Republic of)
TuPX0804.242	11:29~11:32	ACTIVE MICRORHEOLOGY: UNRAVELING THE DYNAMICS OF A LUNG SURFACTANT FLUID AND ASSESSING VISCOSITY CHANGES INDUCED BY ENGINEERED NANOPARTICLES **Jean-François Berret** (Université Paris Cité, France) Corresponding Author Jean-François Berret (Université Paris Cité, France)
TuPX0805.243	11:32~11:35	NEURAL NETWORK MODELLING OF HYBRID NANOFLUID IN A DISSIPATIVE PARTICLE DYNAMICS SYSTEM **Mohammad Ferdows** (University of Dhaka, Bangladesh) Corresponding Author Mohammad Ferdows (University of Dhaka, Bangladesh)

FS07		Optimization for solids and fluids
Moderator		Joe Alexandersen (University of Southern Denmark, Denmark)
Room		Room 219, 2F
TuPX0701.235	11:20~11:23	CORRECTION OF A RANS MODEL FOR AN AIRFOIL IN TRANSITIONAL FLOWS USING FIELD INVERSION AND MACHINE LEARNING **Romain Peron** (ONERA, Université Paris Saclay, France) Corresponding Author Romain Peron (ONERA, Université Paris Saclay, France)
TuPX0702.236	11:23~11:26	A HYBRID UNCERTAINTY QUANTIFICATION METHOD COMBINING NON-INTRUSIVE POLYNOMIAL CHAOS AND KRIGING **Bingran Wang** (University of California, San Diego, USA) Corresponding Author Bingran Wang (University of California, San Diego, USA)
TuPX0703.237	11:26~11:29	BAYESIAN OPTIMIZATION-BASED PLATE STRUCTURE DESIGN FOR PARTICLE BEHAVIOR CONTROL **Young Duck Yoon** (Hanyang University, Korea, Republic of) Corresponding Author Gil Ho Yoon (Hanyang University, Korea, Republic of)
TuPX0704.238	11:29~11:32	ENHANCING THERMAL MANAGEMENT WITH JET IMPINGEMENT AND MICROPOSTS: INDUCING VORTICES AND REDUCING BOUNDARY LAYER THICKNESS **Seungwoo Kim** (Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of) Corresponding Author Youngsuk Nam (Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of)
SM02		Tribology-contact and friction
Moderator		Marco Paggi (IMT School for Advanced Studies Lucca, Italy) / Ramin Aghababaei (Aarhus University, Denmark)
Room		Room 306A, 3F
TuPS0201.261	11:20~11:23	WHEEL-RAIL ROLLING-SLIDING-IMPACT BEHAVIOURS OF HIGH-SPEED RAILWAY: A CROSS-SCALE STUDY **xiongfei Zhou** (Southwest Jiaotong University, China) Corresponding Author Lin Jing (Southwest Jiaotong University, China)
TuPS0202.262	11:23~11:26	MEASUREMENT OF THE COEFFICIENT OF KINETIC FIRICTION AT LOW SLIDING VELOCITY **Katsuharu Ando** (Meijo University, Japan) Corresponding Author Katsuharu Ando (Meijo University, Japan)
TuPS0203.263	11:26~11:29	ADHESIVE CONTACT OF ELASTIC-PERFECTLY PLASTIC SPHERE **Jinshan He** (Tianjin university, China) Corresponding Author Gan-Yun Huang (Tianjin University, China)
TuPS0204.264	11:29~11:32	A VERSATILE THREE-DIMENSIONAL CONTACT ANALYSIS FOR HETEROGENEOUS MATERIAL **Jin Xiaoqing** (Chongqing University, China) Corresponding Author Jin Xiaoqing (Chongqing University, China)

SM14	Computational solid mechanics	
Moderator	Yujie Wei (Institute of Mechanics, Chinese Academy of Sciences, China) / Daya Reddy (University of Cape Town, South Africa)	
Room	Room 306B, 3F	
TuPS1401.364	11:20~11:23	DEVELOPMENT OF A DATA-DRIVEN MULTISCALE FINITE ELEMENT METHOD INCORPORATING DEEP NEURAL NETWORKS AND PROPER ORTHOGONAL DECOMPOSITION **SUHAN KIM** (INHA UNIVERSITY, Korea, Republic of) Corresponding Author Hyunseong Shin (Inha University, Korea, Republic of)
TuPS1402.365	11:23~11:26	A MULTISCALE BRIDGING APPROACH TO PREDICT FRACTURE TOUGHNESS AND CRACK PROPAGATION CHARACTERISTICS OF POLYMER NANOCOMPOSITES **Jae Hun Kim** (Inha university, Korea, Republic of) Corresponding Author Hyunseong Shin (Inha University, Korea, Republic of)
TuPS1403.366	11:26~11:29	NONLINEAR TRANSIENT DYNAMICS OF FINITE STRAIN BEAMS: A MIXED ISOGEOMETRIC FINITE ELEMENT WITH ENHANCED CROSS-SECTIONAL STRAINS **Myung-Jin Choi** (RWTH Aachen university, Germany) Corresponding Author Myung-Jin Choi (RWTH Aachen university, Germany)
TuPS1404.367	11:29~11:32	TIME HOMOGENIZATION APPROACH FOR CYCLICALLY LOADED VISCOELASTIC-VISCOPLASTIC MATERIALS **Wonjoo Lee** (Inha University, Korea, Republic of) Corresponding Author Hyunseong Shin (Inha University, Korea, Republic of)
TuPS1405.368	11:32~11:35	MOLECULAR DYNAMICS STUIDES ON THE CHANGES OF GRAIN STRUCTURES UNDER THE CUMULATIVE BOMBARDMENT ON BCC TUNGSTEN **Hyung gyu Lee** (Yonsei University, Korea, Republic of) Corresponding Author Keonwook Kang (Yonsei University, Korea, Republic of)
TuPS1406.369	11:35~11:38	EFFICIENCY ENHANCEMENT OF NONLINEAR MULTI-SCALE HOMOGENIZATION USING STIFFNESS EVALUATION-BASED NONLINEAR MODEL ORDER REDUCTION METHOD **Yujin So** (Dongguk University, Korea, Republic of) Corresponding Author Jaehun Lee (Dongguk University, Korea, Republic of)
TuPS1407.370	11:38~11:41	A PARAMETRIC COMPONENT MODE SYNTHESIS METHOD COMBINED WITH THE REDUCTION OF LOCALIZED AND PARAMETER-DEPENDENT INTERFACES **Seunghee Cheon** (Dongguk university, Korea, Republic of) Corresponding Author Jaehun Lee (Dongguk University, Korea, Republic of)
TuPS1408.371	11:41~11:44	MULTISCALE APPROACH TO INVESTIGATE EFFECT OF COHESIVE FAILURE MODE ON FRACTURE TOUGHNESS OF POLYMER NANOCOMPOSITES **Jihun Lee** (Inha university, Korea, Republic of) Corresponding Author Hyunseong Shin (Inha University, Korea, Republic of)
TuPS1409.372	11:44~11:47	STUDY ON DEBONDING SIMULATION OF HYBRID STRESS ELEMENT **Weijing Wu** (National University of Defense Technology, China) Corresponding Author Zhibin Shen (National University of Defense Technology, China)
TuPS1410.373	11:47~11:50	AN ASYMMETRIC PINCHED HYSTERESIS MODEL FOR VERSATILE APPLICATIONS **Khogesh Kumar Rathore** (Indian Institute of Technology, India) Corresponding Author Khogesh Kumar Rathore (Indian Institute of Technology, India)
TuPS1411.374	11:50~11:53	SCATTERING ANALYSIS IN MICROPOLAR MATERIALS USING 3-D ELASTODYNAMIC FINITE INTEGRATION TECHNIQUE **Takahiro SAITOH** (Gunma University, Japan) Corresponding Author Takahiro SAITOH (Gunma University, Japan)
TuPS1412.375	11:53~11:56	A ROBUST APPROACH TO INCORPORATE DISSIPATIVE BEHAVIOUR IN THE LINEAR CONSITUTIVE RELATIONSHIP OF MATERIAL MODEL **Jayanta Kumar Dutt** (Indian Institute of Technology, Delhi, India) Corresponding Author Jayanta Kumar Dutt (Indian Institute of Technology, Delhi, India)
TuPS1413.376	11:56~11:59	MULTISCALE STRATEGY TO PREDICT THE FRACTURE TOUGHNESS AND CRACK EXTENSION BEHAVIOR OF OZONE-FUNCTIONALIZED CARBON NANOTUBE/EPOXY NANOCOMPOSITES **Haolin Wang** (Inha University, Korea, Republic of) Corresponding Author Hyunseong Shin (Inha University, Korea, Republic of)
TuPS1414.377	11:59~12:02	KINETICAL PHASE TRANSITION PATHS AND PHASE STABILITY IN FERROELECTRIC HFO2 **JiangHeng Yang** (Xidian University, China) Corresponding Author Yichun Zhou (Xidian University, China)
TuPS1415.378	12:02~12:05	NON-STATIONARY PROBABILISTIC SOLUTION OF NON-SMOOTHLY NONLINEAR OSCILLATOR UNDER MODULATED EXTERNAL AND PARAMETRIC RANDOM EXCITATIONS **Jie Luo** (University of Macau, Macao SAR, China) Corresponding Author Jie Luo (University of Macau, Macao SAR, China)
TuPS1416.379	12:05~12:08	ELASTIC WAVE AND FORCED VIBRATION OF PLATE STRUCTURE WITH PART-THROUGH SURFACE CRACKS **Yongbin Ma** (Northwestern Polytechnical University, China) Corresponding Author Yongbin Ma (Northwestern Polytechnical University, China)
TuPS1417.380	12:08~12:11	A PHASE-FIELD STUDY ON RATCHETTING OF MEDIUM-MANGANESE TRIP STEEL **Juan Zhang** (Southwest Jiaotong University, China) Corresponding Author Juan Zhang (Southwest Jiaotong University, China)
TuPS1418.381	12:11~12:14	FLOW AND HARDENING PARAMETERS IDENTIFICATION FOR COPPER ALLOY USING ML/AI APPROACH **SRIHARI DODLA** (Indian Institute of Technology (BHU) Varanasi, India) Corresponding Author SRIHARI DODLA (Indian Institute of Technology (BHU) Varanasi, India)

SM05	Geomechanics and geophysics	
Moderator	John Rudnicki (Northwestern University, USA) / Jinhyun Choo (KAIST, Korea, Republic of)	
Room	Room 314, 3F	
TuPS0501.302	11:20~11:23	MACHINE LEARNING CALIBRATION FOR DEM SIMULATION OF ROCKS **Mikhail Kholodniak** (Tel Aviv University, Israel) Corresponding Author Mikhail Kholodniak (Tel Aviv University, Israel)
TuPS0502.303	11:23~11:26	DYNAMIC ANALYSIS OF A PILE GROUP IN SOFT SOIL UNDER COUPLED HORIZONTAL AND ROCKING MOTIONS USING A LUMPED-PARAMETER MODEL **Minh-Tam Doan** (National Taiwan University of Science and Technology, China-Taipei) Corresponding Author Jun-Yang Shi (National University of Kaohsiung, China-Taipei)
TuPS0503.304	11:26~11:29	EFFICIENT SIMULATION OF VERTICAL VIBRATIONS IN SOIL-PILE INTERACTION SYSTEMS BY A SIMPLIFIED MODELING APPROACH **Yo-Xin Chang** (National University of Kaohsiung, China-Taipei) Corresponding Author Jun-Yang Shi (National University of Kaohsiung, China-Taipei)

SM15	Vibrations and control of structures	
Moderator	Igor Berinskii (Tel Aviv University, Israel) / Lifeng Wang (Nanjing University of Aeronautics and Astronautics, China)	
Room	Room 315, 3F	
TuPS1501.382	11:20~11:23	A NOVEL ENERGY HARVESTER FOR ULTRALOW FREQUENCY EXCITATION **Xinyu Cao** (Tianjin University, China) Corresponding Author Qichang Zhang (Tianjin University, China)
TuPS1502.383	11:23~11:26	LARGE NONMINIMUM-PHASE ZEROS IN SISO NON-COLLOCATED CONTROL OF BEAM VIBRATIONS **Abdul Hannan Faruqi** (Indian Institute of Technology Kanpur, India) Corresponding Author Abdul Hannan Faruqi (Indian Institute of Technology Kanpur, India)
TuPS1503.384	11:26~11:29	VIBRATIONS OF JOINED CONICAL-CYLINDRICAL SHELLS WITH BOLT BOUNDARY: THEORY AND EXPERIMENT **Yan Qing Wang** (Northeastern University, China) Corresponding Author Yan Qing Wang (Northeastern University, China)
TuPS1504.385	11:29~11:32	MECHANICAL VIBRATION ABSORBER FOR FLEXURAL WAVE ATTENUATION IN MULTI-MATERIALS METASTRUCTURE **Ji Wan Kim** (Hanyang University, Korea, Republic of) Corresponding Author Gil Ho Yoon (Hanyang University, Korea, Republic of)
TuPS1505.386	11:32~11:35	DYNAMIC LOAD IDENTIFICATION BASED ON IMPROVED CONJUGATE GRADIENT REGULARIZATION **Yang Zhirong** (China Special Equipment Inspection and Research Institute, China) Corresponding Author Yang Zhirong (China Special Equipment Inspection and Research Institute, China)
TuPS1506.387	11:35~11:38	BROADBAND VIBRATION ATTENUATION OF NEGATIVE FEEDBACK PIEZOELECTRIC SHUNTED META-BEAM **Jiawei Mao** (Shanghai Jiao Tong University, China) Corresponding Author Yegao Qu (Shanghai Jiao Tong University, China)
TuPS1507.388	11:38~11:41	TARGETED PROPAGATION OF ELASTIC GUIDED WAVES USING A PAIR OF META-ATOMS **Gaoxi Cai** (XJTU, China) Corresponding Author Yongquan Liu (XJTU, China)
TuPS1508.389	11:41~11:44	A VMD-BASED NONLINEAR TRANSFORMATION APPROACH WITH A DEEP RESIDUAL NETWORK FOR THE DETECTION OF BOLTED JOINT LOOSENESS **DongYoon Kim** (Hanyang University, Korea, Republic of) Corresponding Author GilHo Yoon (Hanyang University, Korea, Republic of)
TuPS1509.390	11:44~11:47	CONTROL OF THE FREQUENCY SPECTRUM OF THIN-WALLED STRUCTURES USING PIEZOELECTRIC ELEMENTS **Sergey V. Lekomtsev** (Institute of Continuous Media Mechanics, Russia) Corresponding Author Sergey V. Lekomtsev (Institute of Continuous Media Mechanics, Russia)

SM17	Metamaterials architectured materials and topology optimization	
Moderator	Wei Chen (Northwestern University, USA) / Ole SIgmund (Technical University of Denmark, Denmark)	
Room	Room 320A, 3F	
TuPS1701.407	11:20~11:23	HARNESSING CONNECTIVITY FOR ELASTICALLY ISOTROPIC DISORDERED HETEROGENEOUS MATERIALS **Jehoon Moon** (Korea Advanced Institute of Science and Technology, Korea, Republic of) Corresponding Author Hansohl Cho (Korea Advanced Institute of Science and Technology, Korea, Republic of
TuPS1702.408	11:23~11:26	RIGID FOLDABILITY OF THE HEXAGON RON RESCH PATTERN **Changwoo Ha** (Seoul National University, Korea, Republic of) Corresponding Author Jinkyu Yang (Seoul National University, Korea, Republic of)
TuPS1703.409	11:26~11:29	TOPOLOGY OPTIMIZATION DESIGN UNDER STIFFNESS, STRENGTH, AND TEMPERATURE CONSTRAINTS OVER A WIDE RANGE OF TEMPERATURES **Qing xuan Meng** (Hebei University of Engineering, China) Corresponding Author Qing xuan Meng (Hebei University of Engineering, China)
TuPS1704.410	11:29~11:32	ENHANCING BUCKLING RESISTANCE OF SINGLE CELL STRUT LATTICES VIA 3D TOPOLOGY OPTIMIZATION **Asha Viswanath** (Khalifa University, United Arab Emirates) Corresponding Author Asha Viswanath (Khalifa University, United Arab Emirates)
TuPS1705.411	11:32~11:35	STRUCTURAL TOPOLOGY OPTIMIZATION BASED ON GLOBAL OPTIMIZATION DEEP LEARNING MODEL **Tong Zhao** (Beijing Institute of Technology, China) Corresponding Author DengBao Xiao (Beijing Institute of Technology, China)
TuPS1706.412	11:35~11:38	INVERSE HOMOGENIZATION ENHANCED BY ADVANCED DIFFUSION MODELS: A NEW APPROACH TO CELLULAR STRUCTURE DESIGN **Zhang Jin long** (Beijing institute of technology, China) Corresponding Author Dengbao Xiao (Institute of Advanced Structure Technology, Institute of Beijing Technology, China)
TuPS1707.413	11:38~11:41	OPTIMAL PANEL LAYOUT OF MODULAR-TYPE EMERGENCY BRIDGE CONSIDERING ITS PERIODICITY **Yuki Chikahiro** (Shinshu university, Japan) Corresponding Author Yuki Chikahiro (Shinshu university, Japan)
TuPS1708.414	11:41~11:44	LOAD INTERPOLATION AND SPEED-UPS OF TOPOLOGY OPTIMIZATION UNDER WORST-CASE LOAD UNCERTAINTY **Hampus Hederberg** (Linköping University, Sweden) Corresponding Author Hampus Hederberg (Linköping University, Sweden)
TuPS1709.415	11:44~11:47	DESIGN OF LOCALLY MULTI-RESONANT METAMATERIALS FOR VIBRATION REDUCTION AT MULTIPLE FREQUENCIES **Kwangjin Kim** (Gyeongsang National University, Korea, Republic of) Corresponding Author Junghwan Kook (Gyeongsang National University, Korea, Republic of)
TuPS1710.416	11:47~11:50	TOPOLOGY OPTIMIZATION METHOD FOR 3D STRUCTURES BASED ON TOPOLOGICAL DERIVATIVES **Yang Liu** (Sojo University, Japan) Corresponding Author Yang Liu (Sojo University, Japan)
TuPS1711.417	11:50~11:53	TWO-SCALE SHAPE AND TOPOLOGY OPTIMIZATION UNDER STRESS AND VOLUME CONSTRAINTS USING LEVEL-SET FUNCTION AND TRIIMED MESHES **JINHOO KIM** (Seoul National University of Science and Technology, Korea, Republic of) Corresponding Author Hyun-Gyu Kim (Seoul National University of Science and Technology, Korea, Republic of)
TuPS1712.418	11:53~11:56	TOPOLOGY OPTIMIZATION TO OPEN THE NEW BANDGAP OF PHONONIC CRYSTALS BASED ON LEVEL SET METHOD **Nari Nakayama** (Kyoto University, Japan) Corresponding Author Nari Nakayama (Kyoto University, Japan)
TuPS1713.419	11:56~11:59	OPTIMAL SHAPE DESIGN AND MANUFACTURING OF NITIOL ANTI-CHIRAL AUXETIC STENTS FOR CONFORMAL ANEURYSM CONSOLIDATION **Gillot Nicolas Frédéric** (ELyTMaX IRL3757, CNRS, Univ Lyon, INSA Lyon, Centrale Lyon, Université Claude Bernard Lyon 1, Tohoku University, Sendai, Japan, Japan) Corresponding Author Gillot Nicolas Frédéric (ELyTMaX IRL3757, CNRS, Univ Lyon, INSA Lyon, Centrale Lyon, Université Claude Bernard Lyon 1, Tohoku University, Sendai, Japan, Japan)
TuPS1714.420	11:59~12:02	OPTIMIZATION DESIGNS OF LINEAR AND NONLINEAR LATTICE METAMATERIALS BASED ON GENETIC ALGORITHM **Kun Wu** (Tianjin University, China) Corresponding Author Yue-Sheng Wang (Tianjin University, China)
TuPS1715.421	12:02~12:05	TOPOLOGY OPTIMIZATION OF LINKAGE MECHANISM USING MOVING MORPHABLE LINKS **Gang-Won Jang** (Sejong University, Korea, Republic of) Corresponding Author Gang-Won Jang (Sejong University, Korea, Republic of)
TuPS1716.422	12:05~12:08	SHAPE OPTIMIZATION FOR TWO-DIMENSIONAL SOUND BARRIER WITH LEVEL SET METHOD **Qiuzi Yu** (University of Science and Technology of China, China) Corresponding Author Haibo Chen (University of Science and Technology of China, China)

SM18	Nonlinear dynamics for design	
Moderator	C. Nataraj (Villanova University, USA) / Pedro Ribeiro (Fac. Eng. Un. Porto, Portugal)	
Room	Room 320B, 3F	
TuPS1801.441	11:20~11:23	AMPLITUDE DEPENDENT DISPERSION OF NONLINEAR DIATOMIC METAMATERIAL **Myung Hwan Bae** (Seoul National University, Korea, Republic of) Corresponding Author Joo Hwan Oh (Ulsan National Institute of Science and Technology, (UNIST), Republic of Korea, Korea, Republic of)
TuPS1802.442	11:23~11:26	NONLINEAR BENDING ANALYSIS OF FGM PLATE UNDER MECHANICAL LOADING USING NON-POLYNOMIAL SHEAR DEFORMATION THEORY **SMRUTI RANJAN SAHOO** (Ph.D Research Scholar at Indian Institute of Technology, Kharagpur, India, India) Corresponding Author SMRUTI RANJAN SAHOO (Ph.D Research Scholar at Indian Institute of Technology, Kharagpur, India, India)
TuPS1803.443	11:26~11:29	NONLINEAR DYNAMICS OF BISTABLE COMPOSITE CANTILEVER SHELLS UNDER EXTERNAL EXCITATION **Xingping Fan** (Beijing University of Aeronautics and Astronautics, China) Corresponding Author Jiaying Zhang (Beihang, China)
TuPS1804.444	11:29~11:32	INFLUENCE OF DAMPING ON CHAOS CONTROL IN A DUFFING'S OSCILLATOR **Neeraj Kumar** (University of Queensland- Indian Institute of Technology Delhi Research Academy, India) Corresponding Author Jayanta Kumar Dutt (Indian Institute of Technology Delhi, India)
TuPS1805.445	11:32~11:35	NONLINEAR MODEL OF DISTURBANCES ACTING ON SPACECRAFT ATTITUDE DURING A TUBULAR BOOM DEPLOYMENT PROCESS **Mateusz Daniel Kukuryka** (Warsaw University of Technology, Poland) Corresponding Author Mateusz Daniel Kukuryka (Warsaw University of Technology, Poland)
TuPS1806.446	11:35~11:38	THE INFLUENCE OF THE VELOCITY AND MASS OF MOVING BODY ON THE DYNAMIC RESPONSE OF THE BEAM **Ewa Błazik-Borowa** (Lublin University of Technology, Poland) Corresponding Author Ewa Błazik-Borowa (Lublin University of Technology, Poland)
TuPS1807.447	11:38~11:41	MODEL STUDIES OF THE PASSAGE OF MASS ALONG A BEAM **Michał Jukowski** (Lublin University of Technology, Poland) Corresponding Author Michał Jukowski (Lublin University of Technology, Poland)
TuPS1808.448	11:41~11:44	FREQUENCY DEPENDENT DAMPING OF FAçADE SCAFFOLDING VIBRATIONS **Jarosław Bęc** (Lublin University of Technology, Poland) Corresponding Author Jarosław Bęc (Lublin University of Technology, Poland)
TuPS1809.449	11:44~11:47	EFFECT OF GLYCERINE ON THE DYNAMICAL STATE IN BELOUSOV ZHABOTINSKY OSCILLATORY REACTION **Andjelka Hedrih** (Mathematical Institute of Sciences and Arts, Belgrade, Serbia) Corresponding Author Andjelka Hedrih (Mathematical Institute of Sciences and Arts, Belgrade, Serbia)
TuPS1810.450	11:47~11:50	DYNAMICS OF A HANGING CABLE WITH A MOVING MASS **KUSH KUMAR** (Indian Institute of Technology Kanpur, India) Corresponding Author KUSH KUMAR (Indian Institute of Technology Kanpur, India)

SM16	Soft materials and extremely deformable structures	
Moderator	Fan Xu (Fudan University, China) / Animangsu Ghatak (Indian Institute of Technology Kanpur, India)	
Room	Room 321A, 3F	
TuPS1601.391	11:20~11:23	GELS RESPONSE AROUND FINITE-STRAINED STATES: THE LINEARIZED EQUATIONS **Fernando Pereira Duda** (Federal University of Rio de Janeiro, Brazil) Corresponding Author Fernando Pereira Duda (Federal University of Rio de Janeiro, Brazil)
TuPS1602.392	11:23~11:26	CREPING MECHANICS OF ELASTO-PLASTIC FIBER NETWORKS **Shubham Agarwal** (The University of British Columbia, Canada) Corresponding Author Shubham Agarwal (The University of British Columbia, Canada)
TuPS1603.393	11:26~11:29	INVERSE IDENTIFICATION OF MATERIAL PROPERTIES OF RUBBER O-RINGS IN HYDROGEN FUEL CELL ELECTRIC VEHICLES **Sang Min Lee** (Korea University, Korea, Republic of) Corresponding Author Byoung-Ho Choi (Korea University, Korea, Republic of)
TuPS1604.394	11:29~11:32	BENDING RIGIDITY OF FLUID-RUNNING TUBES **Satsuki Shibuya** (Keio University, Japan) Corresponding Author Satsuki Shibuya (Keio University, Japan)
TuPS1605.395	11:32~11:35	CO-DESIGNING STRUCTURE AND CONTROLLER OF SOFT ROBOTS FOR LOCOMOTION BY TOPOLOGY OPTIMIZATION AND NEURAL NETWORK **Yuki Sato** (Toyota Central R&D Labs., Inc., Japan) Corresponding Author Yuki Sato (Toyota Central R&D Labs., Inc., Japan)
TuPS1606.396	11:35~11:38	STABILITY OF AN ADHESIVE TAPE LOOP **Krishnan Suryanarayanan** (Indian Institute of Technology Gandhinagar, India) Corresponding Author Harmeet Singh (Indian Institute of Technology Gandhinagar, India)
TuPS1607.397	11:38~11:41	VISCOELASTIC-VISCOPLASTIC CHARACTERIZATION OF SOFT MATERIALS: UNVEILING DEFORMATION BEHAVIOR UNDER CYCLIC LOADING **Abuzar Es'haghiOskui** (Southern University of Science and Technology, China) Corresponding Author Abuzar Es'haghiOskui (Southern University of Science and Technology, China)
TuPS1608.398	11:41~11:44	MOLECULAR MECHANISM OF THE VISCOELASTIC CREEP BEHAVIOR OF POLYELECTROLYTE ELASTOMERS **Mohammadreza Adibeig** (Southern University of Science and Technology, China) Corresponding Author Mohammadreza Adibeig (Southern University of Science and Technology, China)
TuPS1609.399	11:44~11:47	SPONTANEOUS NETWORK RECONFIGURATION RESISTS FATIGUE FRACTURE IN AMORPHOUS HYDROGELS WITH DYNAMIC COVALENT CROSSLINKS **Canhui Yang** (Southern University of Science and Technology, China) Corresponding Author Canhui Yang (Southern University of Science and Technology, China)
TuPS1610.400	11:47~11:50	WRINKLING OF A THIN FILM ENCAPSULATED BETWEEN IDENTICALLY PRE-STRETCHED TWO SOFT SUBSTRATES **Hyunsu Kwak** (POSTECH, Korea, Republic of) Corresponding Author Anna Lee (POSTECH, Korea, Republic of)
TuPS1611.401	11:50~11:53	EFFECTS OF CRYSTALLOGRAPHIC DEFECTS ON KIRIGAMI MECHANICS **Byungho Lee** (POSTECH, Korea, Republic of) Corresponding Author Anna Lee (POSTECH, Korea, Republic of)
TuPS1612.402	11:53~11:56	ORIGAMI-BASED DEPLOYABLE AND MULTI-STABLE DODECAHEDRON STRUCTURE **Junseo Kim** (Seoul National University, Korea, Republic of) Corresponding Author Jinkyu Yang (Seoul National University, Korea, Republic of)
TuPS1613.403	11:56~11:59	SOFT ELECTROTHERMAL KIRIGAMIS **Hanseong Jo** (UCLA, USA) Corresponding Author Artur Davoyan (Department of Mechanical and Aerospace Engineering, University of California, Los Angeles (UCLA), USA)
TuPS1614.404	11:59~12:02	EQUIVALENT UNIT CELL MODELLING OF SHAPE MEMORY ALLOY TEXTILE SOFT ACTUATOR **Elahi Muhammad Umar** (Dongguk University, Korea, Republic of) Corresponding Author Heung Soo Kim (Dongguk University, Korea, Republic of)
TuPS1615.405	12:02~12:05	SHAPE CONTROL OF CENTRIFUGAL FORCE-DRIVEN MICROPARTICLES **Mi Song Nam** (Kyung Hee University, Korea, Republic of) Corresponding Author Yun Jung Heo (Kyung Hee University, Korea, Republic of)
TuPS1616.406	12:05~12:08	SPRAY-ENABLED FABRICATION OF POROUS PATCH AND ITS APPLICATION **Haeyeon Iee** (Hanyang University, Korea, Republic of) Corresponding Author Dong Rip Kim (Hanyang University, Korea, Republic of)

SM03	Elasticity	
Moderator	Weiqiu CHEN (Zhejiang University, China) / Guohua Nie (Tongji University, China)	
Room	Room 321B, 3F	
TuPS0301.265	11:20~11:23	MODELING ELASTIC WAVE PROPAGATION IN MULTI-LAYERED COMPOSITE LAMINATE VIA A RECURSIVE MATRIX METHOD **Shuanglin Guo** (Nanchang Hangkong University, China) Corresponding Author Shuanglin Guo (Nanchang Hangkong University, China)
TuPS0302.266	11:23~11:26	STATIC BENDING AND FORCED VIBRATION ANALYSES OF A FLEXOELECTRIC SEMICONDUCTOR CYLINDRICAL SHELL **Yilin Qu** (Northwestern Polytechnical University, China) Corresponding Author Yilin Qu (Northwestern Polytechnical University, China)
TuPS0303.267	11:26~11:29	TENSILE BUCKLING OF A STRETCHED SHEET **Marc Suñé** (University of Oxford, United Kingdom) Corresponding Author Marc Suñé (University of Oxford, United Kingdom)
TuPS0304.268	11:29~11:32	REAL-TIME LARGE-AREA FULL-FIELD INTERFEROMETRIC SYSTEM FOR ABSOLUTE THICKNESS MEASUREMENT OF ULTRA THIN GLASS PLATES **Po-Chi Sung** (National Tsing Hua University, China-Taipei) Corresponding Author Wei-Chung Wang (National Tsing Hua University, China-Taipei)
TuPS0305.269	11:32~11:35	IN SITU TEM CHARACTERIZATION OF THE MECHANICAL BEHAVIOR OF FERROELASTIC DOMAIN STRUCTURED YTTRIUM TANTALATE **Ke Cao** (Xidian University, China) Corresponding Author Ke Cao (Xidian University, China)
TuPS0306.270	11:35~11:38	LOCAL AND NONLOCAL MECROMECHANICS OF COMPOSITES **Valeriy A Buryachenko** (Micromechanics & Composites LLC, USA) Corresponding Author Valeriy A Buryachenko (Micromechanics & Composites LLC, USA)
TuPS0307.271	11:38~11:41	DYNAMIC ANALYSIS OF A MULTI-LAYERED TRANSVERSELY ISOTROPIC SATURATED SOIL UNDER MOVING LOADS **Kaifu Liu** (Zhejiang Sci-Tech University, China) Corresponding Author Kaifu Liu (Zhejiang Sci-Tech University, China)
TuPS0308.272	11:41~11:44	INDENTATION OF A RIGID DISC OVER A TRANSVERSELY ISOTROPIC AND MULTILAYERED POROELASTIC MEDIUM **Zhiqing Zhang** (Wenzhou University of Technology, China) Corresponding Author Zhiqing Zhang (Wenzhou University of Technology, China)
TuPS0309.273	11:44~11:47	SURFACE BEHAVIOR OF TYPICAL SOFT STRUCTURES **Peijian Chen** (China University of Mining and Technology, China) Corresponding Author Peijian Chen (China University of Mining and Technology, China)

FM18	Electro- and magneto-hydrodynamics	
Moderator	Jie Zhang (Xi'an Jiaotong University, China) / Minping Wan (Southern University of Science and Technology, China)	
Room	Room 322A, 3F	
TuPF1801.206	11:20~11:23	ENHANCING ELECTRIC CONNECTIVITY OF SLURRY BY PATTERNED STRUCTURES IN SEMI-SOLID FLOW BATTERY **Sejung Choi** (Hanyang University, Korea, Republic of) Corresponding Author Rhokyun Kwak (Hanyang University, Korea, Republic of)
TuPF1802.207	11:23~11:26	IN-SITU VISUALIZATION OF ELECTROCONVECTIVE INSTABILITY IN POROUS ION-EXCHANGE MATERIALS **Sudong Park** (Hanyang University, Korea, Republic of) Corresponding Author Rhokyun Kwak (Hanyang University, Korea, Republic of)
TuPF1803.208	11:26~11:29	NUMEIRCAL ANALYSIS OF WATER PURIFICATION THROUGH CORONA DISCHARGE **Ji Hong Chung** (Sungkyunkwan University, Korea, Republic of) Corresponding Author Han Seo Ko (Sungkyunkwan University, Korea, Republic of)
TuPF1804.209	11:29~11:32	NUMERICAL ANALYSIS OF MICRO-SCALE ELECTROHYDRODYNAMIC CONDUCTION PUMPING OF LIQUID FILM **Junxiu Wang** (Harbin Institute of Technology, China) Corresponding Author Jian Wu (Harbin Institute of Technology, China)
TuPF1805.210	11:32~11:35	DYNAMICS OF VAPOR PLUME FROM A HOT CYLINDER IN THE PRESENCE OF A VERTICAL ELECTRIC FIELD **Deepak Selvakumar** (Khalifa University, United Arab Emirates) Corresponding Author Ahmed K. Alkaabi (Khalifa University, United Arab Emirates)
TuPF1806.211	11:35~11:38	NON-UNIFORMITY CAUSED BY VISCOUS EFFECT OF ION IN RESONANT-TYPE MICROWAVE PLASMA **Zhiguo Tian** (Tsinghua University, China) Corresponding Author Moran Wang (Tsinghua University, China)
TuPF1807.212	11:38~11:41	EFFECT OF THE TRACER PARTICLES ON THE DYNAMIC OF SINGLE ELECTROCHEMICALLY GENERATED HYDROGEN BUBBLES AT MICROELECTRODES **Yifan Han** (Helmholtz-Zentrum Dresden-Rossendorf, Germany) Corresponding Author Yifan Han (Helmholtz-Zentrum Dresden-Rossendorf, Germany)
TuPF1808.213	11:41~11:44	VISUALIZATION OF SAMPLE DEPOSITION ON THE Cryo-EM GRID USING ELECTROSPRAY **zahra zahra** (Sungkyunkwan University, Korea, Republic of) Corresponding Author Jinkee Lee (Sungkyunkwan University, Korea, Republic of)

FM08	Flow instability and transition	
Moderator	Viswanathan Shankar (Indian Institute of Technology Kanpur, India) / Daniel Rodriguez (Universidad Politecnica de Madrid, Spain)	
Room	Room 322B, 3F	
TuPF0801.139	11:20~11:23	MODAL AND NON-MODAL STABILITY FOR HAGEN-POISEUILLE FLOW WITH NON-IDEAL FLUID **Zheng Congren** (Harbin Institute of Technology, China) Corresponding Author zijing ding (Harbin Institute of Technology, China)
TuPF0802.140	11:23~11:26	NECESSARY CONDITIONS FOR STABILITY OF ALTERNATING JETS **Kengo Deguchi** (Monash University, Australia) Corresponding Author Kengo Deguchi (Monash University, Australia)
TuPF0803.141	11:26~11:29	ANALYSIS OF THE LOCAL ABSOLUTE INSTABILITY REGION LENGTH IN FREE JETS **Linar Gareev** (Lomonosov Moscow State University, Russia) Corresponding Author Julia Zayko (Lomonosov Moscow State University, Russia)
TuPF0804.142	11:29~11:32	PROPAGATION UNITY OF TURBULENT-LAMINAR FRONTS IN POLYGONAL PIPE FLOW **jiashun GUAN** (Peking University, China) Corresponding Author Jianjun Tao (Peking University, China)
TuPF0805.143	11:32~11:35	STABILITY ANALYSIS OF A GIESEKUS FLUID JET FLOW **Leandro Franco de Souza** (University of Sao Paulo, Brazil) Corresponding Author Leandro Franco de Souza (University of Sao Paulo, Brazil)
TuPF0806.144	11:35~11:38	OPTIMAL DISTURBANCES IN ROUND SUBMERGED JETS **Denis Abdulvagabovich Ashurov** (Lomonosov Moscow State University, Russia) Corresponding Author Denis Abdulvagabovich Ashurov (Lomonosov Moscow State University, Russia)
TuPF0807.145	11:38~11:41	HIGH-FIDELITY SIMULATION OF LAMINAR-TO-TURBULENT TRANSITION IN HYPERSONIC BOUNDARY LAYER ON A SHARP CONE **Minjae Jeong** (Gwangju Institute of Science and Technology, Korea, Republic of) Corresponding Author Solkeun Jee (Gwangju Institute of Science and Technology, Korea, Republic of)
TuPF0808.146	11:41~11:44	STABILITY ANALYSIS FOR HIGH-SPEED BOUNDARY LAYER FLOW WITH CAVITIES **Shuo Feng** (Shanghai University, China) Corresponding Author Bofu Wang (Shanghai University, China)
TuPF0809.147	11:44~11:47	FLAKE VISUALIZATION OF THE SPIRAL WAVE STATE OF WIDE-GAP SPHERICAL COUETTE FLOW **Tomoaki Itano** (Kansai Univ., Japan) Corresponding Author Tomoaki Itano (Kansai Univ., Japan)
TuPF0810.148	11:47~11:50	THE EFFECT OF VISCOUS HEATING ON THE STABILITY OF VISCOELASTIC FLUID **ANKUSH ANKUSH** (Indian Institute of Technology, Hyderabad, India, India) Corresponding Author ANKUSH ANKUSH (Indian Institute of Technology, Hyderabad, India)
TuPF0811.149	11:50~11:53	STABILITY ANALYSIS OF ASYMMETRIC SMALL OPEN CAVITIES **Marcello Faraco Medeiros** (University of Sao Paulo, Brazil) Corresponding Author Thiago Freisleben Ribeiro Rezende (University of São Paulo, Brazil)
TuPF0812.150	11:53~11:56	LINEAR STABILITY OF VISCOELASTICITY POISEUILLE FLOW: EFFECT OF MEMORY SLIP **Bin Zhang** (Harbin Institute of Technology, China) Corresponding Author Bin Zhang (Harbin Institute of Technology, China)
TuPF0813.151	11:56~11:59	GLOBAL STABILITY ANALYSIS OF THE FLOW PAST BULLET SHAPED BODY **Ragavendiran Muniyammal** (Indian Institute of Technology Kanpur, India) Corresponding Author Ragavendiran Muniyammal (Indian Institute of Technology Kanpur, India)
TuPF0814.152	11:59~12:02	EXPERIMENTAL STUDY OF THE CONDUCTIVE STATE OF A VISCOUS FLUID IN A HEATED TAYLOR-COUETTE SYSTEM **Antoine Meyer** (University of Le Havre, Normandy, France) Corresponding Author Antoine Meyer (University of Le Havre, Normandy, France)
TuPF0815.153	12:02~12:05	NUMERICAL SIMULATION OF NONLINEAR STAGE OF LAMINAR- TURBULENT TRANSITION IN A SUPERSONIC FLOW **Natalia Palchekovskaya** (Moscow Institute of Physics and Technology, Russia) Corresponding Author Natalia Palchekovskaya (Moscow Institute of Physics and Technology, Russia)

FM06	Drops, bubbles and interfaces	
Moderator	Marco Edoardo Rosti (Okinawa Institute of Science and Technology Graduate University, Japan) / Kirti Chandra Sahu (Indian Institute of Technology Hyderabad, India) / ksahu@che.iith.ac.in	
Room	Room 323A, 3F	
TuPF0601.080	11:20~11:23	IMPROVING PEMFC WATER MANAGEMENT ABILITY BY ACTIVE CONTROL METHOD **Jiyeon Kim** (Chosun University, Korea, Republic of) Corresponding Author Sung Yong Jung (Chosun University, Korea, Republic of)
TuPF0602.081	11:23~11:26	ENHANCED ANTI-ICING PERFORMANCE OF SILICONE-BASED SLIPPERY COATING **Gyu Do Park** (Pohang University of Science and Technology, Korea, Republic of) Corresponding Author Sangjoon Lee (POSTECH, Korea, Republic of)
TuPF0603.082	11:26~11:29	UNSTABLE MOTION OF A PENDANT DROP IN A UNIFORM VERTICAL FLOW **Jongwon Lee** (Seoul National University, Korea, Republic of) Corresponding Author Wontae Hwang (Seoul National University, Korea, Republic of)
TuPF0604.083	11:29~11:32	EFFECT OF SURFACE CURVATURE ON DROP IMPACTING FORCES ON SUPERHYDROPHOBIC SURFACES **Akash Ranjan Pati** (Kyung Hee University, Korea, Republic of) Corresponding Author Choongyeop Lee (Kyung Hee University, Korea, Republic of)
TuPF0605.084	11:32~11:35	IMPACT DYNAMICS OF A VISCOUS DROP THROUGH MICROHOLE PIERCED ON A SUPER-NON-WETTABLE SURFACE **Mohammad Shibli Reza** (Kyung Hee University, Korea, Republic of) Corresponding Author Choongyeop Lee (Kyung Hee University, Korea, Republic of)
TuPF0606.085	11:35~11:38	NON-NEWTONIAN DROP IMPACT DYNAMICS ON THIN LIQUID FILMS **MANGLESH SINGH** (Indian Institute of Technology Ropar., India) Corresponding Author Devranjan samanta (IIT Ropar, India)
TuPF0607.086	11:38~11:41	CAPTURING AIRBORNE MICROPARTICLES THROUGH THE MOTION OF LIQUID DROPLETS **Hyeongjun Jeong** (Pusan National University, Korea, Republic of) Corresponding Author Seungho Kim (Pusan National University, Korea, Republic of)
TuPF0608.087	11:41~11:44	NUMERICAL SIMULATION OF ATOMIZATION CHARACTERISTICS OF LIQUID JETS IN TRANSONIC CROSSFLOW **Jianlong Chang** (North University of China, China) Corresponding Author Jianlong Chang (North University of China, China)
TuPF0609.088	11:44~11:47	NUMERICAL STUDY OF HIGH-SPEED DROPLET IMPACT ON STATIONARY LIQUID FILM CONSIDERING CAVITATION EFFECT **Hangfan Xiong** (Beijing Institute of Technology, China) Corresponding Author Wangxia Wu (Beijing Institute of Technology, China)
TuPF0610.089	11:47~11:50	A NUMERICAL STUDY OF DROPLET MOTION IN A MICRO-CHANNEL. **Clemence Raymond** (École Polytechnique, France) Corresponding Author Clemence Raymond (École Polytechnique, France)
TuPF0611.090	11:50~11:53	ON THE PINCH-OFF MECHANISM OF THE DEEP-SEAL WATER ENTRY CAVITY NEAR A RIGID WALL **Hayato Ezumi** (Saitama University, Japan) Corresponding Author Akihito Kiyama (Saitama University, Japan)
TuPF0612.091	11:53~11:56	COMBUSTION AND ATOMIZATION BEHAVIOR OF STABLE EMULSION DROPLETS **SINDHUJA PRIYADARSHINI** (Indian Institute of Technology Kanpur, India) Corresponding Author D Chaitanya Kumar Rao (Department of Aerospace Engineering, Indian Institute of Technology Kanpur, India)
TuPF0613.092	11:56~11:59	A COUPLED EULERIAN-LAGRANGIAN METHOD FOR UNDERWATER EXPLOSION PROBLEMS **Wei Shao** (Beijing Institute of Technology, China) Corresponding Author Xiangzhao Xu (Beijing Institute of Technology, China)
TuPF0614.093	11:59~12:02	PARTIAL VENTILATION OF A CAVITATION BUBBLE NEAR A FREE SURFACE **Jingzhu Wang** (Institute of Mechanics, Chinese Academy of Sciences, China) Corresponding Author Jingzhu Wang (Institute of Mechanics, Chinese Academy of Sciences, China)
TuPF0615.094	12:02~12:05	NUMERICAL SIMULATION OF CLOSE-COUPLED GAS ATOMIZATION FOR PREDICTION OF PARTICLE SIZE AND ITS THERMAL PROFILE FOR NICKEL-BASED SUPERALLOY POWDERS **Sabita Sarkar** (Indian Institute of Technology Madras, India) Corresponding Author Sabita Sarkar (Indian Institute of Technology Madras, India)
TuPF0616.095	12:05~12:08	MECHANISM, MANIPULATION AND APPLICATION OF THE BUBBLE PROPELLED JANUS MICROMOTOR **Leilei Wang** (Institute of Mechanics, Chinese Academy of Sciences, China) Corresponding Author Xu Zheng (Institute of Mechanics, CAS, China)
TuPF0617.096	12:08~12:11	NUMERICAL SIMULATION OF TWO-PHASE FLOW USING COUPLED LEVEL-SET AND VOLUME-OF-FLUID METHOD **Duy Tai Vu** (Seoul National University of Science and Technology, Korea, Republic of) Corresponding Author Sung Goon Park (Seoul National University of Science and Technology, Korea, Republic of)
TuPF0618.097	12:11~12:14	A VERSATILE AND HIGHLY TRANSFORMABLE PARTICLE-ARMORED LIQUID ROBOT **Hyobin Jeon** (Seoul National University, Korea, Republic of) Corresponding Author Ho-Young Kim (Seoul National University, Korea, Republic of)
TuPF0619.098	12:14~12:17	CONTACT LINE MOTIONS OF LIQUID METALS WITH A SURFACE OXIDE LAYER **Sangyun Jung** (Sogang university, Korea, Republic of) Corresponding Author Wonjung Kim (Sogang University, Korea, Republic of)

FM01	Biological fluid mechanics	
Moderator	Roberto Verzicco (Univ. Rome Tor Vergata, Italy) / Simon Mendez (CNRS, France)	
Room	Room 323B, 3F	
TuPF0101.044	11:20~11:23	ELUCIDATION OF TROPHOBLAST MIGRATION DYNAMICS IN OXYGEN-CONTROLLED GEL PATTERNED MICROFLUIDIC SYSTEM **Dongjun Yu** (inha university, Korea, Republic of) Corresponding Author Sun Min Kim (Inha University, Korea, Republic of)
TuPF0102.045	11:23~11:26	DIFFERENTIAL RESPONSE OF CYTOPLASMIC STREAMING OF PLANT CELLS TO GENETIC DIFFERENCE AND ENVIRONMENT STRESS **Young Su Ko** (Kyunghee Univ., Korea, Republic of) Corresponding Author Choongyeop Lee (Kyunghee Univ, Korea, Republic of)
TuPF0103.046	11:26~11:29	GEOMETRIC CONSISTENCY IN SEGMENTED TONGUES OF BEES MEDIATED BY HYDRODYNAMIC CONSTRAINTS **Zexiang Huang** (Sun Yat-sen University, China) Corresponding Author Jianing Wu (School of Advanced Manufacturing, Sun Yat-sen University, China)
TuPF0104.047	11:29~11:32	AI-BASED HEMORHEOLOGY PREDICTION WITH PATIENT-SPECIFIC BIOMETRIC BOUNDARY CONDITIONS **Hyeong Jun Lee** (Yonsei University, Korea, Republic of) Corresponding Author Joon Sang Lee (Yonsei University, Korea, Republic of)
TuPF0105.048	11:32~11:35	FABRICATION OF 3D TUMOR SPHEROIDS THROUGH ACOUSTO-MICROFLUIDIC MODULATION OF DROPLET SIZE **yongtaek Im** (KAIST, Korea, Republic of) Corresponding Author Jessie S Jeon (KAIST, Korea, Republic of)
TuPF0106.049	11:35~11:38	PATTERN FORMATION AND DEFECT ORDERING IN ACTIVE CHIRAL NEMATICS **Zhong-Yi Li** (Tsinghua University, China) Corresponding Author Bo Li (Tsinghua University, China)
TuPF0107.050	11:38~11:41	GENERATION OF HELICAL FLOW USING ACOUSTOFLUIDIC CHIP TO INVESTIGATE ITS ATHEROPROTECTIVE ROLE **Daesik Kwak** (KAIST, Korea, Republic of) Corresponding Author Jessie S Jeon (KAIST, Korea, Republic of)
TuPF0108.051	11:41~11:44	FSI SIMULATION OF INTRACRANIAL ANEURYSMS AND EFFECT OF WALL THICKNESS AND DOMAIN SIZE TO HEMODYNAMIC INDEXES **Jungjae Yoon** (Korea University, Korea, Republic of) Corresponding Author Jaiyoung Ryu (Korea University, Korea, Republic of)
TuPF0109.052	11:44~11:47	MODELING THE VASCULAR RESPONSE TO LOCALIZED BRAIN ACTIVATION **caterina guiot** (university of Torino, Italy) Corresponding Author caterina guiot (university of Torino, Italy)
TuPF0110.053	11:47~11:50	MEASUREMENT OF SWIMMING SPEED OF BACTERIA IN A SHEAR THINNING FLUID **Tonau Nakai** (Tottori University, Japan) Corresponding Author Tonau Nakai (Tottori University, Japan)
TuPF0111.054	11:50~11:53	GEOMETRICAL OPTIMIZATION OF BRISTLED WINGS OF MINIATURE FLAPPING FLIERS **Dmitry Kolomenskiy** (Skoltech, Russia) Corresponding Author Dmitry Kolomenskiy (Skoltech, Russia)
TuPF0112.055	11:53~11:56	NUMERICAL STUDY OF DROP IMPACT ON CONCAVE SURFACES: EFFECTS ON PLANT DISPERSAL **DATONG WANG** (CNRS. SCTD 3194, France) Corresponding Author DATONG WANG (CNRS. SCTD 3194, France)
TuPF0113.056	11:56~11:59	MODELLING CAPILLARY RISE WITH SLIP BOUNDARY CONDITION **Srboljub S Simić** (University of Novi Sad, Serbia) Corresponding Author Srboljub S Simić (University of Novi Sad, Serbia)
TuPF0114.057	11:59~12:02	INTEGRAL PARAMETERS FOR PRECISE HEMODYNAMIC ANALYSIS USING 4D FLOW MRI DATA **Don-Gwan An** (Hanyang University, Korea, Republic of) Corresponding Author Simon Song (Hanyang University, Korea, Republic of)
TuPF0115.058	12:02~12:05	INVESTIGATION OF THE EFFECT OF PROTEINS ON THE RHEOLOGY OF HUMAN FOLLICULAR FLUIDS UNDER SHEAR AND EXTENSIONAL STRESS CONDITIONS **Keigo Kikuchi** (Nagoya Institute of Technology, Japan) Corresponding Author Keigo Kikuchi (Nagoya Institute of Technology, Japan)
TuPF0116.059	12:05~12:08	STABILITY AND CONVERGENCE ANALYSIS FOR BIOMAGNETIC FLUID FLOW OVER A STRETCHING CYLINDER UNDER MAGNETIC DIPOLE **Dr. Mohammad Ferdows** (University of Dhaka, Bangladesh) Corresponding Author Dr. Mohammad Ferdows (University of Dhaka, Bangladesh)
TuPF0117.060	12:08~12:11	PRESSURIZED METERED DOSE INHALER-BASED ANALYSIS OF PULMONARY DRUG DELIVERY USING THE COUPLED DISCRETE PHASE AND EULERIAN WALL FILM MODEL **SAMEER KUMAR VERMA** (NIT Rourkela, India) Corresponding Author Kishore Singh Patel (National Institute of Technology, Rourkela, India, India)

FM04	Compressible flow	
Moderator	**Daniel Livescu** (Los Alamos National Laboratory, USA) / **Ye Zhou** (Lawrence Livermore National Lab, USA)	
Room	Room 324A, 3F	
TuPF0401.070	11:20~11:23	INVESTIGATION OF BACKGROUND PRESSURE INFLUENCE ON PIPE FLOW USING PIV ANALYSIS **chen chen** (Beihang University, China) Corresponding Author Liu li hui (Beihang University, China)
TuPF0402.071	11:23~11:26	AERODYNAMIC AND SHOCKWAVE INVESTIGATION IN HYPERLOOP: COMPARATIVE ANALYSIS OF BOGIE CONFIGURATIONS **Thi Thanh Giang Le** (Korea University, Korea, Republic of) Corresponding Author Jaiyoung Ryu (Korea University, Korea, Republic of)
TuPF0403.072	11:26~11:29	INVESTIGATION OF COMPRESSIBLE TURBULENT/NON-TURBULENT MIXING WITHIN NON-PLANAR GEOMETRIES **Eunhye An** (Korea Air Force Academy, Korea, Republic of) Corresponding Author Eric Johnsen (University of Michigan, USA)
TuPF0405.074	11:29~11:32	MULTISTAGE BIFURCATION AND NESTING HYSTERESIS OF CURVED COMPRESSION RAMP FLOWS **Yan-Chao Hu** (China aerodynamics research and development center, China) Corresponding Author Yan-Chao Hu (China aerodynamics research and development center, China)
TuPF0406.075	11:35~11:38	A HIGH RESOLUTION CELL-CENTERED ALE METHOD FOR MULTI-MATERIAL INTERFACE WITH LARGE DEFORMATION **Yan Liu** (Institute of Applied Physics and Computational Mathematics, China) Corresponding Author Yan Liu (Institute of Applied Physics and Computational Mathematics, China)
TuPF0407.076	11:38~11:41	RESEARCH AND ANALYSIS OF THE INFLUENCE OF INLET DISTORTION ON THE UNSTEADY FLOW FIELD **K. ZHANG** (SUSTech, China) Corresponding Author K. ZHANG (SUSTech, China0
TuPF0408.077	11:41~11:44	SHOCK WAVE INTERACTIONS FOR RATE-TYPE MATERIALS **Repaka Radha** (University of Hyderabad, India) Corresponding Author Repaka Radha (University of Hyderabad, India)
TuPF0409.078	11:44~11:47	GPU ACCELERATION OF A SIMPLIFIED RECONSTRUCTION FOR GAS-KINETIC SCHEME ON UNSTRUCTURED MESH WITH MEMORY REDUCTION TECHNIQUES **chengxiang li** (Southern University of Science and Technology, China) Corresponding Author Lian-Ping Wang (Southern University of Science and Technology, China)
TuPF0410.079	11:47~11:50	THERMODYNAMIC MODEL DEVELOPMENT FOR THE DESIGN OF EJECTORS WORKING IN CO2 TRANSCRITICAL COMPRESSION SYSTEMS **Mehdi Falsafioon** (CanmetENERGY-Varennes, Canada) Corresponding Author Mehdi Falsafioon (CanmetENERGY-Varennes, Canada)

FM02	Boundary layers	
Moderator	Yongyun Hwang (Imperial College London, United Kingdom) / Xuesong Wu (Imperial College London, United Kingdom)	
Room	Room 324B, 3F	
TuPF0201.063	11:20~11:23	FEATURES OF TURBULENT BOUNDARY LAYERS IN HEATED CONCENTRIC COAXIAL PIPE FLOWS AT HIGH REYNOLDS AND LOW PRANDTL NUMBERS **Pei-Yun Tsai** (Brandenburg University of Technology Cottbus-Senftenberg, Germany) Corresponding Author Pei-Yun Tsai (Brandenburg University of Technology Cottbus-Senftenberg, Germany)
TuPF0202.064	11:23~11:26	START_LNS: ANOPEN-SOURCEPARALLELANDITERATIVESOLVERFORHARMONIC LINEARIZEDNAVIER-STOKESEQUATIONS **Zhouhua Bi** (Tianjin University, China) Corresponding Author Jianxin Liu (Tianjin University, China)
TuPF0203.065	11:26~11:29	BOUNDARY LAYER DYNAMICS OF WAVE-CURRENT FLOWS OVER CYLINDRICAL CANOPIES **Junao Kan** (Shanghai Jiao Tong University, China) Corresponding Author Hui Xu (Shanghai Jiaotong University, China)
TuPF0204.066	11:29~11:32	EXPERIMENTAL STUDY OF MOVING-TRPIV ON DRAG REDUCTION CONTROL OF COHERENT STRUCTURES IN TURBULENT BOUNDARY LAYER OVER SUPERHYDROPHOBIC SURFACE **JIN-HUI YUE** (TIANJIN UNIVERSITY, China) Corresponding Author nan jiang (TIANJIN UNIVERSITY, China)
TuPF0205.067	11:32~11:35	WALL TEMPERATURE EFFECT ON CORRELATIONS AMONG THERMODYNAMIC VARIABLES IN SHOCK WAVE/BOUNDARY LAYER INTERACTION **Ximeng Hou** (Southern University of Science and Technology, China) Corresponding Author Ximeng Hou (Southern University of Science and Technology, China)
TuPF0206.068	11:35~11:38	DESIGN AND TESTING OF BOUNDARY LAYER CONTROL SYSTEM FOR VEHICLE WAKE STUDIES IN WIND TUNNEL **Manish Kumar** (Indian Institute of Technology Delhi, India) Corresponding Author Manish Kumar (Indian Institute of Technology Delhi, India)
TuPF0207.069	11:38~11:41	DIRECT NUMERICAL SIMULATION OF TURBULENT BOUNDARY LAYER OVER 3D CUBIC ROUGHNESS **Min Yoon** (National Korea Maritime and Ocean University, Korea, Republic of) Corresponding Author Min Yoon (National Korea Maritime and Ocean University, Korea, Republic of)

FM13	Non-Newtonian and complex fluids	
Moderator	Prabhu Nott (Indian Institute of Science, India) / Anke Lindner (PMMH-ESPCI; CNRS, France)	
Room	Room 325A, 3F	
TuPF1301.170	11:20~11:23	EXPERIMENTAL INVESTIGATION OF VISCOELASTIC FLOW IN CONVERGING-DIVERGING CHANNELS WITH AN AXIAL SYMMETRY **Aidar Ildusovich Kadyirov** (Kazan Scientific Center of RAS, Russia) Corresponding Author Aidar Ildusovich Kadyirov (Kazan Scientific Center of RAS, Russia)
TuPF1302.171	11:23~11:26	BOUNDARY CONFINEMENT CONTROLS THE PATTERN FORMATION IN SHEAR-THICKENING SUSPENSION **Shi Li Xin** (Xi'an Jiaotong University, China) Corresponding Author Song-Chuan Zhao (Xi'an Jiaotong University, China)
TuPF1303.172	11:26~11:29	MODELING VELOCITY AND PRESSURE CHARACTERISTICS IN PERFECT CORE-ANNULAR FLOW OF HERSCHEL-BULKLEY FLUIDS IN A HORIZONTAL PIPE **SUMIT TRIPATHI** (Institute of Infrastructure, Technology, Research and Management (IITRAM) Ahmedabad, India, India) Corresponding Author SUMIT TRIPATHI (Institute of Infrastructure, Technology, Research and Management (IITRAM) Ahmedabad, India, India)
TuPF1304.173	11:29~11:32	RECENT ADVANCES IN POLYMER VISCOELASTICITY FROM GENERAL RIGID BEAD-ROD THEORY **Alan Jeffrey Giacomin** (Physics of Fluids, Canada) Corresponding Author Alan Jeffrey Giacomin (Physics of Fluids, Canada)
TuPX0405.174	11:32~11:35	DEVELOPMENT OF AQUATIC PLANT-INSPIRED SELF-FLOATABLE PHOTOCATALYTIC WATER PURIFICATION TECHNOLOGY **Josue Yaedalm Son** (Korea University, Korea, Republic of) Corresponding Author Hyejeong Kim (Korea University, Korea, Republic of)
TuPF0306.175	11:35~11:38	SUPERSONIC SEPARATION OF CARBON DIOXIDE FROM NATURAL GAS **Esmail Lakzian** (Andong National University, Korea, Republic of) Corresponding Author Esmail Lakzian (Andong National University, Korea, Republic of)
TuPF0307.176	11:38~11:41	THE INFLUENCE OF TURBULENCE ON THE FLAME STRUCTURE AND EMISSION CHARACTERISTICS IN EXPERIMENTAL AMMONIA/AIR PREMIXED JET FLAMES **Tingquan Tian** (Zhejiang University, China) Corresponding Author Haiou Wang (Zhejiang University, China)
TuPF1308.177	11:41~11:44	DRAG REDUCTION PERFORMANCE OF THE YAM MUCILAGE SOLUTION **Luo Xie** (Northwestern Polytechnical University, China) Corresponding Author Luo Xie (Northwestern Polytechnical University, China)

FM07	Multiphase and particle-laden flows	
Moderator	Francesco Picano (University of Padova, Italy) / Jacek Pozorski (Polish Academy of Sciences, Poland)	
Room	Room 325B, 3F	
TuPF0701.111	11:20~11:23	INFLUENCE OF POROUS TRANSPORT LAYER STRUCTURE ON BUBBLE BEHAVIOR AND PERFORMANCE IN PEM WATER ELECTROLYSIS **Seong Keun Kim** (Chosun University, Korea, Republic of) Corresponding Author Sung Yong Jung (Chosun University, Korea, Republic of)
TuPF0702.112	11:23~11:26	CFD-DEM SIMULATION OF PARTICLE-LADEN FLOW AROUND TWO FIBERS IN TANDEM **Woojin Yang** (Kumoh National Institute of Technology, Korea, Republic of) Corresponding Author Dongjoo Kim (Kumoh National Institute of Technology, Korea, Republic of)
TuPF0703.113	11:26~11:29	IMPROVING VENTURI PERFORMANCE AND SUPPRESSING CAVITATION WITH A HEMISPHERICAL OBSTACLE **Jongbin Hwang** (UNIST, Korea, Republic of) Corresponding Author Jooha Kim (UNIST, Korea, Republic of)
TuPF0704.114	11:29~11:32	EULER-LAGRANGE STUDY OF MICROBUBBLE-LADEN TURBULENT FLOW ON SUPERHYDROPHOBIC SURFACES **Byeong-Cheon Kim** (University of Ulsan, Korea, Republic of) Corresponding Author Kyoungsik Chang (University of Ulsan, Korea, Republic of)
TuPF0705.115	11:32~11:35	FLOW STRUCTURE AND CAVITATION EVOLUTION OF SUBMERGED WATERJET PRODUCED THROUGH DIFFERENT NOZZLES **Guangxin Ding** (Gyeongsang National Univ., Korea, Republic of) Corresponding Author Can Kang (Jiangsu University, China)
TuPF0706.116	11:35~11:38	THE STUDY OF PARAMETER DIAGRAM FOR STABLE DROP-ON-DEMAND DROPLET FORMATION **Zhi-Ming Lu** (Shanghai University, China) Corresponding Author Zhi-Ming Lu (Shanghai University, China)
TuPF0707.117	11:38~11:41	HYBRID MODELLING OF A DROPLET SEPARATOR: COUPLING OF A THIN FILM MODEL WITH THE TWO-FLUID MODEL **Digvijay Singh** (Helmholtz-Zentrum Dresden - Rossendorf, Dresden, Germany) Corresponding Author Digvijay Singh (Helmholtz-Zentrum Dresden - Rossendorf, Dresden, Germany)
TuPF0708.118	11:41~11:44	DRAG REDUCTION USING PARTICLES AS SHEAR FREE SURFACES IN A GRAVITY DRIVEN TURBULENT PIPE FLOW **Sri Hari Satya Bharadwaj Vishnubhatla** (IIT Delhi, India) Corresponding Author Murali R Cholemari (Department of Applied Mechanics, Indian Institute of Technology Delhi, India)
TuPF0709.119	11:44~11:47	ALCOHOL VAPOR-DRIVEN WATER-WALKING ACTUATOR **Taeyeong Park** (Pusan National University, Korea, Republic of) Corresponding Author Seungho Kim (Pusan National University, Korea, Republic of)
TuPF0710.120	11:47~11:50	TWO-DIMENSIONAL SUPERCAVITATION: RE-ENTRANT JET MODEL VS. EXPERIMENT **Jeonghyeon Nam** (Korea Advanced Institute of Science and Technology, Korea, Republic of) Corresponding Author Yeunwoo Cho (Korea Advanced Institute of Science and Technology, Korea, Republic of)
TuPF0711.121	11:50~11:53	MECHANISM AND MODEL OF LUNAR SOIL EROSION UNDER VACUUM PLUME IMPINGEMENT **Da Gao** (Beihang University, China) Corresponding Author Lihui Liu (Beihang University, China)
TuPF0712.122	11:53~11:56	BAYESIAN CALIBRATION OF EFFECTIVE MODELS FOR PRESSURE DROP IN TURBULENT PIPE FLOWS WITH FOULING LAYERS **Juliana B. R. Loureiro** (Federal University of Rio de Janeiro, Brazil) Corresponding Author Hugo Saraiva Tavares (Federal University of Rio de Janeiro, Brazil)
TuPF0713.123	11:56~11:59	IMPACT OF NON-LOCALITY ON GRAIN-SIZE DISTRIBUTION USING FRACTIONAL ADE **ARUN KUMAR** (Indian Institute of Technology Kharagpur, Kharagpur, India) Corresponding Author ARUN KUMAR (Indian Institute of Technology Kharagpur, Kharagpur, India)
TuPF0714.124	11:59~12:02	MEASUREMENT OF 2D SETTLING TRAJECTORIES OF MICROPLASTIC PARTICLES USING THE EVENT CAMERA **Youngin Park** (Seoul national university, Korea, Republic of) Corresponding Author Hyungmin Park (Seoul National University, Korea, Republic of)
TuPF0715.125	12:02~12:05	NOVEL SINGLE-STRAND TUNDISH FOR IMPROVED INCLUSION SEPARATION **Vishnu Teja Mantripragada** (Indian Institute of Technology (ISM) Dhanbad, India) Corresponding Author Sabita Sarkar (Indian Institute of Technology Madras, India)
TuPF0716.126	12:05~12:08	NUMERICAL INVESTIGATION OF FLOW BOILING HEAT TRANSFER IN SINGLE-TESLA-VALVE MICROCHANNEL **Bingbing Peng** (Harbin Institute of Technology, China) Corresponding Author Wei Wang (Harbin Institute of Technology, China)
TuPF0717.127	12:08~12:11	EXPERIMENTAL STUDY ON INTERNAL FLOW STRUCTURE AND DYNAMICS OF DENSE LIQUID–PARTICLE FLOW DOWN INCLINED CHANNEL **Jiajun Jiao** (Beijing Institute of Technology, China) Corresponding Author Jiajun Jiao (Beijing Institute of Technology, China)
TuPF0718.128	12:11~12:14	STUDY OF THE BEHAVIOR OF HEAVY PARTICLES AND MICROBUBBLES USING THE EULERIAN APPROACH **Seulgi Lee** (Yonsei University, Korea, Republic of) Corresponding Author Changhoon Lee (Yonsei University, Korea, Republic of)
TuPF0719.129	12:14~12:17	DIRECT STUDY OF THE RELATIONSHIP BETWEEN THE MEAN RADIAL RELATIVE VELOCITY OF INERTIAL PARTICLES AND THE STOKES NUMBER IN TURBULENT FLOW **Xiaohui Meng** (Shanghai University, China) Corresponding Author ewe-wei wei saw (Sun Yat-Sen University, China)
TuPF0720.130	12:17~12:20	ROLE OF BUBBLE-BUBBLE INTERACTIONS IN MEAN AND FLUCTUATING FLOWS **Jieun Yeo** (Seoul National University, Korea, Republic of) Corresponding Author Hyungmin Park (Seoul National University, Korea, Republic of)

FM16	Vortex dynamics	
Moderator	Melissa Green (University of Minnesota, USA) / Yong Cao (Shanghai Jiao Tong University, China)	
Room	Room 325C, 3F	
TuPF1601.200	11:20~11:23	APPROACH TO A FINITE-TIME SINGULARITY OF THE NAVIER-STOKES EQUATIONS **Henry Keith Moffatt** (University of Cambridge, United Kingdom) Corresponding Author **Henry Keith Moffatt** (University of Cambridge, United Kingdom)
TuPF1602.201	11:23~11:26	CONNECTION OF CIRCULATIONS OF CYCLIC MOTIONS OF SEPARATE JET VORTICAL FLOWS (FILAMENTS) WITH THE INTERNAL ANGULAR MOMENTUM OF THE KERN **Algimantas Milyus** (International Research Group "LITAVEM-3", Lithuania) Corresponding Author **Algimantas Milyus** (International Research Group "LITAVEM-3", Lithuania)
TuPF1603.202	11:26~11:29	VORTEX DYNAMICS OF THE SUBSTANCE OF A CLOSED ELLISOIDAL MICROVORTEX THROUGH THE EYES OF CONFORMAL GEOMETRY **Elena Milyute** (International Research Group, Lithuania) Corresponding Author **Elena Milyute** (International Research Group, Lithuania)
TuPF1604.203	11:29~11:32	VORTEX SOUND PRODUCED BY A TENT MODEL FOR VORTEX RECONNECTION **Yoshifumi Kimura** (Nagoya University, Japan) Corresponding Author **Yoshifumi Kimura** (Nagoya University, Japan)
TuPF1605.204	11:32~11:35	A SUB-HARMONIC SYNCHRONIZATION PHENOMENON IN VORTEX-INDUCED VIBRATION **RENJIE JIANG** (Ningbo University, China) Corresponding Author **RENJIE JIANG** (Ningbo University, China)
FM14	Computational fluid dynamics	
Moderator	Adrian Lozano-Duran (MIT, USA) / Yue Yang (Peking University, China)	
Room	Room 325D, 3F	
TuPF1401.178	11:20~11:23	NUMERICAL SIMULATION OF MOLTEN STEEL FLOW AND FLUCTUATION BEHAVIOR IN CONTINUOUS CASTING MOLD UNDER A NEW VERTICAL ELECTROMAGNETIC BRAKE **ENGANG WANG** (Northeastern University, China Corresponding Author ENGANG WANG (Northeastern University, China)
TuPF1402.179	11:23~11:26	HIGH-FIDELITY NUMERICAL SIMULATIONS OF A STANDING-WAVE THERMOACOUSTIC ENGINE **Alina Lemster Larin** (Technion, Israel) Corresponding Author Guy Zeev Ramon (Faculty of Civil and Environmental Engineering, Technion, Haifa, 32000, Israel)
TuPF1403.180	11:26~11:29	NUMERICAL STUDY OF THE INFLUENCE OF THE APPARENT RETENTION TIME ON HEAT AND MASS TRANSFER IN FLOWING FLASH EVAPORATION **Bingrui Li** (Harbin Institute of Technology, China) Corresponding Author Wei Wang (Harbin Institute of Technology, China)

TuPF1404.181	11:29~11:32	EFFECT OF HYDROGEN COMBUSTION ON FILM COOLING ON THE FIRST-STAGE ROTOR VANE **Yoonhyeong Jeong** (Korea University, Korea, Republic of) Corresponding Author Jaiyoung Ryu (Korea University, Korea, Republic of)
TuPF1405.182	11:32~11:35	THE ADAPTIVE MESH REFINEMENT FOR LARGE-EDDY SIMULATIONS OF COMPLEX TURBULENT FLOWS **Qin Xin Lian** (Harbin Institute of Technology, China) Corresponding Author Wei Wang (Harbin Institute of Technology, China)
TuPF1406.183	11:35~11:38	AERODYNAMIC ANALYSIS OF DEPLOYING HIGH-LIFT DEVICE INSTALLED ON AIRCRAFT **Jiseon Ahn** (Seoul National University, Korea, Republic of) Corresponding Author Gunjin Yun (Seoul National University, Korea, Republic of)
TuPF1407.184	11:38~11:41	MITIGATION OF THE POROSITY FORMATION IN THE LASER WELDING PROCESS OF AN ALUMINIUM ALLOY (AL 1050) THROUGH LASER WOBBLING **Akash Meena** (Denmark Technical University, Denmark) Corresponding Author Akash Meena (Denmark Technical University, Denmark)
TuPF1408.185	11:41~11:44	DIGITAL TWIN-BASED SMART WATER TREATMENT SYSTEM ESTABLISHMENT STRATEGIES **Tae Kyun Kim** (Seoul Water Institute, Korea, Republic of) Corresponding Author Tae Kyun Kim (Seoul Water Institute, Korea, Republic of)
TuPF1409.186	11:44~11:47	STUDY ON THE MOTION CHARACTERISTICS OF FIBERS IN A ROTATING TURBULENT FLOW FIELD **Zhenyu Zhang** (Zhejiang Sci-Tech University, China) Corresponding Author Zhenyu Zhang (Zhejiang Sci-Tech University, China)
TuPF1410.187	11:47~11:50	CFD STUDY FOR THE EFFECT OF UPSTREAM ORIFICE FLOW DISTURBANCE ON THE HYDRAULIC CHARACTERISTIC OF THE BUTTERFLY VALVE; MULTIPLE BENDS IN THE DIFFERENT PLANE CASE **Gong Hee Lee** (Korea Institute of Nuclear Safety, Korea, Republic of) Corresponding Author Gong Hee Lee (Korea Institute of Nuclear Safety, Korea, Republic of)
TuPF1411.188	11:50~11:53	NUMERICAL SIMULATIONS FOR NON-INVASIVE OPTICAL COHERENCE TOMOGRAPHY FRACTIONAL FLOW RESERVE **Kyung Eun Lee** (Inha University, Korea, Republic of) Corresponding Author Kyung Eun Lee (Inha University, Korea, Republic of)
TuPF1412.189	11:56~11:59	IMPACT OF THE POSITION AND THE QUANTITY OF INTIMAL TEAR ON BLOOD FLOW DYNAMICS AND AORTIC DISSECTION PROPAGATION **Labin Kim** (Inha University, Korea, Republic of) Corresponding Author Kyung Eun Lee (Inha University, Korea, Republic of)
TuPF1413.190	11:59~12:02	CONTRIBUTION TO THE DYNAMIC STUDY OF A FLUIDIC OSCILLATOR **Iakehal Abdelhak** (University of Sciences and Technologie Houari Boumediene, Algeria) Corresponding Author Iakehal Abdelhak (University of Sciences and Technologie Houari Boumediene, Algeria)

SM09	Additive manufacturing	
Moderator	Jesper Hattel (Technical University of Denmark (DTU), Denmark) / Ferdinando Auricchio (University of Pavia, Italy)	
Room	Room 503, 5F	
TuPS0901.332	11:20~11:23	EXPERIMENTAL STUDY ON THE IMPROVING PROPERTIES OF CELLULOSE NANO CRYSTAL REINFORCED RESIN BASED ON PHOTOPOLYMERIZATION 3D PRINTING METHOD **Wonhee Lee** (KAIST, Korea, Republic of) Corresponding Author Yong-Jin Yoon (Korea Advanced Institute of Science and Technology, Korea, Republic of
TuPS0902.333	11:23~11:26	RESPONSE ANALYSIS AND DESIGN OPTIMIZATION USING ANISOTROPIC MECHANICAL PROPERTIES OF ADDITIVE MANUFACTURING **Chaerim Seon** (University of Seoul, Korea, Republic of) Corresponding Author Minho Yoon (University of Seoul, Korea, Republic of)
TuPS0903.334	11:26~11:29	A BOUNDARY CONDITION ENFORCEMENT STUDY OF THE MATERIAL POINT METHOD FOR ADDITIVE MANUFACTURING CONCRETE PROCESSES **Johannes Christoffel Joubert** (University of Pretoria, South Africa) Corresponding Author Johannes Christoffel Joubert (University of Pretoria, South Africa)
TuPS0904.335	11:29~11:32	OPTIMIZED MULTI-LAYER CONTINUOUS CARBON FIBER PATTERN AND A SPLINE BASED PATH PLANNING INTERPRETATION **Fabian Wein** (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany) Corresponding Author Fabian Wein (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
TuPS0905.336	11:32~11:35	A STUDY OF THE PROCESS PARAMETERS OF WIRE ARC ADDITIVE MANUFACTURING USING MULTIPHYSICS SIMULATIONS **YOUSUNG HAN** (Incheon National University, Korea, Republic of) Corresponding Author YOUSUNG HAN (Incheon National University, Korea, Republic of)
TuPS0906.337	11:35~11:38	PREDICTION OF FATIGUE LIFE OF ADDITIVELY MANUFACTURED METALS VIA PHYSICS-INFORMED MACHINE LEARNING **Nan Ya Hu** (Southwest Jiaotong University, China) Corresponding Author Nan Ya Hu (Southwest Jiaotong University, China)
TuPS0907.338	11:41~11:44	PROBING SURFACE STRUCTURES IN RAPIDLY SOLIDIFIED METAL POWDERS USING A PHENOMENOLOGICAL APPROACH **Koushik Viswanathan** (Indian Institute of science bangalore, India) Corresponding Author Koushik Viswanathan (Indian Institute of science bangalore, India)

SM07	Multi-component, composites and hierarchical materials	
Moderator	Sung Hoon Kang (Johns Hopkins University, USA) / Wei Tan (Queen Mary University of London, United Kingdom)	
Room	Room 504, 5F	
TuPS0701.314	11:20~11:23	SEMI-ANALYTICAL REPRESENTATION OF THE EFFECTIVE PROPERTIES OF MULTICOMPONENT COMPOSITES **Abdulaziz Mohammed Alnaghmoush** (University of Delaware, USA) Corresponding Author R. Valery Roy (University of Delaware, USA)
TuPS0702.315	11:23~11:26	MEAN FIELD VERSUS FULL FIELD HOMOGENIZATION APPROACHES FOR ELASTIC BI-CONTINUOUS COMPOSITES **Rihem Ouertatani** (Process and Materials Sciences Laboratory, France) Corresponding Author Rihem Ouertatani (Process and Materials Sciences Laboratory, France)
TuPS0703.316	11:26~11:29	INDENTATION RESPONSE OF SKIN-LIKE THIN VISCOELASTIC MULTILAYER MATERIALS **Juyeong Hong** (Seoul National University, Korea, Republic of) Corresponding Author Ho-Young Kim (Seoul National University, Korea, Republic of)
TuPS0704.317	11:29~11:32	LOW-VELOCITY IMPACT BEHAVIOUR OF A MICROPOROUS LATTICE-WALLED HIERARCHICAL TUBE INTERNALLY INFILTRATED BY SHEAR THICKENING FLUID **Bin Hu** (Southern University of Science and Technology, China) Corresponding Author Xin Zhang (Southern University of Science and Technology, China)
TuPS0705.318	11:32~11:35	STOCHASTIC NANOMECHANICS OF HARDMETALS **Ferhun C. Caner** (Technical University of Catalonia, Spain) Corresponding Author Ferhun C. Caner (Technical University of Catalonia, Spain)
TuPS0706.319	11:35~11:38	AN EXPERIMENTAL/COMPUTATIONAL DATA DRIVEN ANALYSIS FOR QUANTITATIVE STRENGTH ESTIMATION OF COMPOSITES **Sei-ichiro Sakata** (Kindai University, Japan) Corresponding Author Sei-ichiro Sakata (Kindai University, Japan)
TuPS0707.320	11:38~11:41	MECHANICAL BEHAVIOR OF GRADIENT-STRUCTURED MATERIALS: CRYSTAL PLASTICITY FEM COUPLED WITH PHASE-FIELD MODELING **Xu Zhang** (Southwest Jiaotong University, China) Corresponding Author Xu Zhang (Southwest Jiaotong University, China)

TuPS0708.321	11:41~11:44	MULTISCALE SIMULATION OF FIBER AGGREGATION IN CELLULOSE-BASED COMPOSITE MATERIALS **Luo Chao** (Osaka Institute of Technology, Japan) Corresponding Author Yasutomo Uetsuji (Osaka Institute of Technology, Japan)
TuPS0709.322	11:44~11:47	ENHANCED PIEZOELECTRIC PROPERTIES OF FILLER-DISPERSED POLYMER COMPSOITES **Yasutomo Uetsuji** (Osaka Institute of Technology, Japan) Corresponding Author Yasutomo Uetsuji (Osaka Institute of Technology, Japan)
TuPS0710.323	11:47~11:50	EFFECT OF POROUS MICROSTRUCTURE AND FIBER ARRANGEMENT OF THERMAL PROTECTION COMPOSITES ON THEIR EFFECTIVE THERMAL CONDUCTIVITY **Fan Yang** (Harbin Institute of Technology, China) Corresponding Author Fan Yang (Harbin Institute of Technology, China)
TuPS0711.324	11:50~11:53	A DATA DRIVEN HIERARCHICAL MULTISCALE MECHANICAL MODEL FOR PARTICLE REINFORCED COMPOSITES **Xiaoming Bai** (Nuclear Power Institute of China, China) Corresponding Author Xiaoming Bai (Nuclear Power Institute of China, China)
TuPS0712.325	11:53~11:56	TOPOLOGY OPTIMIZATION OF COATED STRUCTURES INFILLED WITH MULTIPLE SELF-CONNECTED MICROSTRUCTURES **Tiannan Hu** (Kyoto University, Japan) Corresponding Author Tiannan Hu (Kyoto University, Japan)
TuPS0713.326	11:56~11:59	PROPERTY PREDICTION AND INVERSE DESIGN/IDENTIFICATION OF COMPOSITE MATERIALS **Yuli Chen** (Beihang University, China) Corresponding Author Yuli Chen (Beihang University, China)
TuPS0714.327	11:59~12:02	IMPROVING THE OUTPUT PERFORMANCE OF PIEZOELECTRIC PN JUNCTIONS THROUGH THE STRAIN ENGINEERING **Wanli Yang** (Huazhong University of Science and Technology, China) Corresponding Author Yuantai Hu (Huazhong University of Science and Technology, China)
TuPS0715.328	12:02~12:05	A NOVEL DEFORMABLE HONEYCOMB CORE BY MULTI-MATERIAL 3D PRINTING **Qiang Fu** (Harbin Institute of Technology, China) Corresponding Author Jian Xiong (Harbin Institute of Technology, China)

SM11	Nanostructures and MEMS	
Moderator	M Taher Saif (University of Illinois at Urbana-Champaign, USA) / Manas Chandra Ray (Indian Institute of Technology Kharagpur, India)	
Room	Room 505, 5F	
TuPS1101.345	11:20~11:23	A NUMERICAL PROCEDURE FOR THE NONLOCAL BENDING OF NANOBEAMS AND NANOPLATES **Andrea Caporale** (University of Cassino and Southern Lazio, Italy) Corresponding Author Andrea Caporale (University of Cassino and Southern Lazio, Italy)
TuPS1102.346	11:23~11:26	INVESTIGATING THE SLIDING BEHAVIOR OF GRAPHENE USING CONTINUUM MODELING **Gourav Yadav** (Indian Institute of Technology Kanpur, India) Corresponding Author Gourav Yadav (Indian Institute of Technology Kanpur, India)
TuPS1103.347	11:26~11:29	MECHANICAL PROPERTIES OPTIMIZATION OF SILICENE BASED NANOSTRUCTURE **Waclaw Kus** (Institute of Fundamental Technological Research Polish Academy of Science, Poland) Corresponding Author Waclaw Kus (Institute of Fundamental Technological Research Polish Academy of Science, Poland)
TuPS1104.348	11:29~11:32	ELECTRON AND PHONON TEMPERATURES: APPLICATION TO THE THERMAL-SHOCK PROPAGATION IN NANOWIRES **Antonio Sellitto** (University of Salerno, Italy) Corresponding Author Antonio Sellitto (University of Salerno, Italy)
TuPS1105.349	11:32~11:35	MAGNETOMECHANICS OF TWO-DIMENSIONAL NANOMATERIALS BASED ON THE MOMENT-MEMBRANE THEORY OF SHELLS AND PLATES **Samvel Hovhannes Sargsyan** (Shirak State university, Armenia) Corresponding Author Samvel Hovhannes Sargsyan (Shirak State university, Armenia)
TuPS1106.350	11:35~11:38	STOCHASTIC DESIGN SENSITIVITY ANALYSIS AND OPTIMIZATION OF THERMAL CONDUCTIVITY IN GRAPHENE USING MOLECULAR DYNAMICS SIMULATIONS **Songhyun Cha** (Seoul National University, Korea, Republic of) Corresponding Author Seonho Cho (Seoul National University, Korea, Republic of)
TuPS1107.351	11:38~11:41	ELECTROMECHANICAL COUPLING OF NANOSTRUCTURE WITH FLEXOELECTRICITY **Peng Wang** (University of Jinan, China) Corresponding Author Peng Wang (University of Jinan, China)
TuPS1108.352	11:41~11:44	SPECTRAL MECHANICAL INVESTIGATION OF THE ELASTIC INTERFACE BETWEEN A MOS2/GRAPHENE HETEROSTRUCTURE AND A SOFT SUBSTRATE **Huadan Xing** (Tianjin University, China) Corresponding Author Wei Qiu (Tianjin University, China)

SM04	Damage & fracture mechanics	
Moderator	Gil Ho Yoon (Hanyang University, Korea, Republic of)	
Room	Room 506, 5F	
TuPS0401.277	11:20~11:23	IMPROVING THE DELAMINATION STRENGTH OF FIBER METAL LAMINATES (FMLS) **Vinay Kumar** (Indian Institute of Technology Ropar, India) Corresponding Author Prabhat K. Agnihotri (Indian Institute of Technology Ropar, India)
TuPS0402.278	11:23~11:26	THE INFLUENCE OF PHASE TRANSFORMATION ON THE CRACKING PROCESS OF AUSTENITIC STAINLESS STEELS AT CRYOGENIC TEMPERATURES **Weronika Zwolińska-Faryj** (AGH University of Krakow, Poland) Corresponding Author Weronika Zwolińska-Faryj (AGH University of Krakow, Poland)
TuPS0403.279	11:26~11:29	MULTISCALE METHOD STUDY ON HYDROGEN INDUCED FALIURE MECHANISM IN THE GRITH WELD ZONE OF X80 HYDROGEN DOPED TRANSPORTATION PIPELINE **Taolong Xu** (Southwest Petroleum University, China) Corresponding Author Taolong Xu (Southwest Petroleum University, China)
TuPS0404.280	11:29~11:32	FRACTURE MECHANICS IN OUTER SPACE : ANALYSIS OF FRAGMENTATION IN CONSOLIDATED REGOLITH SIMULANTS **Nitin Gupta** (Indian Institute of Science Bangalore, India) Corresponding Author Koushik Viswanathan (Indian Institute of science bangalore, India)
TuPS0405.281	11:32~11:35	CONTINUUM APPROACH TO ANISOTROPIC HIGH-CYCLE FATIGUE **Reijo Kouhia** (Tampere University, Finland) Corresponding Author Reijo Kouhia (Tampere University, Finland)
TuPS0406.282	11:35~11:38	FRACTURING ICE FLOES BY COLLISION IN A GRANULAR MODEL **Dang-Toai Phan** (Sorbonne Universite, France) Corresponding Author Dang-Toai Phan (Sorbonne Universite, France)
TuPS0407.283	11:38~11:41	EFFECT OF PLASTIC ANISOTROPY ON DUCTILE FAILURE IN SHEET METALS **Krunal Namdeorao Morey** (Indian Institute of Technology Madras, India) Corresponding Author Krunal Namdeorao Morey (Indian Institute of Technology Madras, India)
TuPS0408.284	11:41~11:44	A STUDY ON FRACTURE BEHAVIOUR OF GH4169 SUBJECTED TO HIGH TEMPERATURE FATIGUE USING DIGITAL IMAGE CORRELATION **Haoyang Luo** (Hunan university, China) Corresponding Author Wei He (Hunan university, China)
TuPS0409.285	11:44~11:47	NUMERICAL INVESTIGATION OF THE EVOLUTION OF NEW PHASE DOMAINS IN AN ELASTIC SOLID WITH STRESS CONCENTRATORS **Polina Kabanova** (Institute for Problems in Mechanical Engineering of the Russian Academy of Sciences, Russia) Corresponding Author Polina Kabanova (Institute for Problems in Mechanical Engineering of the Russian Academy of Sciences, Russia)
TuPS0410.286	11:47~11:50	TENSILE TESTING OF MACROSCALE SINGLE CRYSTAL GRAPHENE **ANIRBAN KUNDU** (Institute for Basic Science (IBS), Korea, Republic of) Corresponding Author Rodney Scott Ruoff (IBS(Institute for Basic Science), Korea, Republic of)
TuPS0411.287	11:50~11:53	LATTICE KINKING INDUCES THE PLASTIC DEFORMATION OF A6B2017 (A = Zr, Hf; B = Nb, Ta) SUPERSTRUCTURE **Junhui Luo** (Xidian University, China) Corresponding Author Li Yang (029-81892651, China)
TuPS0412.288	11:53~11:56	SALT-INDUCED DAMAGES IN POLYAMIDES 6 AND 6,6 IN THE AUTOMOTIVE CONTEXT **Edwige Lay** (ESPCI Paris PSL, France) Corresponding Author Edwige Lay (ESPCI Paris PSL, France)
TuPS0413.289	11:56~11:59	PHYSICALLY CONSISTENT NONLOCAL MACRO-MESO-SCALE DAMAGE MODEL **Yudong Ren** (Tongji University, China) Corresponding Author Jianbing Chen (College of Civil Engineering, Tongji University, China)
TuPS0414.290	11:59~12:02	THE DYNAMIC RESPONSE OF ROCK-LIKE MATERIALS WITH A FILLED JOINT UPON THE NORMAL INCIDENT P WAVE **Chao Wang** (Sichuan Normal University, China) Corresponding Author Chao Wang (Sichuan Normal University, China)
TuPS0415.291	12:02~12:05	PHASE FIELD MODELING OF BRITTLE CRACK PATHS IN 2-DIMENSIONAL SOLIDS **Retam Paul** (Indian Institute of Technology Kanpur, India) Corresponding Author Retam Paul (Indian Institute of Technology Kanpur, India)
TuPS0416.292	12:05~12:08	AN INTERFACE-WIDTH-INSENSITIVE COHESIVE PHASE-FIELD MODEL FOR FRACTURE EVOLUTION IN HETEROGENEOUS MATERIALS **Qianqian Zhou** (18911300216, China) Corresponding Author Qianqian Zhou (18911300216, China)
TuPS0417.293	12:08~12:11	A FRACTAL ANALYSIS OF CRACKS FOR TUNNEL LINING CONCRETE **Atsushi Suto** (Tohoku Institute of Technology, Japan) Corresponding Author Atsushi Suto (Tohoku Institute of Technology, Japan)
TuPS0418.294	12:11~12:14	FLEXURE RESPONSE OF BIOINSPIRED SINGLE AND DOUBLE HELICOIDAL COMPOSITE LAMINATES: AN EXPERIMENTAL STUDY **Shreya Rai** (Indian Institute of Technology, Madras, India) Corresponding Author Prashant Rawat (Indian Institute of Technology, Madras, India)
TuPS0419.295	12:14~12:17	FATIGUE LIFE PREDICTION OF CREEP PRE-DEFORMED 2024AA UNDER LCF TORSIONAL LOADING **Adam Tomczyk** (Bialystok University of Technology, Poland) Corresponding Author Adam Tomczyk (Bialystok University of Technology, Poland)
TuPS0420.296	12:17~12:20	INFLUENCE OF LASER SHOCK PEENING MODE ON FATIGUE LIFE OF TI64 **Aleksei Vshivkov** (ICMM UB RAS, Russia) Corresponding Author Aleksei Vshivkov (ICMM UB RAS, Russia)

Oral Presentation 4		
FM15	Turbulence	
Moderator	**Jinyul Hwang** (Pusan National University, Korea, Republic of) / **Yutaro Motoori** (Osaka University, Japan)	
Room	Auditorium, 5F	
TuFM1518	14:10~14:30	TRANSITION FROM THREE-DIMENSIONAL TO TWO-DIMENSIONAL TURBULENCE IN QUASI-STATIC MHD **Semion Sukoriansky** (Ben-Gurion University of the Negev (BGU), Israel) Corresponding Author Semion Sukoriansky (Ben-Gurion University of the Negev (BGU), Israel)
TuFM1519	14:30~14:50	CAUSALITY OF THE ENERGY CASCADE IN ISOTROPIC TURBULENCE **Alvaro Martinez-Sanchez** (Massachusetts Institute of Technology, USA) Corresponding Author Alvaro Martinez-Sanchez (Massachusetts Institute of Technology, USA)
TuFM1520	14:50~15:10	WALL-ATTACHED SELF-SIMILAR STRUCTURES IN CANONICAL WALL TURBULENCE **Jinyul Hwang** (Pusan National University, Korea, Republic of) Corresponding Author Jinyul Hwang (Pusan National University, Korea, Republic of)
TuFM1521	15:10~15:30	SMALL-SCALE STRUCTURE OF FREE-SURFACE TURBULENCE **Yinghe Qi** (ETH Zurich, Switzerland) Corresponding Author Filippo Filippo Coletti (ETH Zurich, Switzerland)
TuFM1522	15:30~15:50	SCALING ANALYSIS OF TIME-REVERSAL ASYMMETRIES IN FULLY DEVELOPED TURBULENCE **Francois G Schmitt** (CNRS, France) Corresponding Author Francois G Schmitt (CNRS, France)
TuFM1523	15:50~16:10	HIERARCHY OF COHERENT VORTICES IN TURBULENT BOUNDARY LAYERS AND CHANNEL FLOW **Yutaro Motoori** (Osaka University, Japan) Corresponding Author Yutaro Motoori (Osaka University, Japan)

FS05	Fluid structure interactions	
Moderator	**Sung Goon Park** (Seoul National University of Science and Technology, Korea, Republic of) / **Daegyoum Kim** (KAIST, Korea, Republic of)	
Room	Room 211, 2F	
TuFS0519	14:10~14:30	PARTICLE IMAGE VELOCIMETRY BASED EVALUATION OF SURFACE WAVES INTERACTING WITH VLFS **Esra Uksul** (TU Delft, Netherlands) Corresponding Author Esra Uksul (TU Delft, Netherlands)
TuFS0520	14:30~14:50	GRAVITY WAVE INTERACTION WITH VLFS IN PRESENCE OF A THICK POROUS BED **Chia-Cheng Tsai** (National Taiwan Ocean University, China-Taipei) Corresponding Author **SANIYA SUHAIL** (Vellore Institute of Technology, Vellore, India)
TuFS0521	14:50~15:10	OBLIQUE WAVE SCATTERING BY A SYSTEM OF FLOATING AND SUBMERGED POROUS ELASTIC PLATES NEAR A RIGID WALL **Harekrushna Behera** (National Taiwan Ocean University, Keelung, China-Taipei) Corresponding Author Harekrushna Behera (National Taiwan Ocean University, Keelung, China-Taipei)
TuFS0522	14:50~15:10	MITIGATION OF CAVITATION EROSION BY AN AIR POCKET AND FORMATION OF A POCKET JET **Changhwan Jang** (KAIST, Korea, Republic of) Corresponding Author Daegyoum Kim (KAIST, Korea, Republic of)
TuFS0523	15:30~15:50	NUMERICAL ANALYSIS OF WIND-WAVE-TURBINE INTERACTIONS IN AN OFFSHORE WIND ENERGY **VAN LONG CAO** (Seoul National University of Science and Technology, Korea, Republic of) Corresponding Author Sung Goon Park (Seoul National University of Science and Technology, Korea, Republic of)
TuFS0524	15:50~16:10	FSI ANALYSIS OF NORMAL SHOCK WAVE IMPACT ON SOLID BODY IN WATER **Rajasekar Jayabal** (Andong National University, Korea, Republic of) Corresponding Author Rajasekar Jayabal (Andong National University, Korea, Republic of)

FS06	Granular materials and flows	
Moderator	**Daniel Barreto** (Edinburgh Napier University, United Kingdom) / **Michał Nitka** (Gdańsk University of Technology, Poland)	
Room	Room 214, 2F	
TuFS0601 (INVITED)	14:10~14:40	THE EFFECT OF PARTICLE SIZE AND SIZE DISTRIBUTION ON THE EVOLUTION OF FABRIC WITHIN THE CONTEXT OF GRANULAR FLOWS AND PHASE TRANSITIONS **Daniel Barreto** (Edinburgh Napier University, United Kingdom) Corresponding Author Daniel Barreto (Edinburgh Napier University, United Kingdom)
TuFS0602 (INVITED)	14:40~15:10	IMPACT OF PARTICLE SIZE POLYDISPERSITY AND STAGED FUEL REACTOR ON FULL-LOOP CHEMICAL LOOPING GASIFICATION OF BIOMASS **Zishuo wang** (Zhejiang University, China) Corresponding Author Xiaoke Ku (Zhejiang University, China)
TuFS0603	15:10~15:30	CONTINUUM MODELING OF SHEAR DILATANCY DRIVEN SECONDARY FLOWS IN A GRANULAR MEDIUM **Gautam Vatsa** (Indian Institute of Science, Bengaluru, India, India) Corresponding Author Prabhu Nott (Indian Institute of Science, India)
TuFS0604	15:30~15:50	SHEAR BAND EVOLUTION PHENOMENA IN DIRECT SHEAR – EXPERIMENTAL AND NUMERICAL (DEM) STUDY **Michał Nitka** (Gdańsk University of Technology, Poland) Corresponding Author Michał Nitka (Gdańsk University of Technology, Poland)
TuFS0605	15:50~16:10	NUMERICAL STUDY ON FLOW PATTERN OF FAST GRANULAR FLOW IMPACTING A GRANULAR DEPOSIT **Wangxin Yu** (Beijing Institute of Technology, China) Corresponding Author Wangxin Yu (Beijing Institute of Technology, China)
TuFS0606	16:10~16:30	DISCRETE AND EXPERIMENTAL STUDY OF THE INTERFACE BETWEEN BULK SOLID AND SILO WALLS DURING CONFINED GRANULAR FLOW **Aleksander Grabowski** (Gdańsk University of Technology, Poland) Corresponding Author Aleksander Grabowski (Gdańsk University of Technology, Poland)
TuFS0607	16:30~16:50	RATE INDEPENDENCE OF THE STRESS IN SLOW GRANULAR FLOW ARISES FROM STRESS FLUCTUATIONS AND PARTICLE ELASTICITY **Prabhu Nott** (Indian Institute of Science, India) Corresponding Author Prabhu Nott (Indian Institute of Science, India)

FS01	Acoustics	
Moderator	**Martin Berggren** (Umeå University, Sweden) / **John Sharer Allen** (University of Hawaii Manoa, USA)	
Room	Room 217, 2F	
TuFS0104	14:10~14:30	CAN WE DEVISE EFFECTIVE TIME DOMAIN BOUNDARY CONDITIONS FOR VISCOTHERMAL ACOUSTICS? **Martin Berggren** (Umeå University, Sweden) Corresponding Author Martin Berggren (Umeå University, Sweden)
TuFS0105	14:30~14:50	NONLINEAR ACOUSTICS IN A GENERAL 3D DUCT **Freddie Jensen** (University of Warwick, United Kingdom) Corresponding Author Freddie Jensen (University of Warwick, United Kingdom)
TuFS0106	14:50~15:10	MECHANISMS OF SOUND PRODUCTION IN FLAPPING WING FLIGHT OF INSECTS **John Sharer Allen** (University of Hawaii Manoa, USA) Corresponding Author John Sharer Allen (University of Hawaii Manoa, USA)
TuFS0107	15:10~15:30	ASYMPTOTIC THEORY OF THE INTERACTION OF NONLINEAR ACOUSTIC WAVES AND SHEAR **Prateek Gupta** (Indian Institute of Technology, Delhi, India) Corresponding Author Prateek Gupta (Indian Institute of Technology, Delhi, India)
TuFS0108	15:30~15:50	CONSTANT DIRECTIVITY INDEX FROM A FINITE PISTON IN AN INFINITE BAFFLE USING ACOUSTIC TOPOLOGY OPTIMIZATION **Peter Risby Andersen** (GN Audio A/S, Denmark) Corresponding Author Peter Risby Andersen (GN Audio A/S, Denmark)
TuFS0109	15:50~16:10	EXCITATION ANALYSIS FOR SCATTERERS IN AN OPEN DOMAIN USING BOUNDARY ELEMENT AND PERTURBATION METHODS **Taizo Maruyama** (Tokyo Institute of Technology, Japan) Corresponding Author Taizo Maruyama (Tokyo Institute of Technology, Japan)
TuFS0110	16:10~16:30	SOUND ABSORPTION PROPERTIES OF FUNCTIONALLY GRADED TPMS STRUCTURES: NUMERICAL MODELING AND EXPERIMENTAL VALIDATION **Xueying Guan** (Delft University of Technology, Netherlands) Corresponding Author Xueying Guan (Delft University of Technology, Netherlands)

FS07	Optimization for solids and fluids	
Moderator	Hao Li (University of Southern Denmark, Denmark)	
Room	Room 219, 2F	
TuFS0705 (INVITED)	14:10~14:40	TOPOLOGY OPTIMIZATION, ADDITIVE MANUFACTURING AND THERMOHYDRAULIC TESTING OF THREE-DIMENSIONAL HEAT SINKS **Xiaoping Qian** (University of Wisconsin, Madison, USA) Corresponding Author Xiaoping Qian (University of Wisconsin, Madison, USA)
TuFS0706 (INVITED)	14:40~15:10	DISCRETE VARIABLE TOPOLOGY OPTIMIZATION DESIGN FOR INTERNALLY FINNED DUCT USING MODAL SUPERPOSITION REDUCED-ORDER MODEL AND CONSIDERING THERMAL ENTRY REGION **yuan liang** (Dalian University of Technology, China) Corresponding Author yuan liang (Dalian University of Technology, China)
TuFS0707	15:10~15:30	TOPOLOGY OPTIMIZATION OF DUAL-FLUID PRINTED CIRCUIT HEAT EXCHANGERS (PCHES) CONSIDERING ORDER-REDUCED MODEL BASED ON DENSITY METHOD **QIRUI YANG** (Xi'an Jiaotong University, China) Corresponding Author LI CHEN (Xi'an Jiaotong University, China)
TuFS0708	15:30~15:50	TOPOLOGY OPTIMIZATION FOR OPTIMAL INTERNAL COOLING WITH TURBULENT FLOW AND ISLANDS CONSTRAINTS **Carl-Johan Thore** (Linköping University, Sweden) Corresponding Author Carl-Johan Thore (Linköping University, Sweden)
TuFS0709	15:50~16:10	TOWARDS OPTIMAL DESIGN OF CONFORMAL COOLING CHANNELS FOR INJECTION MOULDING USING TOPOLOGY OPTIMISATION **Joe Alexandersen** (University of Southern Denmark, Denmark) Corresponding Author Joe Alexandersen (University of Southern Denmark, Denmark)

FM11	Low Reynolds number flows and suspension	
Moderator	G P Raja Sekhar (Indian Institute of Technology Kharagpur, India) / Jae-Sung Kwon (Incheon National University, Korea, Republic of)	
Room	Room 306A, 3F	
TuFM1108 (INVITED)	14:10~14:40	RAPID IMMUNOFLUORESCENCE ENHANCEMENT BY A DETACHABLE ACOUSTOFLUIDIC MICROCHIP **Han-Sheng Chuang** (National Cheng Kung University, China-Taipei) Corresponding Author Han-Sheng Chuang (National Cheng Kung University, China-Taipei)
TuFM1109 (INVITED)	14:40~15:10	VERY FLEXIBLE FIBERS IN A SHEAR FLOW **Maria L. Ekiel-Jezewska** (Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland) Corresponding Author Maria L. Ekiel-Jezewska (Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland)
TuFM1110	15:10~15:30	OPTIMAL SWIMMING STRATEGY OF A CHIRAL SWIMMER **SHIBA BISWAS** (Indian Institute of Technology Kharagpur, India) Corresponding Author SHIBA BISWAS (Indian Institute of Technology Kharagpur, India)
TuFM1111	15:30~15:50	DYNAMICS OF PARTICLE-SUSPENSION MICRODROPS ON SOLID SURFACES **Hyun-Woo Kim** (Seoul National University, Seoul, Korea, Republic of) Corresponding Author Ho-Young Kim (Seoul National University, Korea, Republic of)
TuFM1112	15:50~16:10	CAPILLARY STRETCHING AND BREAK-UP OF NON-BROWNIAN SUSPENSIONS **Virgile Thiévenaz** (PMMH laboratory (CNRS and ESPCI Paris), France) Corresponding Author Virgile Thiévenaz (PMMH laboratory (CNRS and ESPCI Paris), France)
TuFM1113	16:10~16:30	NUMERICAL AND EXPERIMENTAL INVESTIGATION OF MICROSCALE ACOUSTIC STREAMING FLOW-INDUCED MIXING **Beomseok Cha** (Chonnam National University, Korea, Republic of) Corresponding Author Jinsoo Park (Chonnam National University, Korea, Republic of)

SM14	Computational solid mechanics	
Moderator	Debashis Khan (Indian Institute of Technology (BHU) Varanasi, India) / Zhao Jing (Northwestern Polytechnical University, China)	
Room	Room 306B, 3F	
TuSM1416	14:10~14:30	PLASTIC DISSIPATION DURING CRACK-VOID INTERACTION IN PLASTICALLY COMPRESSIBLE HARDENING SOLIDS **SATYABRAT PANDEY** (Indian Institute of Technology (BHU), Varanasi, India) Corresponding Author Debashis Khan (Department of Mechanical Engineering, Indian Institute of Technology (BHU), Varanasi, India)
TuSM1417	14:30~14:50	DISCRETE RITZ METHOD **Zhao Jing** (Northwestern Polytechnical University, China) Corresponding Author Zhao Jing (Northwestern Polytechnical University, China)
TuSM1418	14:50~15:10	MACHINE-LEARNING-BASED ASYMPTOTIC HOMOGENISATION AND LOCALISATION **Yichao Zhu** (Dalian University of Technology, China) Corresponding Author Yichao Zhu (Dalian University of Technology, China)
TuSM1419	15:10~15:30	STRUCTURAL TOPOLOGY OPTIMIZATION OF THERMOELASTIC PROBLEM CONSIDERING TEMPERATURE DEPENDENT YOUNG'S MODULUS **Seongwon Bae** (Kyoto University, Korea, Republic of) Corresponding Author Seongwon Bae (Kyoto University, Korea, Republic of)
TuSM1420	15:30~15:50	STRUCTURAL DYNAMICS IN HP-REFINEMENT FINITE ELEMENT ANALYSIS OF PERIODIC SCISSORS STRUCTURE **Haicheng Ma** (Hiroshima University, Japan) Corresponding Author Haicheng Ma (Hiroshima University, Japan)
TuSM1421	15:50~16:10	THE INFLUENCE OF CREEP BEHAVIOR ON THE PARTICLE CRACKING IN UMO/ZR DISPERSION FUEL PLATES DURING POST-IRRADIATION ANNEAL TESTS **Feng Yan** (Nuclear Power Institute of China, China) Corresponding Author Feng Yan (Nuclear Power Institute of China, China)
TuSM1422	16:10~16:30	FFT-ACCELERATED FINITE ELEMENT SOLVER FOR PERIODIC HOMOGENIZATION **Martin Ladecký** (University of Freiburg, Germany) Corresponding Author Martin Ladecký (University of Freiburg, Germany)
TuSM1423	16:30~16:50	AN ADAPTIVE MESHFREE COUPLING SCHEME FOR EFFECTIVE EXTREME EVENT SIMULATION **Michael Hillman** (Karagozian and Case, Inc., USA) Corresponding Author Michael Hillman (Karagozian and Case, Inc., USA)

SM13	Stability and instability of materials and structures	
Moderator	Henryk Petryk (Institute of Fundamental Technological Research PAS, Poland) / Davide Bigoni (University of Trento, Italy)	
Room	Room 314, 3F	
TuSM1314 (INVITED)	14:10~14:40	CONSEQUENCES OF THERMODYNAMIC STABILITY FOR RATE-INDEPENDENT EVOLUTION OF DISSIPATIVE SOLIDS **Henryk Petryk** (Institute of Fundamental Technological Research PAS, Poland) Corresponding Author Henryk Petryk (Institute of Fundamental Technological Research PAS, Poland)
TuSM1315 (INVITED)	14:40~15:10	MORPHOELASTIC FLUTTER IN ACTIVE HYDROGEL FILAMENTS **Giovanni Noselli** (SISSA - International School for Advanced Studies, Italy) Corresponding Author Giovanni Noselli (SISSA - International School for Advanced Studies, Italy)
TuSM1316	15:10~15:30	IMPLEMENTING FLUTTER INSTABILITY IN A METAMATERIAL **Davide Bigoni** (University of Trento, Italy) Corresponding Author Davide Bigoni (University of Trento, Italy)
TuSM1317	15:30~15:50	STUDY OF ELASTIC–PLASTIC BIFURCATION ON CYLINDRICAL SHELLS WITH AXISYMMETRIC THICKNESS VARIATION **Yu Zhao** (Tianjin University, China) Corresponding Author Lin Yuan (Tianjin University, China)
TuSM1318	15:50~16:10	MULTI-OBJECTIVE SHAPE OPTIMIZATION OF ARCHITECTED LATTICES **Federico Bosi** (University College London, United Kingdom) Corresponding Author Federico Bosi (University College London, United Kingdom)
TuSM1319	16:10~16:30	SWIMMING OF HYDROGEL FILAMENTS EMERGING FROM FLUTTER INSTABILITY **Ariel Surya Boiardi** (SISSA - International School for Advanced Studies, Italy) Corresponding Author Ariel Surya Boiardi (SISSA - International School for Advanced Studies, Italy)

SM06	Impact mechanics and wave propagation	
Moderator	NING LUO (China University of Mining and Technology, China) / Sohichi HIROSE (Tokyo Institute of Technology, Japan)	
Room	Room 315, 3F	
TuSM0606 (INVITED)	14:10~14:40	DISPERSION ANALYSIS OF ELEMENT-DOMAIN WAVE PACKET ENRICHED FINITE ELEMENT FOR WAVE PROPAGATION PROBLEMS **Santosh Kapuria** (Indian Institute of Technology Delhi, India) Corresponding Author Santosh Kapuria (Indian Institute of Technology Delhi, India)
TuSM0607 (INVITED)	14:40~15:10	STUDY ON PETROPHYSICAL PROPERTIES AND POROSITY EVOLUTION OF FRACTURED COAL MASS UNDER CYCLIC IMPACT FOR COALBED METHANE EXPLOITATION **NING LUO** (China University of Mining and Technology, China) Corresponding Author NING LUO (China University of Mining and Technology, China)
TuSM0608	15:10~15:30	SCATTERING ANALYSIS OF GUIDEDWAVES USING FAR-FIELD EXPLICIT EXPRESSIONS **Sohichi HIROSE** (Tokyo Institute of Technology, Japan) Corresponding Author Sohichi HIROSE (Tokyo Institute of Technology, Japan)
TuSM0609	15:30~15:50	DYNAMIC MODELING AND ANALYSIS OF HIGH-FREQUENCY WAVE PROPAGATION **Tiantian Tang** (Beijing Institute of Technology, China) Corresponding Author Tiantian Tang (Beijing Institute of Technology, China)
TuSM0610	15:50~16:10	ON RIEMANN INVARIANTS AND WAVE PROPAGATION CHARACTERISTICS OF FUNCTIONALLY GRADED MATERIALS IN 1D **Archita Gogoi** (Indian Institute of Technology (IIT) Gandhinagar, India) Corresponding Author Ravi Sastri Ayyagari (Indian Institute of Technology Gandhinagar, India)
TuSM0611	16:10~16:30	ELASTIC WAVE BAND STRUCTURE ENGINEERING BY ELECTROMECHANICAL COUPLING AND ITS APPLICATION IN TUNABLE GUIDED WAVES MANIPULATION **Rongyu Xia** (Sun Yat-sen University, China) Corresponding Author Zheng Li (Peking Univ., China)
TuSM0615	16:30~16:50	THE FRACTIONAL ORDER DERIVATIVES AND THEIR APPLICATION IN THE WAVE MOTION AND VIBRATION PROBLEMS **P J Wei** (university of sciences and technology Beijing, China) Corresponding Author P J Wei (university of sciences and technology Beijing, China)

SM17	Metamaterials architectured materials and topology optimization	
Moderator	Carlos M Portela (MIT, USA) / Feng Jin (Xi'an Jlaotong University, China)	
Room	Room 320A, 3F	
TuSM1710	14:10~14:30	PERFORATED THIN-PLATE METAMATERIAL FOR HIGH-PERFORMANCE ACOUSTIC ENERGY HARVESTING **Tian Deng** (Xi'an Jiaotong University, China) Corresponding Author Feng Jin (Xi'an Jlaotong University, China)
TuSM1711	14:30~14:50	DESIGN METHODOLOGY OF HIGH-EFFICIENCY WATERBORNE ACOUSTIC METASURFACE **HONGTAO ZHOU** (Tianjin University, China) Corresponding Author HONGTAO ZHOU (Tianjin University, China)
TuSM1712	14:50~15:10	MULTIFUNCTIONAL HYBRID LATTICE STRUCTURES WITH OUTSTANDING SOUND ABSORPTION AND LOAD-BEARING PERFORMANCES **Lingbo Li** (Tongji University, China) Corresponding Author Fan Yang (Tongji University, China)
TuSM1713	15:10~15:30	NEURAL OPERATOR ASSISTED CONCURRENT ARCHITECTURE-STIMULUS OPTIMIZATION OF PROGRAMMABLE PHOTONIC METASURFACES **Doksoo Lee** (Northwestern University, USA) Corresponding Author Wei Chen (Northwestern University, USA)
TuSM1714	15:30~15:50	TRANSFORMABLE DESIGN OF MECHANICAL METAMATERIALS FOR PROGRAMMABLE ELASTIC WAVES CONTROL **Rui Zhu** (Beijing Institute of Technology, China) Corresponding Author Rui Zhu (Beijing Institute of Technology, China)
TuSM1715	15:50~16:10	RAINBOW TRAPPING AND PIEZOELECTRIC ENERGY HARVESTING OF ACOUSTIC WAVES IN GRADIENT METAMATERIALS WITH COUPLED TOPOLOGICAL INTERFACES **Tian-Xue Ma** (Beijing Jiaotong University, China) Corresponding Author Tian-Xue Ma (Beijing Jiaotong University, China)
TuSM1716	16:10~16:30	UNCOVERING THE MECHANICS OF ARCHITECTED MATERIALS UNDER DYNAMIC CONDITIONS **Carlos M Portela** (MIT, USA) Corresponding Author Carlos M Portela (MIT, USA)
TuSM1717	16:30~16:50	EFFECT OF PHONONIC BANDGAPS ON THE THERMAL CONDUCTIVITY IN NOVEL DESIGNS WITH SILICON NANOMESH **Myunghoon Oh** (Seoul National University, Korea, Republic of) Corresponding Author Seonho Cho (Seoul National University, Korea, Republic of)

SM12	Plasticity, viscoplasticity and creep	
Moderator	Alan Needleman (Texas A&M, USA) / Henrik Myhre Jensen (Aarhus University, Denmark)	
Room	Room 320B, 3F	
TuSM1201 (INVITED)	14:10~14:40	PLASTICITY, DISSIPATION AND THE CLAUSIUS-DUHEM INEQUALITY **Alan Needleman** (Texas A&M, USA) Corresponding Author Alan Needleman (Texas A&M, USA)
TuSM1202 (INVITED)	14:40~15:10	ELASTO-VISCOPLASTIC FAST FOURIER TRANSFORM-BASED METHOD CONSIDERING INERTIA, GEOMETRICALLY ACCURATE BOUNDARIES AND NON-PERIODIC MICROSTRUCTURES FOR MULTISCALE CALCULATIONS **Ricardo Lebensohn** (Los Alamos National Laboratory, USA) Corresponding Author Ricardo Lebensohn (Los Alamos National Laboratory, USA)
TuSM1203	15:10~15:30	EULERIAN RATES OF ELASTIC INCOMPATIBILITIES IN FINITE ELASTIC-INELASTIC RESPONSE OF MATERIALS **MB B Rubin** (Technion, Israel) Corresponding Author MB B Rubin (Technion, Israel)
TuSM1204	15:30~15:50	SIZE-DEPENDENT ELASTOPLASTICITY RELYING ON EULERIAN RATES OF ELASTIC INCOMPATIBILITIES: APPLICATION TO LARGE-DEFORMATION TORSION **Lorenzo Bardella** (University of Brescia, Italy) Corresponding Author Lorenzo Bardella (University of Brescia, Italy)
TuSM1205	15:50~16:10	STRENGTH-DIFFERENTIAL EFFECTS ON CRACK-TIP BEHAVIOUR **Brian Nyvang Legarth** (Technical University of Denmark, Denmark) Corresponding Author Brian Nyvang Legarth (Technical University of Denmark, Denmark)
TuSM1206	16:10~16:30	ANISOTROPIC POROUS PLASTICITY MODELS FOR DUCTILE FRACTURE **Ahmed BENALLAL** (Université Paris Saclay, France) Corresponding Author Ahmed BENALLAL (Université Paris Saclay, France)
TuSM1207	16:30~16:50	NONLINEAR ANISOTROPIC VISCO-ANELASTICITY Souhayl Sadik (Aarhus University, Denmark) Corresponding Author Arash Yavari (Georgia Institute of Technology, USA)

SM16	Soft materials and extremely deformable structures	
Moderator	Sangwoo Kim (EPFL, Switzerland) / Kai Luo (Beijing Institute of Technology, China)	
Room	Room 321A, 3F	
TuSM1611	14:10~14:30	MARGINALLY STABLE TO ULTRASTABLE SOFT OVERJAMMED DISK PACKINGS **Sangwoo Kim** (EPFL, Switzerland) Corresponding Author Sangwoo Kim (EPFL, Switzerland)
TuSM1612	14:30~14:50	DYNAMIC MODELING, OPTIMIZATION AND CONTROL OF HARD-MAGNETIC SOFT BEAMS **Yancong Wang** (Beijing Institute of Technology, China) Corresponding Author Kai Luo (Beijing Institute of Technology, China)
TuSM1613	14:50~15:10	PROBLEMS OF SHAPE MANIPULATION OF THE ELASTICA WITH ROBOTIC APPLICATIONS **Ramsharan Rangarajan** (Indian Institute of Science, India) Corresponding Author Ramsharan Rangarajan (Indian Institute of Science, India)
TuSM1614	15:10~15:30	A MODEL FOR DYNAMIC SNAP-THROUGH OF AN ELASTICA AND ITS APPLICATION TO UNDERWATER LOCOMOTION **Chiraprabha Bhattacharyya** (Indian Institute of Science, India) Corresponding Author Ramsharan Rangarajan (Indian Institute of Science, India)
TuSM1615	15:30~15:50	STIFFNESS AND TOUGHNESS OF LIQUID REINFORCED SOFT COMPOSITES **Sumit Basu** (Indian Institute of Technology Kanpur, India) Corresponding Author Sumit Basu (Indian Institute of Technology Kanpur, India)
TuSM1616	15:50~16:10	MACHINE LEARNING-ENABLED FORWARD PREDICTION AND INVERSE DESIGN OF 4D-PRINTED ACTIVE PLATES **Xiaohao Sun** (University of Science and Technology of China, China) Corresponding Author Hang Jerry Qi (Georgia Institute of Technology, USA)
TuSM1617	16:10~16:30	CURVED-WALL DESIGN AND CONTROLLABLE BENDING SURFACE FOR FLEXIBLE COMPOSITE HONEYCOMB **Xingyu WEI** (Harbin Institute of Technology, China) Corresponding Author Jian Xiong (Harbin Institute of Technology, China)

FM10	Geophysical and environmental fluid dynamics	
Moderator	Megan Davies Wykes (University of Cambridge, United Kingdom) / Jin-Han Xie (Peking University, China)	
Room	Room 321B, 3F	
TuFM1009	14:10~14:30	STATION-DATA-DRIVEN TEMPERATURE FORECASTING IN SOUTH KOREA USING DEEP NEURAL NETWORKS **Jun Park** (Yonsei University, Korea, Republic of) Corresponding Author Changhoon Lee (Yonsei University, Korea, Republic of)
TuFM1010	14:30~14:50	ANALYSIS OF THE POTENTIAL TEMPERATURE RELATED THIRD-ORDER STRUCTURE FUNCTION IN ATMOSPHERE BOUNDARY LAYER **Junning Wang** (Peking University, China) Corresponding Author Jin-Han Xie (Peking University, China)
TuFM1011	14:50~15:10	A THEORETICAL FRAME FOR GENERAL CIRCULATION IN MID-LATITUDES **Woosok Moon** (Pukyong National University, Korea, Republic of) Corresponding Author Woosok Moon (Pukyong National University, Korea, Republic of)
TuFM1012	15:10~15:30	MULTISCALE TIME SERIES MODEL AND ITS APPLICATION TO ATMOSPHERIC SURFACE LAYERS **Fei-Chi Zhang** (Peking University, China) Corresponding Author Jin-Han Xie (Peking University, China)
TuFM1013	15:30~15:50	STRUCTURE-FUNCTION-BASED KINETIC AND POTENTIAL ENERGY TRANSFER ANALYSIS IN THE NORTHEAST ATLANTIC **Yuyang Hou** (Peking University, China) Corresponding Author Jin-Han Xie (Peking University, China)
TuFM1014	15:50~16:10	OBSERVING THE IMPACT OF THE EDDY FLUX NEAR THE HADLEY CELL EDGE ON THE CELL CHARACTERISTICS DURING WINTER SEASON IN REANALYSIS DATA **Seungpyo Lee** (Pukyong National University, Korea, Republic of) Corresponding Author Seungpyo Lee (Pukyong National University, Korea, Republic of)
TuFM1015	16:10~16:30	SURFACE DYNAMICS IS NOT ENOUGH TO EXPLAIN THE NASTROM-GAGE SPECTRA **Yitong Zhang** (Peking University, China) Corresponding Author Jin-Han Xie (Peking University, China)
TuFM1016	16:30~16:50	INTERNAL WAVE FOCUSING BY A PARTIAL TORUS **Natalia Shmakova** (Lavrentyev Institute of Hydrodynamics SB RAS, Russia) Corresponding Author Natalia Shmakova (Lavrentyev Institute of Hydrodynamics SB RAS, Russia)

SM04	Damage & fracture mechanics	
Moderator	Veronique Lazarus (Institut Polytechnique de Paris, France) / Roberta Massabo (University of Genova, Italy)	
Room	Room 322A, 3F	
TuSM0413	14:10~14:30	GEOMETRIC COMPLEXITY ENHANCES CRACK TOUGHNESS IN BRITTLE SOLIDS **Xinyue Wei** (EPFL, Switzerland) Corresponding Author John Martin Kolinski (EPFL, Switzerland)
TuSM0414	14:30~14:50	R-CURVE BEHAVIOR IN PERFECTLY BRITTLE COMPOSITES: A PHENOMENON DRIVEN BY MATERIAL DISORDER AND GEOMETRICAL NON-LINEARITIES **Mathias Lebihain** (Ecole des Ponts, France) Corresponding Author Mathias Lebihain (Ecole des Ponts, France)
TuSM0415	14:50~15:10	NEAR CRACK TIP DEFORMATION FIELDS REVEAL THE STRUCTURE OF THE FRACTURE PROCESS ZONE IN BRITTLE HYDROGELS **Chenzhuo Li** (EPFL, Switzerland) Corresponding Author John Martin Kolinski (EPFL, Switzerland)
TuSM0416	15:10~15:30	BIFURCATION AND STABILITY OF SYSTEMS UNDER CONSTRAINTS: THE MECHANICAL ROLE OF SOFTENING AND IRREVERSIBILITY. **Andrés A León Baldelli** (∂'Alembert • CNRS, France) Corresponding Author Andrés A León Baldelli (∂'Alembert • CNRS, France)
TuSM0417	15:30~15:50	AE DATA BASED LOCAL APPROACH TO TENSILE FRACTURE OF GLASSY POLYMER **SUBRAT SENAPATI** (INDIAN INSTITUTE OF TECHNOLOGY MADRAS, India) Corresponding Author SUBRAT SENAPATI (INDIAN INSTITUTE OF TECHNOLOGY MADRAS, India)
TuSM0418	15:50~16:10	NUMERICAL ESTIMATION OF THE FRACTURE TOUGHNESS IN SHORT-FIBRE CMC **Hyung-Jun CHANG** (SafranTech, France) Corresponding Author Hyung-Jun CHANG (SafranTech, France)
TuSM0419	16:10~16:30	WHY MEASURING THE FRACTURE PROPERTIES OF MATERIALS WITH STATISTICAL FRACTOGRAPHY INSTEAD OF STANDARD MECHANICAL TESTS **Laurent Ponson** (Sorbonne Université, France) Corresponding Author Laurent Ponson (Sorbonne Université, France)

FM08	Flow instability and transition	
Moderator	Aaron Towne (University of Michigan, USA) / Marcello Faraco Medeiros (University of Sao Paulo, Brazil)	
Room	Room 322B, 3F	
TuFM0818	14:10~14:30	STATISTICAL AND DATA-DRIVEN MODELS FOR TRANSIENT GROWTH IN WALL-BOUNDED FLOWS **Aaron Towne** (University of Michigan, USA) Corresponding Author Aaron Towne (University of Michigan, USA)
TuFM0819	14:30~14:50	FLOW OSCILLATIONS INDUCED BY A GAP AND THEIR EFFECT ON BOUNDARY LAYER TRANSITION **Marcello Faraco Medeiros** (University of Sao Paulo, Brazil) Corresponding Author Marcello Faraco Medeiros (University of Sao Paulo, Brazil)
TuFM0820	14:50~15:10	TRANSIENT FORMATION PROCESS OF A LAMINAR SEPARATION BUBBLE **Igor Braga de Paula** (PUC-Rio, Brazil) Corresponding Author omar horna pinedo (PUC-Rio, Brazil)
TuFM0821	15:10~15:30	ACCURATE SELECTION OF BOUNDARY LAYER RECURSION PARAMETERS FOR ONE-WAY NAVIER-STOKES EQUATIONS **Elliot James Badcock** (Imperial College University, United Kingdom) Corresponding Author Elliot James Badcock (Imperial College University, United Kingdom)
TuFM0822	15:30~15:50	EVOLUTION OF WING-TIP VORTICES PERTURBED BY LINEAR OPTIMAL PERTURBATION IN THE WAKE OF FINITE SPAN WING **MOHD. SUHAIL NAIM** (Indian Institute of Technology, India) Corresponding Author MOHD. SUHAIL NAIM (Indian Institute of Technology, India)

FM06	Drops, bubbles and interfaces	
Moderator	alfredo soldati (TU Wien, Austria) / Stéphane Popinet (CNRS & Sorbonne Université, France)	
Room	Room 323A, 3F	
TuFM0615	14:10~14:30	HEAT TRANSFER IN DROP-LADEN TURBULENCE **alfredo soldati** (TU Wien, Austria) Corresponding Author alfredo soldati (TU Wien, Austria)
TuFM0616	14:30~14:50	TURBULENT RAYLEIGH-BéNARD CONVECTION WITH EMULSIONS **Parisa Mirbod** (University of Illinois at Chicago, USA) Corresponding Author Parisa Mirbod (University of Illinois at Chicago, USA)
TuFM0617	14:50~15:10	BUBBLE FRAGMENTATION IN CENTRIFUGAL FIELDS **Atila P S Freire** (Universidade Federal do Rio de Janeiro, Brazil) Corresponding Author Atila P S Freire (Universidade Federal do Rio de Janeiro, Brazil)
TuFM0618	15:10~15:30	RISE VELOCITY REDUCTION OF BUBBLES IN TURBULENCE **Zehua Liu** (Princeton University, USA) Corresponding Author Luc Deike (Princeton University, USA)
TuFM0619	15:30~15:50	DRIFTING AND DISPERSION IN A DECAYING GRAVITY WAVE **Giulio Foggi Rota** (Okinawa Institute of Science and Technology Graduate University, Japan) Corresponding Author Marco Edoardo Rosti (Okinawa Institute of Science and Technology Graduate University, Japan)
TuFM0620	15:50~16:10	NEAREST PARTICLE MICROSTUCTURE IN RISING MONODISPERSE SUSPENSIONS OF DROPS **Stéphane Popinet** (CNRS & Sorbonne Université, France) Corresponding Author nicolas fintzi (Sorbonne universite, France)
TuFM0621	16:10~16:30	A FREE SURFACE'S DEFORMATIONS REVEAL THE TURBULENCE UNDERNEATH **Daniel Ruth** (ETH Zurich, Switzerland) Corresponding Author Daniel Ruth (ETH Zurich, Switzerland)

FM05	Convection	
Moderator	Anne Sergent (Sorbonne Universite, France) / Andreas Tilgner (University of Göttingen, Germany)	
Room	Room 323B, 3F	
TuFM0507	14:10~14:30	LAGRANGIAN MEASUREMENTS AND PHYSICS-INFORMED NEURAL NETWORK FOR RAYLEIGH-BéNARD FLOW RECONSTRUCTION **Anne Sergent** (Sorbonne Universite, France) Corresponding Author Anne Sergent (Sorbonne Universite, France)
TuFM0508	14:30~14:50	TRANSITION TO FULLY DEVELOPED TURBULENCE IN LIQUID METAL CONVECTION FACILITATED BY SPATIAL CONFINEMENT **Yi-Chao XIE** (Xi'an Jiaotong University, China) Corresponding Author Yi-Chao XIE (Xi'an Jiaotong University, China)
TuFM0509	14:50~15:10	PARTICLE IMAGE THERMOMETRY AND VELOCIMETRY FOR INVESTIGATING RAYLEIGH-BENARD TURBULENCE **Bahadır Turkyilmaz** (Reykjavik University, Iceland) Corresponding Author Bahadır Turkyilmaz (Reykjavik University, Iceland)
TuFM0510	15:10~15:30	FLOW STATES AND CRITICAL RAYLEIGH NUMBERS IN LIQUID METAL CONVECTION: SPATIAL CONFINEMENT AND VERTICAL MAGNETIC FIELD INFLUENCE **Xin-yuan Chen** (Xi'an Jiaotong University, China) Corresponding Author Ming-Jiu Ni (University of Chinese Academy of Sciences, China)
TuFM0511	15:30~15:50	EXPERIMENTAL OBSERVATION OF DOUBLE DIFFUSIVE FINGER CONVECTION **Andreas Tilgner** (University of Göttingen, Germany) Corresponding Author Andreas Tilgner (University of Göttingen, Germany)
TuFM0512	15:50~16:10	DOUBLE DIFFUSIVE CONVECTION IN THE DIFFUSIVE REGIME WITH A UNIFORM BACKGROUND SHEAR **Junyi Li** (Tsinghua University, China) Corresponding Author Junyi Li (Tsinghua University, China)
TuFM0513	16:10~16:30	EXPERIMENTAL STUDY OF RAYLEIGH-BéNARD CONVECTION OF WATER IN AN EVAPORATING LARGE ASPECT RATIO LAYER **Hugo Remise-Charlot** (CNRS Université Paris Saclay, France) Corresponding Author Hugo Remise-Charlot (CNRS Université Paris Saclay, France)
TuFM0514	16:30~16:50	ENHANCED STRUCTURAL DESIGN FOR LIQUID COOLING COLD PLATES: A CONVOLUTIONAL NEURAL NETWORK-DRIVEN TOPOLOGY OPTIMIZATION APPROACH Wang Minliang (Chonnam National University, Korea, Republic of) Corresponding Author Hyunwook Kang (Chonnam National University, Korea, Republic of)

FM04	Compressible flow	
Moderator	Jaiyoung Ryu (Korea University, Korea, Republic of)	
Room	Room 324A, 3F	
TuFM0411	14:10~14:30	INFLUENCE OF REYNOLDS NUMBER ON THE VIBRATIONAL NON-EQUILIBRIUM PROCESS IN COMPRESSIBLE TURBULENCE **SHISHIR SRIVASTAVA** (Indian Institute of Technology Delhi, India) Corresponding Author SHISHIR SRIVASTAVA (Indian Institute of Technology Delhi, India)
TuFM0412	14:30~14:50	NUMERICAL STUDY OF DUAL CAVITY SCRAMJET COMBUSTOR WITH PYLON DOWNSTREAM **Prasanth P Nair** (IIT Gandhinagar, India) Corresponding Author Prasanth P Nair (IIT Gandhinagar, India)
TuFM0413	14:50~15:10	INTERACTION OF THE DROPLET FLAME WITH A BLAST WAVE **Gautham Vadlamudi** (Indian Institute of Science, India) Corresponding Author Saptarshi Basu (Indian Institute of Science, India)
TuFM0414	15:10~15:30	RESPONSE OF PREMIXED JET FLAMES TO BLAST WAVES **Akhil Aravind** (Indian Institute of Science, India) Corresponding Author Saptarshi Basu (Indian Institute of Science, India)
TuFM0415	15:30~15:50	AN EXPERIMENTAL STUDY OF FLAME-FLOW INTERACTIONS IN A SWIRLING UNDEREXPANDED JET **Jonathon Harling Miller** (Georgia Institute of Technology, USA) Corresponding Author Adam Michael Steinberg (Georgia Institute of Technology, USA)
TuFM0416	15:50~16:10	A DNS STUDY ON THE STRUCTURES AND TURBULENCE–FLAME INTERACTIONS OF TRANSVERSE HYDROGEN JET INTO SUPERSONIC CROSSFLOWS AT DIFFERENT FLIGHT ALTITUDES **Chengming Wang** (Zhejiang University, China) Corresponding Author Haiou Wang (State Key Laboratory of Clean Energy Utilization, Zhejiang University, China)
TuFM0417	16:10~16:30	CONSISTENT KINETIC MODEL FOR SIMULATION OF NON-IDEAL FLUIDS **Seyed Ali Hosseini** (ETH Zurich, Switzerland) Corresponding Author Ilya Karlin (ETH Zurich, Switzerland)
TuFM0418	16:30~16:50	NUMERICAL ANALYSIS OF NON-IDEAL COMPRESSIBLE FLUID DYNAMICS OF SUPERCRITICAL CO2 **Senthil Kumar Raman** (Kalasalingam Academy of Research and Education, India) Corresponding Author Simon Song (Hanyang University, Korea, Republic of)

FM02	Boundary layers	
Moderator	Le Fang (Beihang University, China)	
Room	Room 324B, 3F	
TuFM0211	14:10~14:30	SCALING LAWS OF VELOCITY GRADIENT MOMENTS BY ATTACHED EDDIES **Le Fang** (Beihang University, China) Corresponding Author Le Fang (Beihang University, China)
TuFM0212	14:30~14:50	CAUSAL ANALYSIS OF NEAR-WALL INNER AND OUTER TURBULENT MOTIONS **Ruifeng Hu** (Lanzhou University, China) Corresponding Author Ruifeng Hu (Lanzhou University, China)
TuFM0213	14:50~15:10	DIRECT NUMERICAL SIMULATION OF TURBULENT PIPE FLOW AT Re_τ =10,000 **Jie Yao** (Beijing Institute of Technology, China) Corresponding Author Jie Yao (Beijing Institute of Technology, China)
TuFM0214	15:10~15:30	WALL-ATTACHED AND WALL-DETACHED EDDIES IN HIGH-REYNOLDS-NUMBER ATMOSPHERIC SURFACE LAYER **Hongyou Liu** (Lanzhou University, China) Corresponding Author Hongyou Liu (Lanzhou University, China)
TuFM0215	15:30~15:50	A UNIVERSAL VELOCITY TRANSFORMATION FOR STRATIFIED BOUNDARY LAYER FLOWS **Peng Chen** (Southern University of Science and Technology, China) Corresponding Author Wen Zhang (Southern University of Science and Technology, China)
TuFM0216	15:50~16:10	EXACT SIMILARITY SOLUTIONS OF UNSTEADY LAMINAR BOUNDARY LAYERS **BO HUA SUN** (Chinese Academy of Sciences, China) Corresponding Author BO HUA SUN (Chinese Academy of Sciences, China)
TuFM0217	16:10~16:30	MODIFICATION OF THE UNIFORM MOMENTUM ZONES IN A TURBULENT BOUNDARY LAYER OVER SUPERHYDROPHOBIC SURFACE **Xiaoqi Cheng** (Tianjin University, China) Corresponding Author nan jiang (TIANJIN UNIVERSITY, China)
TuFM0218	16:30~16:50	PHASE SPEED AND INCLINATION ANGLE RELATIONSHIPS FOR COHERENT STRUCTURES IN TURBULENT WALL-BOUNDED FLOWS **Guangyao Cui** (Technion Israel Institute of Technology, Israel) Corresponding Author Ian Jacobi (Technion, Israel)

FM13	Non-Newtonian and complex fluids	
Moderator	Rob Poole (University of Liverpool, United Kingdom) / Aloke Kumar (Indian Institute of Science of Bengaluru, India)	
Room	Room 325A, 3F	
TuFM1308	14:10~14:30	INSTABILITIES AND TRANSITION TO TURBULENCE IN VISCOELASTIC TAYLOR-COUETTE **INNOCENT MUTABAZI** (CNRS LOMC UMR6294, France) Corresponding Author INNOCENT MUTABAZI (CNRS LOMC UMR6294, France)
TuFM1309	14:30~14:50	HIGH-FIDELITY AND REDUCED-ORDER SIMULATIONS OF VISCOELASTIC JETS **Konstantinos Zinelis** (Imperial College London, United Kingdom) Corresponding Author Konstantinos Zinelis (Imperial College London, United Kingdom)
TuFM1310	14:50~15:10	THE EFFECT OF VISCOELASTICITY IN A THIN SQUEEZED FILM **Luca Biancofiore** (Bilkent University, Türkiye) Corresponding Author Luca Biancofiore (Bilkent University, Türkiye)
TuFM1311	14:50~15:10	UPSTREAM WAKES IN A VISCOELASTIC SHEAR FLOW **Fumihiko Mikami** (Chiba University, Japan) Corresponding Author Fumihiko Mikami (Chiba University, Japan)
TuFM1312	15:30~15:50	EXTENSIONAL RHEOLOGICAL MEASUREMENTS OF VISCOELASTIC FLUIDS THROUGH DROPLET SLIDING ON A ROUGH HYDROPHOBIC SURFACE **Jeong-Hyun Kim** (Seoul National University of Science and Technology, Korea, Republic of) Corresponding Author Jeong-Hyun Kim (Seoul National University of Science and Technology, Korea, Republic of)
TuFM1313	15:50~16:10	MEASUREMENT OF EXTENSIONAL CHARACTERISTICS OF DILUTE POLYMER SOLUTIONS BY USING PIEZO-DRIVEN DROP-ON-DEMAND EXTENSIONAL RHEOMETRY **Takeshi Matsuda** (SCREEN Holdings Co., Ltd, Japan) Corresponding Author Shinji Tamano (Nagoya Institute of Technology, Japan)
TuFM1314	16:10~16:30	DEFORMATION OF VISCOELASTIC DROP IN ALTERNATING ELECTRIC FIELD **Sarika Shivaji Bangar** (Indian Institute of Science, India) Corresponding Author Gaurav Tomar (Indian Institute of Science, India)
TuFM1315	16:30~16:50	MODELING THE EFFECTS OF VISCOELASTICITY IN THREE-DIMENSIONAL LUBRICATED CONTACTS **Humayun Ahmed** (Bilkent University, Türkiye) Corresponding Author Humayun Ahmed (Bilkent University, Türkiye)

FM16	Vortex dynamics	
Moderator	**Morten Brøns** (Technical University of Denmark, Denmark) / **Takeshi Gotoda** (Tokyo Institute of Technology, Japan)	
Room	Room 325B, 3F	
TuFM1610	14:10~14:30	DYNAMICS OF CRITICAL POINTS OF VORTICITY WITH APPLICATION TO VORTEX MERGING **Morten Brøns** (Technical University of Denmark, Denmark) Corresponding Author Morten Brøns (Technical University of Denmark, Denmark)
TuFM1611	14:30~14:50	ENSTROPHY DISSIPATION CAUSED BY SELF-SIMILAR COLLAPSE OF POINT VORTICES **Takeshi Gotoda** (Tokyo Institute of Technology, Japan) Corresponding Author Takeshi Gotoda (Tokyo Institute of Technology, Japan)
TuFM1612	14:50~15:10	CLASSIFICATION OF STREAMLINE TOPOLOGY OF VORTEX FLOWS IN DOUBLY PERIODIC DOMAINS **Tomoo Yokoyama** (Saitama University, Japan) Corresponding Author Tomoo Yokoyama (Saitama University, Japan)
TuFM1613	15:10~15:30	VORTICAL FLOW STRUCTURE DERIVED FROM LOCAL FLOW GEOMETRY **Katsuyuki Nakayama** (Aichi Institute of Technology, Japan) Corresponding Author Katsuyuki Nakayama (Aichi Institute of Technology, Japan)
TuFM1614	15:30~15:50	DYNAMICS OF COAXIAL THIN VORTEX RING ARRAYS **Emad Masroor** (Swarthmore College, USA) Corresponding Author Emad Masroor (Swarthmore College, USA)
TuFM1615	15:50~16:10	A LABORATORY MODEL FOR POLAR VORTICES ON JUPITER **Michael Le Bars** (CNRS, France) Corresponding Author Djihane BENZEGGOUTA (IRPHE, France)
TuFM1616	16:10~16:30	MIXING IN A SYSTEM OF THREE SUBVORTICES **Hamid AIT Abderrahmane** (Khalifa University, United Arab Emirates) Corresponding Author Hamid AIT Abderrahmane (Khalifa University, United Arab Emirates)

FM18	Electro- and magneto-hydrodynamics	
Moderator	**Rhokyun Kwak** (Hanyang University, Korea, Republic of) / **Bumjoo Kim** (Kongju National University, Korea, Republic of)	
Room	Room 325C, 3F	
TuFM1811	14:10~14:30	REGULATING ELECTRO-CONVECTIVE FLOWS ON PATTERNED ION EXCHANGE MEMBRANES **Sangbin Nam** (Hanyang University, Korea, Republic of) Corresponding Author Rhokyun Kwak (Hanyang University, Korea, Republic of)
TuFM1812	14:30~14:50	CONFINEMENT EFFECTS ON ELECTROCONVECTION PATTERNS: THE ROLE OF SIDEWALL CONDITIONS AND ASPECT RATIO **Sunghoon Kim** (Hanyang University, Korea, Republic of) Corresponding Author Rhokyun Kwak (Hanyang University, Korea, Republic of)
TuFM1813	14:50~15:10	THEORETICAL ESTIMATE OF ELECTRO-VORTEX FLOW VELOCITY IN A CYLINDRICAL LIQUID METAL ELECTRODE **Swapnil Soni** (IIT Bombay, India, India) Corresponding Author Swapnil Soni (IIT Bombay, India, India)
TuFM1814	15:10~15:30	MAGNETOHYDRODYNAMIC EFFECT DURING ELECTRODEPOSITION OF NANO-STRUCTURED METAL LAYERS **Mengyuan Huang** (Beijing University of Chemical Technology, China) Corresponding Author Mengyuan Huang (Beijing University of Chemical Technology, China)
TuFM1815	15:30~15:50	UNSTEADY ELECTROROTATION OF A DROP IN A CONSTANT ELECTRIC FIELD **Alexander N. Tyatyushkin** (Moscow State University, Russia) Corresponding Author Alexander N. Tyatyushkin (Moscow State University, Russia)
TuFM1816	15:50~16:10	INVESTIGATION OF ELECTROCOALESCENCE FOR UNEQUAL-SIZED DROPLETS WITH VARIED INITIAL DISTANCES **Seongsu Cho** (Sungkyunkwan University, Korea, Republic of) Corresponding Author Jinkee Lee (Sungkyunkwan University, Korea, Republic of)
TuFM1817	16:10~16:30	TOWARDS A DEEP UNDERSTANDING OF MELTING HEAT TRANSFER OF AN ORGANIC MATERIAL SUBJECTED TO ELECTRIC FIELD **Jian Wu** (Harbin Institute of Technology, China) Corresponding Author Jian Wu (Harbin Institute of Technology, China)

FM14	Computational fluid dynamics	
Moderator	**Eunseop Yeom** (Pusan National University, Korea, Republic of) /**Joon Sang Lee** (Yonsei Univ., Korea, Republic of)	
Room	Room 325D, 3F	
TuFM1409	14:10~14:30	TEMPERATURE AND FLOW ANAYSIS IN AN OVEN USING COMPUTATIONAL FLUID DYNAMICS **Jeon Won Woo** (Pusan National University, Korea, Republic of) Corresponding Author Eunseop Yeom (Pusan National University, Korea, Republic of)
TuFM1410	14:30~14:50	INVESTIGATION OF LITHIUM POLYSULFIDE GENERATION ON LITHIUM-SULFUR BATTERY DURING REPEATED CHARGING/DISCHARGING CYCLES **Se Young Kim** (Yonsei University, Korea, Republic of) Corresponding Author Joon Sang Lee (Yonsei Univ., Korea, Republic of)
TuFM1411	14:50~15:10	CONCENTRATION POLARISATION AND PERMEATE FLUX IN MULTI-STAGE ROTO-DYNAMIC RO SYSTEM FOR SEA WATER DESALINATION. **Nitikesh Prakash** (Indian Institute of Technology Madras, India) Corresponding Author Abhijit Chaudhuri (Indian Institute of Technology Madras, India)
TuFM1412	15:10~15:30	MAPPING THE EFFECT OF GREEN INFRASTRUCTURE ON URBAN MICROCLIMATE: FROM STREETS TO PARKS **Sushobhan Sen** (IIT Gandhinagar, India) Corresponding Author Shubham Kumar Verma (Indian Institute Of Technology Gandhinagar, India)
TuFM1413	15:30~15:50	DIP COATING WITH FINITE IMMERSION DEPTH **Dongkeun Yu** (Seoul National University, Korea, Republic of) Corresponding Author Jaewook Nam (Seoul National University, Korea, Republic of)
TuFM1414	15:50~16:10	RADIONUCLIDES RELEASE RATE CALCULATION FROM A SPENT FUEL TRANSPORT CASK SUBMERGED IN DEEP-SEA **GUHYEON JEONG** (Keimyung University, Korea, Republic of) Corresponding Author Sanghoon Lee (Keimyung University, Korea, Republic of)
TuFM1415	16:10~16:30	AN EFFECT OF INCLINED MHD AND BIVISCOUS-BINGHAM TERNARY NANOFLUID FLOW OVER THE ACCELERATED SURFACE WITH POWER LAW VELOCITY **Sachhin S. M** (Davangere University, India) Corresponding Author Sachhin S. M (Davangere University, India)

MS03	Nonlinear mechanical models for biological and bioinspired materials	
Moderator	**Simon Hadjaje** (Aix-Marseille University, CNRS, IUSTI, France) / **Nicola Maria Pugno** (Trento University, Italy)	
Room	Room 503, 5F	
TuMS0312	14:10~14:30	MECHANICAL DESCRIPTION OF INSECTS WING EXPANSION **Simon Hadjaje** (Aix-Marseille University, CNRS, IUSTI, France) Corresponding Author Simon Hadjaje (Aix-Marseille University, CNRS, IUSTI, France)
TuMS0313	14:30~14:50	FRICTIONAL ANISOTROPY OF BIO-INSPIRED TEXTURE FOR GENERATING UNIDIRECTIONAL LOCOMOTION **vivek kashyap** (Trento University, Italy) Corresponding Author Nicola Maria Pugno (Trento University, Italy)
TuMS0314	14:50~15:10	FRACTURE IN HUMAN CORTICAL BONES: INFLUENCE OF STRUCTURE AND MICROSTRUCTURE **Glynn Gallaway** (Purdue University, USA) Corresponding Author Thomas Siegmund (Purdue University, USA)
TuMS0315	15:10~15:30	NON-LINEAR ELASTICITY OF COMPOSITE HYDROGELS AND BIOLOGICAL TISSUES **Jake Song** (Stanford University, USA) Corresponding Author Gareth H. McKinley (MIT, USA)
TuMS0316	15:30~15:50	A PREDICTIVE MODEL FOR DNA DENATURATION: TEMPERATURE AND MECHANICAL EFFECTS **Giuseppe Florio** (Polytechnic of Bari, Italy) Corresponding Author Giuseppe Florio (Polytechnic of Bari, Italy)
TuMS0317	15:50~16:10	SHAPE TRANSFORMATIONS OF VESICLES WITH CONFINED FILAMENTS **Xin Yi** (Peking University, China) Corresponding Author Xin Yi (Peking University, China)
TuMS0318	16:10~16:30	HARNESSING GRADIENTS FOR SELF-ASSEMBLY OF PEPTIDES INTO NANOCAPSULES **XULIANG QIAN** (Nanyang Technological University, Singapore) Corresponding Author Huajian Gao (Department of Engineering Mechanics, Tsinghua University, Beijing, China

MS01	Chemo-mechanics and materials for energy conversion and storage	
Moderator	**Robert M. McMeeking** (University of California, USA) / **Hanqing Jiang** (Westlake University, China)	
Room	Room 504, 5F	
TuMS0111	14:10~14:30	COUPLING DIFFUSION AND FINITE DEFORMATION IN PHASE TRANSFORMATION MATERIALS **Ananya Renuka Balakrishna** (University of California Santa Barbara, USA) Corresponding Author Ananya Renuka Balakrishna (University of California Santa Barbara, USA)
TuMS0112	14:30~14:50	ELECTROCHEM-MECHANICS COUPLED FAILURE MECHANISM AND MODELING OF LITHIUM-ION BATTERIES SUBJECTED TO EXTERNAL MECHANICAL LOADINGS **Chao Zhang** (Northwestern Polytechnical University, China) Corresponding Author Chao Zhang (Northwestern Polytechnical University, China)
TuMS0113	14:50~15:10	STATE OF HEALTH PREDICTION OF LITHIUM-ION BATTERY PACKS BASED ON MICROMECHANICAL MODELS **Peter Gudmundson** (KTH Royal Institute of Technology, Sweden) Corresponding Author Peter Gudmundson (KTH Royal Institute of Technology, Sweden
TuMS0114	15:10~15:30	BATTERY MODULE DESIGN OPTIMIZATION FOR THERMAL AND MECHANICAL SAFETY **Yoon Koo Lee** (Korea Advanced Institute of Science and Technology, Korea, Republic of) Corresponding Author Yoon Koo Lee (Korea Advanced Institute of Science and Technology, Korea, Republic of)
TuMS0115	15:30~15:50	MECHANICS OF PIEZO-ELECTROCHEMISTRY FOR Li BATTERY **Wei Lu** (University of Michigan, USA) Corresponding Author Wei Lu (University of Michigan, USA)
TuMS0116	15:50~16:10	CHEMOMECHANICS OF SURFACE STRESS AND IMPLICATIONS ON ENVIRONMENT-ASSISTED FRACTURE **Anirudh Udupa** (Indian Institute of Technology Madras, India) Corresponding Author Anirudh Udupa (Indian Institute of Technology Madras, India)

MS02	Soft matter, theory meets experiment	
Moderator	**Ying Li** (University of Wisconsin-Madison, USA) / **Ye Xu** (Beihang University, China)	
Room	Room 505, 5F	
TuMS0218	14:10~14:30	A "SEMI-TOY" MOLECULAR CONSTITUTIVE MODEL FOR ENTANGLED POLYDISPERSE LINEAR AND/OR STAR FLEXIBLE POLYMERS WITH ENTANGLEMENT DYNAMICS AND A CONFIGURATION DEPENDENT FRICTION COEFFICIENT **David W. Mead** (Mead Consulting, USA) Corresponding Author David W. Mead (Mead Consulting, USA)
TuMS0219	14:30~14:50	PHYSICALLY-BASED GRADIENT DAMAGE FORMULATION FOR TEXTILE COMPOSITES **Khiem Vu Ngoc** (RWTH Aachen University, Germany) Corresponding Author Khiem Vu Ngoc (RWTH Aachen University, Germany)
TuMS0220	14:50~15:10	HOT-PRESSING WELDING OF VITRIMER: MODELLING AND EXPERIMENTS **Le An** (Xi'an Jiaotong University, China) Corresponding Author Le An (Xi'an Jiaotong University, China)
TuMS0221	15:10~15:30	MOLECULAR INSIGHTS INTO SELF-HEALING MECHANICS OF SUPRAMOLECULAR POLYMER NETWORKS **Ying Li** (University of Wisconsin-Madison, USA) Corresponding Author Ying Li (University of Wisconsin-Madison, USA)
TuMS0223	15:30~15:50	PROBING COMPLEX MECHANICAL BEHAVIORS OF SOFT MATTER COMBINING MICRO-MECHANICAL TESTING AND IN SITU IMAGING **Ye Xu** (Beihang University, China) Corresponding Author Ye Xu (Beihang University, China)
TuMS0224	15:50~16:10	STRONG AND TOUGH HIERARCHICAL ORGANO-HYDROGELS VIA MULTISCALE MANUFACTURING STRATEGY WITH MILTPLE REINFORCEMENT MECHANISM **Xiao Guo** (National University of Singapore, Singapore) Corresponding Author Wei Zhai (National University of Singapore, Singapore)

SM11	Nanostructures and MEMS	
Moderator	M Taher Saif (University of Illinois at Urbana-Champaign, USA) / Manas Chandra Ray (Indian Institute of Technology Kharagpur, India)	
Room	Room 506, 5F	
TuSM1104	14:10~14:30	ALUMINUM-CARBON THIN FILMS WITH HIGH STRENGTH AND DUCTILITY **Gi-Dong Sim** (Korea Advanced Institute of Science and Technology, Korea, Republic of) Corresponding Author Gi-Dong Sim (Korea Advanced Institute of Science and Technology, Korea, Republic of)
TuSM1105	14:30~14:50	SOLIDS IN NANO-SCALES - EXTREME STRENGTH AND ELASTICITY **Wei Yang** (Zhejiang University, China) Corresponding Author Wei Yang (Zhejiang University, China)
TuSM1106	14:50~15:10	MEMBRANE DEFLECTION CHARACTERIZATION OF SHAPE MEMORY ALLOY THIN FILMS AT ELEVATED TEMPERATURES **Zhuo Feng Lee** (Korea Advanced Institute of Science and Technology, Korea, Republic of) Corresponding Author Gi-Dong Sim (Korea Advanced Institute of Science and Technology, Korea, Republic of)
TuSM1107	15:10~15:30	ATOMISTIC STUDY OF PRESSURE EFFECTS ON PRESSURE-ASSISTED SINTERING OF BIMETALLIC CORE–SHELL NANOPARTICLES **Juheon Kim** (Ulsan National Institute of Science and Technology, Korea, Republic of) Corresponding Author Hayoung Chung (Ulsan National Institute of Science and Technology (UNIST), Korea, Republic of)
TuSM1108	15:30~15:50	FLEXOELECTRICITY-INDUCED NOVEL EFFECTS IN SUSPENDED FILMS **Jiawang Hong** (Beijing Institute of Technology, China) Corresponding Author Jiawang Hong (Beijing Institute of Technology, China)

Oral Presentation 5		
FM15	Turbulence	
Moderator	Enrico Calzavarini (University of Lille, France) / Zhenhua Xia (Zhejiang University, China)	
Room	Auditorium, 5F	
TuFM1524	17:10~17:30	DIRECT MEASUREMENT OF TURBULENT KINETIC ENERGY ON CROSS-JET FLOW USING MAGNETIC RESONANCE VELOCIMETRY **Hangfei Dong** (Hanyang University, Korea, Republic of) Corresponding Author Simon Song (Hanyang University, Korea, Republic of)
TuFM1525	17:30~17:50	BULK VELOCITY DECOMPOSITION AND VELOCITY TRANSFORMATION IN COMPRESSIBLE TURBULENT CHANNEL FLOWS **Zhenhua Xia** (Zhejiang University, China) Corresponding Author Zhenhua Xia (Zhejiang University, China)
TuFM1526	17:50~18:10	EXPERIMENTAL STUDY ON FLOW SEPARATION CONTROL OF FLEXIBLE COVERTS **Xu'an Gong** (Shanghai Jiao Tong University, China) Corresponding Author Shiyi Chen (Department of Engineering, Eastern Institute of Technology, 315200 Ningbo, China, China)
TuFM1527	18:10~18:30	NUMERICAL INVESTIGATION OF VIBRATORY AIRLOADS OF A HOVERING QUADCOPTER WITH ROTOR PHASE VARIATIONS **Young Min Park** (Gwangju Institute of Science and Technology, Korea, Republic of) Corresponding Author Solkeun Jee (Gwangju Institute of Science and Technology, Korea, Republic of)
TuFM1528	18:30~18:50	DIRECT NUMERICAL SIMULATION OF A SPATIALLY DEVELOPING COMPRESSIBLE MIXING LAYER: TURBULENT/NON-TURBULENT INTERFACE AND THE EFFECT OF LARGE-SCALE-MOTIONS **Ruibo Zhang** (Peking University, China) Corresponding Author Jianchun Wang (Southern University of Science and Technology, China)
TuFM1529	18:50~19:10	LARGE-EDDY SIMULATION OF SHOCK TRAIN IN CONVERGENT-DIVERGENT NOZZLE WITH ISOTHERMAL WALLS **Agneev Roy** (Indian Institute of Technology Kharagpur, India) Corresponding Author Agneev Roy (Indian Institute of Technology Kharagpur, India)

FS05	Fluid structure interactions	
Moderator	**Yuriy Semenov** (Harbin Engineering University, China) / **Daegyoum Kim** (KAIST, Korea, Republic of)	
Room	Room 211, 2F	
TuFS0525	17:10~17:30	HYDRODYNAMIC WRINKLING OF A RETRACTING ELASTIC SHEET **Cheolgyun Jung** (KAIST, Korea, Republic of) Corresponding Author Daegyoum Kim (KAIST, Korea, Republic of)
TuFS0526	17:30~17:50	WRINKLE PATTERNS OF AN ELASTIC LOOP INDUCED BY HYDRODYNAMIC PRESSURE **Seyoung Joung** (KAIST, Korea, Republic of) Corresponding Author Daegyoum Kim (KAIST, Korea, Republic of)
TuFS0527	17:50~18:10	NONLINEAR HYDROELASTIC INTERACTION **Yuriy Semenov** (Harbin Engineering University, China) Corresponding Author Yuriy Semenov (Harbin Engineering University, China)
TuFS0528	18:10~18:30	DRAG-DOMINANT WATER JUMPING OF OSCILLATING ELASTIC HOOPS **Ji-Sung Park** (Seoul National University, Korea, Republic of) Corresponding Author Ho-Young Kim (Seoul National University, Korea, Republic of)
TuFS0529	18:30~18:50	ON THE APPLICABILITY OF MECHANICAL EQUIVALENT MODELS FOR SATELLITE SLOSHING **Kamil Zdzisław Cichorek** (Warsaw University of Technology, Poland) Corresponding Author Kamil Zdzisław Cichorek (Warsaw University of Technology, Poland)

FS06	Granular materials and flows	
Moderator	**Keng-Lin Lee** (National Chung Hsing University, China-Taipei) / **Francisco Rocha** (Aix-Marseille Université, France)	
Room	Room 214, 2F	
TuFS0608	17:10~17:30	ANALYTICAL SOLUTION FOR DETERMINING NONLOCAL GRANULAR RHEOLOGY IN INCLINED FLOW CONFIGURATION **Keng-Lin Lee** (National Chung Hsing University, China-Taipei) Corresponding Author Keng-Lin Lee (National Chung Hsing University, China-Taipei)
TuFS0609	17:30~17:50	UNSTEADY RHEOLOGY OF DENSE INERTIAL GRANULAR FLOWS **Wen wen Wang** (University of Edinburgh, United Kingdom) Corresponding Author Jin Sun (University of Glasgow, United Kingdom)
TuFS0610	17:50~18:10	RHEOLOGY OF COHESION-CONTROLLED GRANULAR MATERIALS **Francisco Rocha** (Aix-Marseille Université, France) Corresponding Author Francisco Rocha (Aix-Marseille Université, France)
TuFS0611	18:10~18:30	ANALYSIS OF NON-LOCAL OR COMPRESSIBLE EFFECT ON INCLINED SURFACE GRANULAR FLOWS **You-Yu Chang** (National Taiwan University, China-Taipei) Corresponding Author Fu-Ling Yang (National Taiwan University, China-Taipei)
TuFS0612	18:30~18:50	EXPERIMENTAL STUDY ON THE EFFECT OF INITIAL FLUID VOLUME FOR MULTIPHASE DAM-BREAK FLOW **Shu-San Hsiau** (National Central University, China-Taipei) Corresponding Author Shu-San Hsiau (National Central University, China-Taipei)
TuFS0613	18:50~19:10	NON-INTRUSIVE STRESS MEASUREMENT FOR PHOTOELASTIC CHUTE GRANULAR FLOWS **Fu-Ling Yang** (National Taiwan University, China-Taipei) Corresponding Author Fu-Ling Yang (National Taiwan University, China-Taipei)

FS03	Nonlinear dynamics and pattern formation	
Moderator	Alexander Jakov Fidlin (Karlsruhe Institute of Technology, Germany) / Oleg Gendelman (Technion - Israel Institute of Technology, Israel)	
Room	Room 217, 2F	
TuFS0301	17:10~17:30	QUANTITATIVE ANALYSIS OF PARTICLE BEHAVIOR CONSTITUTING COHERENT STRUCTURES IN A CONCAVE LIQUID BRIDGE **Shin Noguchi** (Tokyo University of Science, Japan) Corresponding Author Shin Noguchi (Tokyo University of Science, Japan)
TuFS0302	17:30~17:50	INTERMODAL TARGETED ENERGY TRANSFER **Oleg Gendelman** (Technion - Israel Institute of Technology, Israel) Corresponding Author Oleg Gendelman (Technion - Israel Institute of Technology, Israel)
TuFS0303	17:50~18:10	PATTERN FORMATION IN COILING OF FALLING VISCOUS THREADS **Behrooz Yousefzadeh** (Concordia University, Canada) Corresponding Author Behrooz Yousefzadeh (Concordia University, Canada)
TuFS0304	18:10~18:30	A MODEL-FREE FOLD BIFURCATION PREDICTION METHOD BASED ON TRANSIENT DYNAMICS: EXPERIMENTAL VALIDATION ON WHEEL-SHIMMY PROBLEM **Fanni Kadar** (Budapest University of Technology and Economics, Faculty of Mechanical Engineering, Hungary) Corresponding Author Fanni Kadar (Budapest University of Technology and Economics, Faculty of Mechanical Engineering, Hungary)
TuFS0305	18:30~18:50	DATA-BASED AVERAGING **Alexander Jakov Fidlin** (Karlsruhe Institute of Technology, Germany) Corresponding Author Alexander Jakov Fidlin (Karlsruhe Institute of Technology, Germany)

FM17	Waves in fluids	
Moderator	Paul Christodoulides (Cyprus University of Technology, Cyprus) / Shyama Prasad Das (Indian Institute of Technology Madras, India)	
Room	Room 219, 2F	
TuFM1708	17:10~17:30	FLUID FLOWS AROUND RECTANGULAR STEPS AND BOULDERS **Paul Christodoulides** (Cyprus University of Technology, Cyprus) Corresponding Author Paul Christodoulides (Cyprus University of Technology, Cyprus)
TuFM1709	17:30~17:50	PARTIALLY FROZEN WAVES IN A HORIZONTALLY OSCILLATING CONTAINER **Shyama Prasad Das** (Indian Institute of Technology Madras, India) Corresponding Author Shyama Prasad Das (Indian Institute of Technology Madras, India)
TuFM1710	17:50~18:10	DIRECT NUMERICAL SIMULATIONS OF BROADBAND WAVES FORCED BY TURBULENT WIND: A MULTISCALE SPECTRAL ANALYSIS **Clara Martin Blanco** (Princeton University, USA) Corresponding Author Clara Martin Blanco (Princeton University, USA)
TuFM1711	18:10~18:30	SHEAR WAVE PROPAGATION IN A SOLID-LIQUID COUPLED SYSTEM **Aaron D'Cruz** (University of Sheffield, United Kingdom) Corresponding Author Aaron D'Cruz (University of Sheffield, United Kingdom)

SM02	Tribology-contact and friction	
Moderator	Ramin Aghababaei (Aarhus University, Denmark) / Lucia Nicola (University of Padova, Italy)	
Room	Room 306A, 3F	
TuSM0209	17:10~17:30	ON VISCOELASTIC ROUGH CONTACTS **Lucia Nicola** (University of Padova, Italy) Corresponding Author Lucia Nicola (University of Padova, Italy)
TuSM0210	17:30~17:50	SLIDING CONTACT OF PERIODIC SYSTEM OF ASPERITIES AND COATED VISCOELASTIC HALF-SPACE **Elena V. Torskaya** (Ishlinsky Institute for Problems in Mechanics RAS, Russia) Corresponding Author Elena V. Torskaya (Ishlinsky Institute for Problems in Mechanics RAS, Russia)
TuSM0211	17:50~18:10	DEALING WITH VISCOELASTIC CIRCULAR CONTACT PROBLEMS: A COMPHENSIVE BOUNDARY ELEMENT STRATEGY **Carmine Putignano** (Politecnico di Bari, Italy) Corresponding Author Carmine Putignano (Politecnico di Bari, Italy)
TuSM0212	18:10~18:30	ROUGHNESS EVOLUTION AND SHAKEDOWN IN REPEATED ELASTIC-PLASTIC ROUGH CONTACTS **Lucas Frérot** (Sorbonne Université, France) Corresponding Author Lucas Frérot (Sorbonne Université, France)
TuSM0213	18:30~18:50	A BEM-BASED ELECTRICAL CONTACT MODEL ON ROUGH SURFACES **YouHua Li** (Tianjin University, China) Corresponding Author Liao-Liang Ke (Tianjin University, China)

SM14	Computational solid mechanics	
Moderator	Lennaert van Veen (Ontario Tech University, Canada) / Sushil Mishra (Indian Institute of Technology Bombay, India)	
Room	Room 306B, 3F	
TuSM1424	17:10~17:30	STATISTICS GENERATED BY SOLUTIONS TO THE KURAMOTO-SIVASHINSKY EQUATION **Lennaert van Veen** (Ontario Tech University, Canada) Corresponding Author Lennaert van Veen (Ontario Tech University, Canada)
TuSM1425	17:30~17:50	NOVEL CRUCIFORM SPECIMEN DESIGN FOR IMPROVED PLASTIC STRAIN USING IN-PLANE BIAXIAL TESTING **Sushil Mishra** (Indian Institute of Technology Bombay, India) Corresponding Author Sushil Mishra (Indian Institute of Technology Bombay, India)
TuSM1426	17:50~18:10	CPFE & ANALYTICAL MODELLING OF THE MICRO STRUCTURAL BEHAVIOR OF PRECIPITATE HARDENED ALUMINUM ALLOY 2219 **Anantha Lakshmi Prasanna Tatavarty** (IIT Bombay, India) Corresponding Author Amit Singh (Indian Institute of Technology Bombay, India)
TuSM1427	18:10~18:30	DATA DRIVEN GENERALIZED POLYNOMIAL CHAOS EXPANSION FOR FORWARD UNCERTAINTY QUANTIFICATION **HOJUN CHOI** (Hanyang University, Korea, Republic of) Corresponding Author Dongjin Lee (Hanyang University, Korea, Republic of)
TuSM1428	18:30~18:50	CONFIGURATION FORCE FOR DISCLINATION **XIAOWEN LEI** (Tokyo Institute of Technology, Japan) Corresponding Author XIAOWEN LEI (Tokyo Institute of Technology, Japan)
TuSM1429	18:50~19:10	MECHANISTIC INVESTIGATION ON THE EVOLUTION OF BUBBLES IN UMO-ZR MONOLITHIC FUEL PLATES POST-BLISTERING **Changbing Tang** (Nuclear Power Institute of China, China) Corresponding Author Changbing Tang (Nuclear Power Institute of China, China)

SM05	Geomechanics and geophysics	
Moderator	Jidong Zhao (HKUST, Hong Kong SAR, China) / Mamoru Kikumoto (Yokohama National University, Japan)	
Room	Room 314, 3F	
TuSM0505	17:10~17:30	OCCURRENCE AND TRANSITION OF DEFORMATION BANDS IN HIGH-POROSITY SANDSTONE: INSIGHTS FROM MULTISCALE MODELING **Jidong Zhao** (HKUST, Hong Kong SAR, China) Corresponding Author Jidong Zhao (HKUST, Hong Kong SAR, China)
TuSM0506	17:30~17:50	SEA ICE SHEET BREAKAGE AND OCEAN CURRENTS USING BONDED DEM **Jose Andrade** (California Institute of Technology, USA) Corresponding Author Jose Andrade (California Institute of Technology, USA)
TuSM0507	17:50~18:10	SEQUENCES OF FAST AND SLOW RUPTURES ON A FRICTIONAL INTERFACE IN AN ELASTO-PLASTIC SOLID: APPLICATION TO EARTHQUAKE MODELING **Ahmed Ettaf Elbanna** (UIUC, USA) Corresponding Author Ahmed Ettaf Elbanna (UIUC, USA)
TuSM0508	18:10~18:30	NUMERICAL SIMULATION OF ATAMI DEBRIS-FLOW USING DEPTH INTEGRATED PARTICLE METHOD (DIPM) **Fazlul Habib Chowdhury** (University of Tsukuba, Japan) Corresponding Author Fazlul Habib Chowdhury (University of Tsukuba, Japan)
TuSM0509	18:30~18:50	PHASE-FIELD MODEL INVESTIGATION OF MIXED-MODE FRACTURE IN ROCK **Jinhyun Choo** (KAIST, Korea, Republic of) Corresponding Author Jinhyun Choo (KAIST, Korea, Republic of)
TuSM0510	18:50~19:10	PRECURSORY PREDICTORS OF THE ONSET OF STICK-SLIP FRICTIONAL INSTABILITY **Shengwang Hao** (Yanshan University, China) Corresponding Author Shengwang Hao (Yanshan University, China)

SM06	Impact mechanics and wave propagation	
Moderator	Guiji Wang (Institute of Fluid Physics, China Academy of Engineering Physics, China) / Yazhou Guo (Northwestern Polytechnical University, China)	
Room	Room 315, 3F	
TuSM0612	17:10~17:30	METASUBSTRATE-BASED PIEZOELECTRIC TRANSDUCERS FOR CONTROLLABLE EXCITATION AND RECEPTION OF SH GUIDED WAVE **Hongchen Miao, Miao** (Southwest Jiaotong University, China) Corresponding Author Hongchen Miao, Miao (Southwest Jiaotong University, China)
TuSM0613	17:30~17:50	IMPACT BEHAVIOR OF LIGHTWEIGHT POROUS STRUCTURES WITH FUNCTIONALLY GRADED TOPOLOGY **Hu Liu** (Southwest Jiaotong University, China) Corresponding Author Hu Liu (Southwest Jiaotong University, China)
TuSM0614	17:50~18:10	ADIABATIC SHEAR FAILURE OF TITANIUM ALLOYS AND POLYMETHYLMETHACRYLATE **Longhui Zhang** (South China University of Technology, China) Corresponding Author Longhui Zhang (South China University of Technology, China)
SM17	Metamaterials architectured materials and topology optimization	
Moderator	Oliver Weeger (TU Darmstadt, Germany) / Bin Niu (Dalian University of Technology, China)	
Room	Room 320A, 3F	
TuSM1718	17:10~17:30	MULTISCALE TOPOLOGY OPTIMIZATION OF COATED STRUCTURES WITH SPATIALLY ROTATING LATTICE INFILL **Bin Niu** (Dalian University of Technology, China) Corresponding Author Bin Niu (Dalian University of Technology, China)
TuSM1719	17:30~17:50	PARAMETERIZED HYPERELASTIC MATERIAL MODELING AND MULTISCALE TOPOLOGY OPTIMIZATION WITH PHYSICS-AUGMENTED NEURAL NETWORKS **Oliver Weeger** (TU Darmstadt, Germany) Corresponding Author Oliver Weeger (TU Darmstadt, Germany)
TuSM1720	17:50~18:10	APPLICATION OF THE STRUCTURAL GENOME DATABASE —— CONCURRENT MULTISCALE OPTIMIZATION BASED ON THE MOVING MORPHABLE COMPONENT METHOD **Wenyu Hao** (Dalian University of Technology, China) Corresponding Author Xu Guo (Dalian University of Technology, China)
TuSM1721	18:10~18:30	EXPLICIT OPTIMIZATION DESIGN OF COMPLEX THIN-WALLED STRUCTURES BASED ON COMPUTATIONAL CONFORMAL MAPPING AND MOVING MORPHABLE COMPONENT APPROACH **Chang Liu** (Dalian University of Technology, China) Corresponding Author Chang Liu (Dalian University of Technology, China)

SM12	Plasticity, viscoplasticity and creep	
Moderator	Lorenzo Bardella (University of Brescia, Italy) / Henrik Myhre Jensen (Aarhus University, Denmark)	
Room	Room 320B, 3F	
TuSM1208	17:10~17:30	EXPERIMENTAL AND NUMERICAL ANALYSIS OF BUCKLING OF THIN POLYETHYLENE STRUCTURE **Martin Kroon** (Linnaeus University, Sweden) Corresponding Author Martin Kroon (Linnaeus University, Sweden)
TuSM1209	17:30~17:50	STRENGTHENING EFFECT OF NANOPRECIPITATES ON TWINNED COPPER: A DISCRETE DISLOCATION DYNAMICS SIMULATION STUDY **Junshi Yu** (Southwest Jiaotong University, China) Corresponding Author Xu Zhang (Southwest Jiaotong University, China)
TuSM1210	17:50~18:10	ASYMPTOTICALLY MODELLING PLASTIC DEFORMATION IN SHEET METAL ROLLING **Mozhdeh Erfanian** (University of Warwick, United Kingdom) Corresponding Author Mozhdeh Erfanian (University of Warwick, United Kingdom)
TuSM1211	18:10~18:30	ADVANCES IN STRAIN-GRADIENT CRYSTAL PLASTICITY MODELING: A DIALOGUE WITH DISCRETE DISLOCATION DYNAMICS **Mohamed JEBAHI** (Arts et Metiers Institute of Technology, France) Corresponding Author Mohamed JEBAHI (Arts et Metiers Institute of Technology, France)
SM16	Soft materials and extremely deformable structures	
Moderator	Matthew David Butler (UCL, United Kingdom)	
Room	Room 321A, 3F	
TuSM1618	17:10~17:30	HIDDEN DAMAGE MODEL FOR REPRODUCING THE MULLINS EFFECT OF RUBBER **Daisuke Kudo** (Tohoku university, Japan) Corresponding Author Shotaro Yamada (Tohoku University, Japan)
TuSM1619	17:30~17:50	A FOLD-CUT-COMBINED STRUCTURE FOR MULTIFUNCTIONAL SOFT ROBOTS **Ganguk Lee** (Seoul National University, Korea, Republic of) Corresponding Author Ho-Young Kim (Seoul National University, Korea, Republic of)
TuSM1620	17:50~18:10	HEATING AND COOLING OF SWELLING HYDROGELS **Matthew David Butler** (UCL, United Kingdom) Corresponding Author Matthew David Butler (UCL, United Kingdom)
TuSM1621	18:10~18:30	4D TOPOLOGY OPTIMIZATION AND ITS EXTENSIONS: DESIGNING SOFT ROBOTS WITH COMPLEX STRUCTURES AND MOTIONS **Changyoung Yuhn** (Toyota Central R&D Labs., Inc., Japan) Corresponding Author Changyoung Yuhn (Toyota Central R&D Labs., Inc., Japan)

FM10	Geophysical and environmental fluid dynamics	
Moderator	Wontae Hwang (Seoul National University, Korea, Republic of)	
Room	Room 321B, 3F	
TuFM1017 (INVITED)	17:10~17:40	FAST PREDICTION FOR OCEANIC FLOWS: LATTICE- AND MORPHOLOGY-INFORMED MODELING **Jin Hwan Hwang** (Seoul National University, Korea, Republic of) Corresponding Author Jin Hwan Hwang (Seoul National University, Korea, Republic of)
TuFM1018 (INVITED)	17:40~18:10	PARTICLE-DRIVEN CONVECTION ABOVE A STRATIFIED LAYER **Megan Davies Wykes** (University of Cambridge, United Kingdom) Corresponding Author Megan Davies Wykes (University of Cambridge, United Kingdom)
TuFM1019	18:10~18:30	IDENTIFICATION OF SPATIALLY DISTRIBUTED RHEOLOGICAL PARAMETERS FOR VISCOPLASTIC GRAVITY CURRENTS **Mathieu Sellier** (University of Canterbury, New Zealand) Corresponding Author Mathieu Sellier (University of Canterbury, New Zealand)
TuFM1020	18:30~18:50	APPROXIMATELY-PERIODIC MOTION IN SALT-FINGERING CONVECTION **Shinya Okino** (Kyoto University, Japan) Corresponding Author Shinya Okino (Kyoto University, Japan)
TuFM1021	18:50~19:10	GRANULAR EROSION BY GROUNDWATER SEEPAGE **Jerome Neufeld** (University of Cambridge, United Kingdom) Corresponding Author Jerome Neufeld (University of Cambridge, United Kingdom)

SM04	Damage & fracture mechanics	
Moderator	Marco Paggi (IMT School for Advanced Studies Lucca, Italy) / Djimedo KONDO (Sorbonne University, France)	
Room	Room 322A, 3F	
TuSM0420	17:10~17:30	EXPLORING MIXED-MODE INTERACTIONS WITH A DUAL ACTUATOR DEVICE **Kenneth Liechti** (University of Texas Austin, USA) Corresponding Author Kenneth Liechti (University of Texas Austin, USA)
TuSM0421	17:30~17:50	EVOLUTION OF A NEAR-SURFACE HYDRAULIC FRACTURE **Zhi-Qiao Wang** (China University of Geosciences (Beijing), China) Corresponding Author Zhi-Qiao Wang (China University of Geosciences (Beijing), China)
TuSM0422	17:50~18:10	ANALYTIC CRACK KINKING TRANSFORMATIONS FOR WILLIAMS EXPANSION AND PRESSURIZED CRACK **Scott Grutzik** (Sandia National Laboratories, USA) Corresponding Author Scott Grutzik (Sandia National Laboratories, USA)
TuSM0423	18:10~18:30	T-STRESS IN BIMATERIAL LAYERS SUBJECTED TO EDGE LOADS **Roberta Massabo** (University of Genova, Italy) Corresponding Author Roberta Massabo (University of Genova, Italy)
TuSM0424	18:30~18:50	INCREMENTAL VARIATIONAL APPROACH TO THE COUPLING BETWEEN GRADIENT DAMAGE AND POROELASTICITY OF SATURATED MEDIA **Long Cheng** (University of Lorraine, France) Corresponding Author Long Cheng (University of Lorraine, France)

FM08	Flow instability and transition	
Moderator	Ivan Egorov (Moscow Institute of Physics and Technology, Russia) / Martin Oberlack (TU Darmstadt, Germany)	
Room	Room 322B, 3F	
TuFM0823	17:10~17:30	TRANSIENT ENERGY GROWTH AND RESOLVENT ANALYSES OF THE AXISYMMETRIC BOUNDARY LAYER WITH SUCTION AND INJECTION **MAYANK PRAVINKUMAR THUMMAR** (Marwadi University, India) Corresponding Author MAYANK PRAVINKUMAR THUMMAR (Marwadi University, India)
TuFM0824	17:30~17:50	EFFECT OF WALL TEMPERATURE RATIO ON GöRTLER INSTABILITY-INDUCED HYPERSONIC BOUNDARY LAYER TRANSITION **Si-Ying Li** (Beihang University, China) Corresponding Author Chong Pan (Beihang University, China)
TuFM0825	17:50~18:10	IMPROVEMENT OF A TURBULENCE MODEL FOR TRANSITIONAL BOUNDARY LAYER USING FIELD INVERSION **Mir Hamed Mohafez** (Gwanagju Institute of Science and Technology (GIST), Korea, Republic of) Corresponding Author Solkeun Jee (Gwangju Institute of Science and Technology, Korea, Republic of)
TuFM0826	18:10~18:30	NEW LINEAR UNSTABLE 3D OBLIQUE MODES SHOWN USING PLANE COUETTE FLOW **Martin Oberlack** (TU Darmstadt, Germany) Corresponding Author Martin Oberlack (TU Darmstadt, Germany)
TuFM0827	18:30~18:50	DIRECT NUMERICAL SIMULATION OF LAMINAR-TURBULENT TRANSITION IN A FLAT PLATE BOUNDARY LAYER IN THE PRESENCE OF MACH WAVE **Ivan Egorov** (Moscow Institute of Physics and Technology, Russia) Corresponding Author Ivan Egorov (Moscow Institute of Physics and Technology, Russia)

FM06	Drops, bubbles and interfaces	
Moderator	Kaitao Tang (University of Oxford, United Kingdom) / Marco Edoardo Rosti (Okinawa Institute of Science and Technology Graduate University, Japan)	
Room	Room 323A, 3F	
TuFM0622	17:10~17:30	IMPACT FORCE OF DROPLET ON ELASTIC SUBSTRATES **Yuto Yokoyama** (Tokyo University of Agriculture and Technology, Japan) Corresponding Author Yuto Yokoyama (Tokyo University of Agriculture and Technology, Japan)
TuFM0623	17:30~17:50	HIGH-SPEED DROPLET IMPACT ON A RIGID SURFACE **Erin May Burrell** (University of Michigan, USA) Corresponding Author Erin May Burrell (University of Michigan, USA)
TuFM0624	17:50~18:10	DROPLET IMPACT OF STABLE WATER-IN-OIL MICRO-EMULSIONS ON HEATED SUBSTRATE **Joita Chakraborty** (Indian Institute of Science, India) Corresponding Author Saptarshi Basu (Indian Institute of Science, Bengaluru, India)
TuFM0625	18:10~18:30	ON THE LARGE BUBBLE FORMATION BY DROP IMPACT ONTO A LIQUID POOL WITH A RING-SHAPED CONFINEMENT **Bharanitharan Kuruchanvalasu Jambulingam** (National Taiwan University, China-Taipei) Corresponding Author An-Bang Wang (National Taiwan University, China-Taipei)
TuFM0626	18:30~18:50	EFFECTS OF GRAVITY ON THE LIQUID RIM SPLASHING BEHAVIOUR **Kaitao Tang** (University of Oxford, United Kingdom) Corresponding Author Kaitao Tang (University of Oxford, United Kingdom)
TuFM0627	18:50~19:10	DEVELOPMENT OF MACHINE LEARNING BASED PREDICTION MODEL FOR PIEZOELECTRIC INKJET JETTING **Se Yoon Lim** (Sungkyunkwan Univ., Korea, Republic of) Corresponding Author Han Seo Ko (Sungkyunkwan University, Korea, Republic of)

FM05	Convection	
Moderator	Quan ZHOU (Shanghai University, China) / Xiaojue Zhu (Max Planck Institute for Solar System Research, Germany)	
Room	Room 323B, 3F	
TuFM0515	17:10~17:30	RA-DEPENDENCE OF THE CRITICAL VIBRATION FREQUENCY IN VIBRATING THERMAL TURBULENCE **Quan ZHOU** (Shanghai University, China) Corresponding Author Quan ZHOU (Shanghai University, China)
TuFM0516	17:30~17:50	THERMOELECTRIC CONVECTION IN A FINITE CYLINDRICAL ANNULUS UNDER MICROGRAVITY **Changwoo Kang** (Jeonbuk National University, Korea, Republic of) Corresponding Author Changwoo Kang (Jeonbuk National University, Korea, Republic of)
TuFM0517	17:50~18:10	HEAT TRANSFER CHARACTERISTICS AND COOLING METHODS OF ELECTRIC HEAT SOURCES IN A HYPERLOOP SYSTEM **Minsoo Kang** (hanyang university, Korea, Republic of) Corresponding Author Simon Song (Hanyang University, Korea, Republic of)
TuFM0518	18:10~18:30	HEAT TRANSPORT SCALING IN RAYLEIGH-DARCY CONVECTION **Xiaojue Zhu** (Max Planck Institute for Solar System Research, Germany) Corresponding Author Xiaojue Zhu (Max Planck Institute for Solar System Research, Germany)
TuFM0519	18:30~18:50	EXPERIMENTAL STUDY OF ROUGHNESS EFFECT ON THE THERMAL TRANSPORT AND FLOW STRUCTURES IN FILM COOLING **Wenwu Zhou** (Shanghai Jiao Tong University, China Corresponding Author Wenwu Zhou (Shanghai Jiao Tong University, China
TuFM0520	18:50~19:10	NUMERICAL AND EXPERIMENTAL STUDY OF THE ELECTRO-THERMO-CONVECTION IN A SQUARE CAVITY FILLED WITH DIELECTRIC LIQUID WITH ALTERNATED ELECTRODES ARRANGEMENT **Dong Hwi Kim** (Kyungpook National University, Korea, Republic of) Corresponding Author Il Seouk Park (Kyungpook National University, Korea, Republic of)

FM04	Compressible flow	
Moderator	Daniel T. H. New (Nanyang Technological University, Singapore) / ABHILASH SURYAN RESIKENDRAN (College of Engineering Trivandrum, India)	
Room	Room 324A, 3F	
TuFM0419	17:10~17:30	CONVECTION FROM FINE WIRES IN THE SLIP FLOW REGIME **Diogo Barros** (Aix Marseille University, France) Corresponding Author Diogo Barros (Aix Marseille University, France)
TuFM0420	17:30~17:50	QUASI-1D ANALYTICAL AND NUMERICAL STUDY ON COMPRESSIBLE FLOW PHENOMENA OF AN OBJECT IN A STRAIGHT PIPE **Jihoon Kim** (Korea University (Korea, Republic of) Corresponding Author Jaiyoung Ryu (Korea University, Korea, Republic of)
TuFM0421	17:50~18:10	STUDY ON SHOCK TRAIN OSCILLATIONS IN A RECTANGULAR DIVERGING ISOLATOR USING LARGE EDDY SIMULATION **Guang Zhang** (Zhejiang Sci-Tech University, China) Corresponding Author Kexin Wu (Zhejiang Sci-Tech University, China)
TuFM0422	18:10~18:30	A MODEL OF EJECTA FROM UNSUPPORTED WAVE SHOCKED SURFACE **chao liu** (Institute of Applied Physics and Computational Mathematics, China) Corresponding Author chao liu (Institute of Applied Physics and Computational Mathematics, China)
TuFM0423	18:30~18:50	INTERACTION OF STOCHASTIC SHOCK WAVES WITH DENSITY GRADIENTS **Joaquim P. Jossy** (Indian Institute of Technology Delhi, India) Corresponding Author Joaquim P. Jossy (Indian Institute of Technology Delhi, India)
TuFM0445	18:50~19:10	ENTRY IMPULSE WAVES EMITTED FROM THE ENTRANCE OF HIGH-SPEED RAILWAY TUNNEL **Taeho Kim** (Andong National University, Korea, Republic of) Corresponding Author HEUY DONG KIM (Andong National University, Korea, Republic of)

FM02	Boundary layers	
Moderator	Song Fu (Tsinghua University, China) / Ming Dong (Institute of Mechanics, Chinese Academy of Sciences, China)	
Room	Room 324B, 3F	
TuFM0219	17:10~17:30	STABILITY CHARACTERISTICS OF CROSSFLOW MODES IN HYPERSONIC BOUNDARY LAYER WITH EXPANSION CORNER **Peisen Lu** (Tsinghua University, China) Corresponding Author Song Fu (Tsinghua University, China)
TuFM0220	17:30~17:50	TRANSITION CONTROL OF HYPERSONIC CROSSFLOW BOUNDARY LAYER USING SUBCRITICAL STATIONARY VORTICES **Gen Li** (Tianjin University, China) Corresponding Author Caihong Su (Tianjin University, China)
TuFM0221	17:50~18:10	ROUGHNESS INDUCED SUBCRITICAL TRANSITION OF HIGH-SPEED ATTACHMENT-LINE BOUNDARY LAYERS OVER A SWEPT BLUNT BODY **Youcheng Xi** (Tsinghua University, China) Corresponding Author Youcheng Xi (Tsinghua University, China)
TuFM0222	18:10~18:30	TRANSITION INDUCED BY A BURSTING VORTEX RING IN CHANNEL FLOW **Boyuan Wang** (Peking University, China) Corresponding Author Yue Yang (Peking University, China)
TuFM0223	18:30~18:50	LAMINAR-TURBULENT TRANSITION IN A BUMP-DISTORTED BOUNDARY LAYER **Rui Wang** (Shanghai Jiao Tong University, China) Corresponding Author Hui Xu (Shanghai Jiaotong University, China)

FM13	Non-Newtonian and complex fluids	
Moderator	Yoel Forterre (Aix-Marseille University, France) / Ian Frigaard (University of British Columbia, Canada)	
Room	Room 325A, 3F	
TuFM1316	17:10~17:30	DYNAMICS AND RHEOLOGY OF DENSE SUSPENSIONS OF HIGHLY CONDUCTIVE PARTICLES IN AN ELECTRIC FIELD: TOWARDS ACTIVE RHEOLOGY CONTROL **Jae Sung Park** (University of Nebraska - Lincoln, USA) Corresponding Author Jae Sung Park (University of Nebraska - Lincoln, USA)
TuFM1317	17:30~17:50	DEVELOPMENT OF RHEO-OPTICAL TECHNIQUE FOR MEASURING UNIAXIALLY EXTENDING WORM-LIKE MICELLAR SOLUTIONS **Masakazu Muto** (Nagoya Institute of Technology, Japan) Corresponding Author Masakazu Muto (Nagoya Institute of Technology, Japan)
TuFM1318	17:50~18:10	DROPLET FORMATION AND MENISCUS BEHAVIOR IN SUSPENSION LIQUID DRIPPING **Kishorkumar Sarva** (IISc Bangalore, India) Corresponding Author Gaurav Tomar (Professor, India)
TuFM1319	18:10~18:30	BOUNDARY CONDITIONS ALTER INHOMOGENEITY AND STRESS FLUCTUATIONS IN SHEAR-THICKENING SUSPENSIONS **mengfei hu** (xi'anjiaotong university, China) Corresponding Author Song-Chuan Zhao (Xi'an Jiaotong University, China)
TuFM1320	18:30~18:50	NEWTONIAN INK PRINTING IN VISCOPLASTIC MATRIX **Hyejoon Jun** (KAIST, Korea, Republic of) Corresponding Author Hyoungsoo Kim (KAIST, Republic of)

FM07	Multiphase and particle-laden flows	
Moderator	Ruifeng Hu (Lanzhou University, China) / Jacek Pozorski (Polish Academy of Sciences, Poland)	
Room	Room 325B, 3F	
TuFM0724	17:10~17:30	WALL-MODEL LARGE EDDY SIMULATION WITH TRANSPORT OF PARTICLES DISPERSED IN TURBULENT CHANNEL FLOWS **Francesco Picano** (University of Padova, Italy) Corresponding Author Francesco Picano (University of Padova, Italy)
TuFM0725	17:30~17:50	STOCHASTIC MODELING OF FLUID FORCES ON A FINITE-SIZE SPHERICAL PARTICLE IN TURBULENCE **Yuqi Wang** (LanZhou University, China) Corresponding Author Ruifeng Hu (Lanzhou University, China)
TuFM0726	17:50~18:10	LARGE-EDDY SIMULATION OF PARTICLE-LADEN ISOTROPIC TURBULENCE **Jacek Pozorski** (Polish Academy of Sciences, Poland) Corresponding Author Jacek Pozorski (Polish Academy of Sciences, Poland)
TuFM0727	18:10~18:30	PHYSCIS ADDED NEURAL NETWORKS (PANNS) FOR TIME-DEPENDENT PREDICTION OF 3D RECONSTRUCTED DROPLET EVAPORATION **Seungcheol Ko** (Yonsei Univ., Korea, Republic of) Corresponding Author Joon Sang Lee (Yonsei Univ., Korea, Republic of)
FM06	Drops, bubbles and interfaces	
Moderator	Tian Long (Sorbonne Université, France) / Gherhardt Ribatski (University of Sao Paulo, Brazil)	
Room	Room 325C, 3F	
TuFM0628	17:10~17:30	ON THE MODELING OF PHASE CHANGE FLOWS BASED ON THE EDGE-BASED INTERFACE TRACKING (EBIT) METHOD **Tian Long** (Sorbonne Université, France) Corresponding Author Tian Long (Sorbonne Université, France)
TuFM0629	17:30~17:50	SIMULATIONS OF PHASE CHANGE EFFECTS IN SHOCK-DROPLET INTERACTIONS **Shucheng Pan** (Northwestern Polytechnical University, China) Corresponding Author Shucheng Pan (Northwestern Polytechnical University, China)
TuFM0630	17:50~18:10	EXPERIMENTAL INVESTIGATION OF THE CRITICAL HEAT FLUX UNDER SUB-COOLED AND SATURATED FLOW BOILING CONDITIONS USING HIGH-SPEED DIAGNOSTICS Gherhardt Ribatski (University of Sao Paulo, Brazil) Corresponding Author Mauricio Mani Marinheiro (University of Sao Paulo, Brazil)

FM14	Computational fluid dynamics	
Moderator	Wilson Lu (University of Melbourne, Australia) / Shang-Gui Cai (Institute of Mechanics, Chinese Academy of Sciences, China)	
Room	Room 325D, 3F	
TuFM1416	17:10~17:30	INFLUENCE OF UPSTREAM TURBULENCE ON CONFINED CYLINDER FLOWS **Wilson Lu** (University of Melbourne, Australia) Corresponding Author Wilson Lu (University of Melbourne, Australia)
TuFM1417	17:30~17:50	IMMERSED BOUNDARY METHOD FOR HIGH REYNOLDS NUMBER COMMPLEX TURBULENT FLOWS **Shang-Gui Cai** (Institute of Mechanics, Chinese Academy of Sciences, China) Corresponding Author Shang-Gui Cai (Institute of Mechanics, Chinese Academy of Sciences, China)
TuFM1418	17:50~18:10	FORMULATIONS OF AN INTERPOLATED HYBRID RANS-LES SCHEME FOR TURBULENT FLUID FLOWS **ASHUTOSH KUMAR JAISWAL** (Indian Institute of Technology Delhi, India) Corresponding Author ASHUTOSH KUMAR JAISWAL (Indian Institute of Technology Delhi, India)
TuFM1419	18:10~18:30	AN ANALYSIS OF FLOW DYNAMICS AND THERMAL PERFORMANCE WITHIN INTERNAL COOLING CHANNELS USING SEPARATED RIBS **Van-Hoang Nguyen** (Seoul National University of Science and Technology, Korea, Republic of) Corresponding Author Sung Goon Park (Seoul National University of Science and Technology, Korea, Republic of)
TuFM1420	18:30~18:50	HYDROGEN FLOW CHARACTERISTICS WITH MASS FLOW AMPLIFIER IN L-SHAPED PIPE **Hyun Su Jeong** (Sungkyunkwan University, Korea, Republic of) Corresponding Author Youn-Jea Kim (Sungkyunkwan University, Korea, Republic of)
MS06	Fluid dynamics of disease transmission	
Moderator	Roberto Verzicco (Univ. Rome Tor Vergata, Italy) / L. Bourouiba (MIT, USA)	
Room	Room 503, 5F	
TuMS0605	17:10~17:30	TOWARDS A RAPID PREDICTION FRAMEWORK FOR AEROSOL TRANSMISSION OF DISEASES IN INDOOR SPACES **Sivaramakrishnan Balachandar** (University of Florida, USA) Corresponding Author Sivaramakrishnan Balachandar (University of Florida, USA)
TuMS0606	17:30~17:50	ON MODELING THE MECHANICS OF SMALLPOX TRANSMISSION THROUGH INHALED PATHOGENS IN RESPIRATORY DOMAINS **Saikat Basu** (South Dakota State University, USA) Corresponding Author Saikat Basu (South Dakota State University, USA)
TuMS0607	17:50~18:10	OUTCOMES OF THE 2024 INTERNATIONAL CFD CHALLENGE ON LONG-RANGE INDOOR DISPERSION OF PATHOGEN-LADEN AEROSOLS **Jordi Pallares** (Universitat Rovira i Virgili, Spain) Corresponding Author Jordi Pallares (Universitat Rovira i Virgili, Spain)

MS07	Non-reacting and reacting fluid dynamics for sustainable propulsion systems	
Moderator	Adam Michael Steinberg (Georgia Institute of Technology, USA)	
Room	Room 504, 5F	
TuMS0705	17:10~17:30	DUAL SWIRLED NON-PREMIXED H2/AIR FLAME RESPONSE TO AIR AND FUEL FORCING **Hugo Paniez** (Institut de Mécanique des Fluides de Toulouse - INP Toulouse, France) Corresponding Author Hugo Paniez (Institut de Mécanique des Fluides de Toulouse - INP Toulouse, France)
TuMS0706	17:30~17:50	LEAN BLOWOFF LIMITS AND EMISSIONS TRENDS IN A MULTI-ELEMENT COMBUSTOR WITH VARIABLE REACTANT MIXEDNESS AND VAPORIZATION **Samuel E Wonfor** (Georgia Institute of Technology, USA) Corresponding Author Adam M Steinberg (Georgia Institute of Technology, USA)
TuMS0707	17:50~18:10	COMPARATIVE STUDY OF THE NOISE GENERATED BY LAMINAR HYDROGEN AND METHANE-HYDROGEN FLAMES **Francesco Gabriele Schiavone** (Polytechnic University of Bari, Italy) Corresponding Author Francesco Gabriele Schiavone (Polytechnic University of Bari, Italy)
TuMS0708	18:10~18:30	10 KHZ, MULTI-SPECIES, 2D RAMAN SCATTERING MEASUREMENTS FOR ANALYSIS OF LEAN FLAME BLOWOFF FOR TURBULENT PREMIXED FLAMES AT ELEVATED PRESSURES **Manya Subbaramaiah** (Georgia Institute of Technology, USA) Corresponding Author Manya Subbaramaiah (Georgia Institute of Technology, USA)
TuMS0709	18:30~18:50	DILUTION AND PREHEATING IMPACTS ON FLAME STRUCTURE AND IGNITION OF A GAS TURBINE MODEL COMBUSTOR **Amir Agha Beige** (Sharif University of Technology, Iran) Corresponding Author Amir Mardani (Sharif university of Technology, Iran)
TuMS0710	18:50~19:10	INFLUENCE OF RADIATION ON LAMINAR PREMIXED AMMONIA/AIR FLAMES AT ELEVATED TEMPERATURE AND PRESSURE **Seif-Eddine Mehdi Zitouni** (Université Orleans, France) Corresponding Author Seif-Eddine Mehdi Zitouni (Université Orleans, France)

MS05	Data-driven mechanics and artificial intelligence	
Moderator	**Bernd R. Noack** (Harbin Institute of Technology, China) / **Yanchuan Hui** (Shenyang University, China)	
Room	Room 505, 5F	
TuMS0510	17:10~17:30	ON THE COUPLING OF DATA-DRIVEN COMPUTING AND MODEL-DRIVEN COMPUTING WITH HIERARCHICAL BEAM MODEL **Yanchuan Hui** (Shenyang University, China) Corresponding Author Yanchuan Hui (Shenyang University, China)
TuMS0511	17:30~17:50	SYNERGISTIC COMPUTATIONAL MECHANICS AND UNCERTAINTY QUANTIFICATION FOR THE DIGITAL TWINNING OF CLIMATE CHANGE RESILIENT INFRASTRUCTURE **Zhiye Li** (Stanford Universtiy, USA) Corresponding Author Zhiye Li (Stanford Universtiy, USA)
TuMS0512	17:50~18:10	DATA-DRIVEN LIFT REGULATION OF EXTREME VORTEX-AIRFOIL INTERACTIONS **Kai Fukami** (University of California, Los Angeles, USA) Corresponding Author Kai Fukami (University of California, Los Angeles, USA)
TuMS0513	18:10~18:30	ADAPTIVE MATERIAL DATA SET ENRICHMENT FOR MULTI-SCALE ANALYSIS. **Erik Christian Prume** (RWTH Aachen University, Germany) Corresponding Author Erik Christian Prume (RWTH Aachen University, Germany)
TuMS0514	18:30~18:50	UNIFYING THE DESIGN SPACE AND OPTIMIZING LINEAR AND NONLINEAR TRUSS METAMATERIALS BY GENERATIVE MODELING **Li Zheng** (ETH Zurich, Switzerland) Corresponding Author Dennis Kochmann (ETH Zurich, Switzerland)
TuMS0515	18:50~19:10	GRAVITY CURRENTS RECONSTRUCTION WITH PHYSICS INFORMED NEURAL NETWORKS FROM SYNTHETIC AND EXPERIMENTAL DATA **Yoann Cheny** (LEMTA / CNRS, France) Corresponding Author Yoann Cheny (LEMTA / CNRS, France)

SM09	Additive manufacturing	
Moderator	**Jesper Hattel** (Technical University of Denmark (DTU), Denmark) / **Ferdinando Auricchio** (University of Pavia, Italy)	
Room	Room 506, 5F	
TuSM0904	17:10~17:30	INFLUENCE OF SIMULATION PARAMETERS ON THERMOMECHANICAL MODELLING OF METAL ADDITIVE MANUFACTURING WITH THE FLASH HEATING METHOD **Alberto Santi** (Technical University of Denmark, Denmark) Corresponding Author Alberto Santi (Technical University of Denmark, Denmark)
TuSM0905	17:30~17:50	ACOUSTIC FIELD ASSISTED AEROSOL JET PRINTING **Roxanne Kate Agtang Balanay** (University of Hawaii at Manoa, USA) Corresponding Author Tyler Ray (University of Hawaii at Manoa, USA)
TuSM0906	17:50~18:10	MULTIPHYSICS MODELING OF PROCESS-STRUCTURE-PROPERTY LINKAGES IN LASER POWDER BED FUSION OF TI-6AL-4V INCORPORATING HIERARCHICAL MICROSTRUCTURE **Kang-Hyun Lee** (Seoul National University, Korea, Republic of) Corresponding Author Gun Jin Yun (Seoul National University, Korea, Republic of)
TuSM0907	18:10~18:30	RECENT PROGRESS OF COHERENT GRADIENT SENSOR (CGS) NEW TECHNIQUES: FROM THE THEORETICAL FRONTIER TO PRACTICAL ADDITIVE MANUFACTURING **Qixian Zhong** (Tsinghua University, China) Corresponding Author Huimin Xie (Tsinghua University, China)
TuSM0908	18:30~18:50	A SYSTEMATIC INVESTIGATION OF LASER BEAM SHAPE VARIATION ON THE THERMAL AND MELT POOL DYNAMICS IN LASER POWDER BED FUSION OF 316L STAINLESS STEEL **Wayne Edgar Alphonso** (DTU, Denmark) Corresponding Author Wayne Edgar Alphonso (DTU, Denmark)
TuSM0909	18:50~19:10	ANISOTROPIC FATIGUE PROPERTIES ANALYSIS OF LASER ADDITIVE MANUFACTURED GH4169 SUPERALLOY **Zhenan ZHAO** (Zhejiang University, China) Corresponding Author Weizhu Yang (Northwestern Polytechnical University, China)

Time	Room	Code	Program	
Wednesday, August 28, 2024				
07:30 ~	Registration			
08:00 ~ 10:00	Oral Presentation 6			221p
	Auditorium, 5F	FM15	Turbulence	221p
	Room 211, 2F	FS05	Fluid structure interactions	222p
	Room 214, 2F	FS09	Reduced order modeling of fluids and solids	223p
	Room 217, 2F	FS03	Nonlinear dynamics and pattern formation	224p
	Room 219, 2F	FS07	Optimization for solids and fluids	225p
	Room 306A, 3F	FM11	Low Reynolds number flows and suspension	226p
	Room 306B, 3F	SM08	Phase transformations and thermomechanical phenomena	226p
	Room 314, 3F	SM13	Stability and instability of materials and structures	227p
	Room 315, 3F	SM15	Vibrations and control of structures	228p
	Room 320A, 3F	SM17	Metamaterials architectured materials and topology optimization	229p
	Room 320B, 3F	SM18	Nonlinear dynamics for design	230p
	Room 321A, 3F	SM01	Biomechanics and biomaterials	231p
	Room 321B, 3F	SM03	Elasticity	232p
	Room 322A, 3F	SM04	Damage & fracture mechanics	233p
	Room 322B, 3F	FM08	Flow instability and transition	234p
	Room 323A, 3F	FM06	Drops, bubbles and interfaces	235p
	Room 323B, 3F	FM05	Convection	236p
	Room 324A, 3F	FM05	Convection	237p
	Room 324B, 3F	FM02	Boundary layers	238p
	Room 325A, 3F	FM13	Non-Newtonian and complex fluids	239p
	Room 325B, 3F	FM03	Zero-emission combustion	240p
	Room 325C, 3F	FM06	Drops, bubbles and interfaces	241p
	Room 325D, 3F	FM14	Computational fluid dynamics	242p
	Room 503, 5F	MS05	Data-driven mechanics and artificial intelligence	243p
	Room 504, 5F	MS05	Data-driven mechanics and artificial intelligence	244p
	Room 505, 5F	MS05	Data-driven mechanics and artificial intelligence	245p
	Room 506, 5F	SM07	Multi-component, composites and hierarchical materials	246p
10:00 ~ 10:20	Coffee Break			
10:20 ~ 11:20	Convention Hall, 5F	PL03	Hill prize lecture - Yonggang Huang	246p
11:20 ~ 12:20	Convention Hall, 5F	PL04	Batchelor Prize lecture - Charles Meneveau	246p
12:20 ~ 19:00	Congress Tour			

Wed. (Aug. 28)

Oral Presentation 6

FM15	Turbulence	
Moderator	**Yongmann Chung** (University of Warwick, United Kingdom) / **Oliver Buxton** (Imperial College London, United Kingdom)	
Room	Auditorium, 5F	
WeFM1530	08:00~08:20	INLET-REYNOLDS NUMBER EFFECT ON A PLANAR JET **Giovanni Soligo** (Okinawa Institute of Science and Technology Graduate University, Japan) Corresponding Author Giovanni Soligo (Okinawa Institute of Science and Technology Graduate University, Japan)
WeFM1531	08:20~08:40	ON THE EXTREME WALL SHEAR STRESS EVENTS IN A TURBULENT PIPE FLOW **Haoqi Fei** (Shanghai JiaoTong University, China) Corresponding Author Hui Xu (Shanghai Jiaotong University, China)
WeFM1532	08:40~09:00	THE ENTRAINMENT OF MASS, MOMENTUM, AND KINETIC ENERGY FROM A TURBULENT BACKGROUND INTO A SPATIALLY-EVOLVING PLANAR WAKE **Oliver Buxton** (Imperial College London, United Kingdom) Corresponding Author Oliver Buxton (Imperial College London, United Kingdom)
WeFM1533	09:00~09:20	INFLUENCE OF FREE STREAM TURBULENCE AND POROSITY ON POROUS DISC WAKES **Martin Bourhis** (Imperial College London, United Kingdom) Corresponding Author Martin Bourhis (Imperial College London, United Kingdom)
WeFM1534	09:20~09:40	UNIFORM-MOMENTUM ZONES IN ACCELERATING TURBULENT CHANNEL FLOW **Yongmann Chung** (University of Warwick, United Kingdom) Corresponding Author Yongmann Chung (University of Warwick, United Kingdom)
WeFM1535	09:40~10:00	TURBULENT DISPERSION OF PARTICULATES IN THE AHMED BODY WAKE AND EFFECTS OF MOVING GROUND **Murali R Cholemari** (Indian Institute of Technology Delhi, India) Corresponding Author Murali R Cholemari (Indian Institute of Technology Delhi, India)

FS05	Fluid structure interactions	
Moderator	Jing Tang Xing (University of Southampton, United Kingdom) Lin Fu (The Hong Kong University of Science and Technology, Hong Kong SAR, China)	
Room	Room 211, 2F	
WeFS0530	08:00~08:20	AN UPDATED LAGRANGIAN PARTICLE HYDRODYNAMICS (ULPH) - NON-ORDINARY STATE-BASED PERIDYANMICS COUPLING APPROACH FOR MODELING FLUID-STRUCTURE INTERACTION PROBLEMS **Xin Lai** (Wuhan University of Technology, China) Corresponding Author Xin Lai (Wuhan University of Technology, China)
WeFS0531	08:20~08:40	A NEW ALGORITHM FOR FLUID-STRUCTURE INTERACTIONS INVOLVING FRACTURE **Mohd Furquan** (Indian Institute of Technology Delhi, India) Corresponding Author Mohd Furquan (Indian Institute of Technology Delhi, India)
WeFS0532	08:40~09:00	NUMERICAL ANALYSIS OF TWO TANDEM WIND TURBINES UNDER SHEARED INFLOW USING ACTUATOR LINE MODEL **Radouan Boukharfane** (UM6P, Morocco) Corresponding Author Radouan Boukharfane (UM6P, Morocco)
WeFS0533	09:00~09:20	A DENSITY SMOOTHING B-SPLINE MATERIAL POINT METHOD FOR FLUID-STRUCTURE INTERACTION PROBLEMS **Zheng Sun** (Jiangxi University of Science and Technology, China) Corresponding Author Zheng Sun (Jiangxi University of Science and Technology, China)
WeFS0534	09:20~09:40	3D FLUID-SHELL INTERACTION FRAMEWORK BASED ON MESHLESS METHODS **Tianrun Gao** (The Hong Kong University of Science and Technology, Hong Kong SAR, China) Corresponding Author Lin Fu (The Hong Kong University of Science and Technology, Hong Kong SAR, China)
WeFS0535	09:40~10:00	FINITE ELEMENT MODELLING AND DYNAMIC STIFFNESS OF FLUID-POROUS MATERIAL DYNAMIC INTERACTION SYSTEMS **hongling qin** (Fuzhou University, China) Corresponding Author Jing Tang Xing (University of Southampton, United Kingdom)

FS09	Reduced order modeling of fluids and solids	
Moderator	Majdi AZAIEZ (Bordeaux INP, France) / Ellen Mary Jolley (University of Warwick, United Kingdom)	
Room	Room 214, 2F	
WeFS0906 (INVITED)	08:00~08:30	DYNAMICS OF AN ICE PARTICLE SUBMERGED IN WATER **Ellen Mary Jolley** (University of Warwick, United Kingdom) Corresponding Author Ellen Mary Jolley (University of Warwick, United Kingdom)
WeFS0907 (INVITED)	08:30~09:00	LEAST-SQUARES PRESSURE RECOVERY IN REDUCED ORDER METHODS FOR INCOMPRESSIBLE FLOWS **Majdi AZAIEZ** (Bordeaux INP, France) Corresponding Author Majdi AZAIEZ (Bordeaux INP, France)
WeFS0908	09:00~09:20	VORTEX-INDUCED VIBRATION OF AN UNDERWATER FLEXIBLE CYLINDER USING A STOCHASTIC WAKE OSCILLATOR MODEL **Rameezraja Badhurshah** (Newcastle University, United Kingdom) Corresponding Author Rameezraja Badhurshah (Newcastle University, United Kingdom)
WeFS0909	09:20~09:40	PHASE-BASED ANALYSIS OF SYNCHRONIZATION BETWEEN THREE-DIMENSIONAL CYLINDER WAKE AND FORCED OSCILLATION **Youngjae Kim** (University of California, Los Angeles, USA) Corresponding Author Youngjae Kim (University of California, Los Angeles, USA)
WeFS0910	09:40~10:00	STABILITY OF VERTICALLY-TRAVELING TETHERED AEROSTATS **Abhinav Ravindra Dehadrai** (Amrita Vishwa Vidyapeetham, India) Corresponding Author Abhinav Ravindra Dehadrai (Amrita Vishwa Vidyapeetham, India)

FS03	Nonlinear dynamics and pattern formation	
Moderator	Tamas Kalmar-Nagy (Budapest University of Technology and Economics, Hungary) Oleg Gendelman (Technion - Israel Institute of Technology, Israel)	
Room	Room 217, 2F	
WeFS0306 (INVITED)	08:00~08:30	TRANSIENT NONLINEAR WAVE PHENOMENA IN DISCRETE ACTIVE MEDIA **Yuli Starosvetsky** (Technion, Israel) Corresponding Author Yuli Starosvetsky (Technion, Israel)
WeFS0307 (INVITED)	08:30~09:00	INVARIANT SOLUTIONS AND THEIR GHOSTS IN WALL-BOUNDED FLOWS: A VARIATIONAL APPROACH **Tobias M Schneider** (EPFL, Switzerland) Corresponding Author Tobias M Schneider (EPFL, Switzerland)
WeFS0308	09:00~09:20	ON STRESS EFFECTS ON SURFACE CHEMICAL PATTERNS IN ELASTIC SOLIDS **Francisco de Souza Forte Neto** (Universidade Federal do Rio de Janeiro, Brazil) Corresponding Author Francisco de Souza Forte Neto (Universidade Federal do Rio de Janeiro, Brazil)
WeFS0309	09:20~09:40	ANALYTICAL SOLUTION OF LARGE-SCALE CIRCULATION SURROUNDING ISOLATED TURBULENT BAND IN PLANE POISEUILLE FLOW **Chihang Liu** (Peking University, China) Corresponding Author Jianjun Tao (Peking University, China)
WeFS0310	09:40~10:00	ANOMYLOUS CONTACT NUCLEATION DURING IMPACT OF GLYCEROL-WATER DROPLETS **John Martin Kolinski** (EPFL, Switzerland) Corresponding Author John Martin Kolinski (EPFL, Switzerland)

FS07	Optimization for solids and fluids	
Moderator	Konstantinos Poulios (Technical University of Denmark, Denmark)	
Room	Room 219, 2F	
WeFS0710	08:00~08:20	TOPOLOGY OPTIMIZATION OF PNEUMATICALLY-ACTUATED WALKING/CLIMBING SOFT ROBOTS **Hiroki Kobayashi** (Toyota Central R&D Labs., Inc., Japan) Corresponding Author Hiroki Kobayashi (Toyota Central R&D Labs., Inc., Japan)
WeFS0711	08:20~08:40	A POROHYPERELASTIC TOPOLOGY OPTIMIZATION FORMULATION FOR SOFT PNEUMATIC ACTUATORS **Konstantinos Poulios** (Technical University of Denmark, Denmark) Corresponding Author Konstantinos Poulios (Technical University of Denmark, Denmark)
WeFS0712	08:40~09:00	TOPOLOGY OPTIMIZATION OF THERMO-MECHANICAL SWITCHES **Anna Dalklint** (Technical University of Denmark, Denmark) Corresponding Author Anna Dalklint (Technical University of Denmark, Denmark)
WeFS0713	09:00~09:20	OPTIMAL DESIGN OF META-MATERIALS WITH BIOMIMETIC PATTERNS **Minhyung Lee** (Gachon University, Korea, Republic of) Corresponding Author Keunhwan Park (Gachon University, Korea, Republic of)
WeFS0714	09:20~09:40	DENSITY-BASED TOPOLOGY OPTIMIZATION USING AN IMPLICIT MATERIAL POINT METHOD **Sanghyeon Park** (Ulsan National Institute of Science and Technology, Korea, Republic of) Corresponding Author Hayoung Chung (Ulsan National Institute of Science and Technology, Korea, Republic of)
WeFS0715	09:40~10:00	EXPLICIT MULTI-MATERIAL TOPOLOGY OPTIMIZATION OF THE LARGE DEFORMING HYPERELASTIC STRUCTURES **Byeonghyeon Goh** (Ulsan National Institute of Science and Technology, Korea, Republic of) Corresponding Author Hayoung Chung Ulsan National Institute of Science and Technology, Korea, Republic of)

FM11	Low Reynolds number flows and suspension	
Moderator	Jae-Sung Kwon (Incheon National University, Korea, Republic of) / G P Raja Sekhar (Indian Institute of Technology Kharagpur, India)	
Room	Room 306A, 3F	
WeFM1114 (INVITED)	08:00~08:30	STOKES LAW CORRECTIONS FOR HYDRODYNAMICALLY INTERACTING PARTICLES IN NON-UNIFORM FLOWS **D. Palaniappan** (Texas A&M University, Corpus Christi, USA) Corresponding Author D. Palaniappan (Texas A&M University, Corpus Christi, USA)
WeFM1115 (INVITED)	08:30~09:00	ELECTRICALLY-MEDIATED INTERPLAY OF CELLULAR INTERACTIONS IN CONFINED MICROFLUIDIC PATHWAYS **Suman Chakraborty** (Indian Institute of Technology Kharagpur, India) Corresponding Author Suman Chakraborty (Indian Institute of Technology Kharagpur, India)
WeFM1116	09:00~09:20	TRANSITIONS AND HYSTERESIS IN TAYLOR-COUETTE FLOW OF NON-COLLOIDAL SUSPENSIONS **Changwoo Kang** (Jeonbuk National University, Korea, Republic of) Corresponding Author Parisa Mirbod (University of Illinois at Chicago, USA)
WeFM1117	09:20~09:40	HEAT-THICKENING BEHAVIOR OF ACTIVE LIVING SUSPENSIONS **Daniel See-Wai Tam** (TU Delft, Netherlands) Corresponding Author Daniel See-Wai Tam (TU Delft, Netherlands)
SM08	Phase transformations and thermomechanical phenomena	
Moderator	Moran Wang (Tsinghua University, China) / Changqing Chen (Tsinghua University, China)	
Room	Room 306B, 3F	
WeSM0801 (INVITED)	08:00~08:30	THERMOMECHANICS OF PHASE TRANSFORMATIONS IN NITI: EFFECTS OF RATE ON PSEUDOELASTIC BEHAVIOR **Solon Tsimpoukis** (The University of Texas at Austin, USA) Corresponding Author Stelios Kyriakides (University of Texas at Austin, USA)
WeSM0802 (INVITED)	08:30~09:00	PHASE TRANSFORMING MECHANICAL METAMATERIALS: FROM CELLULAR MATERIAL TO DEPLOYABLE STRUCTURE TO INFORMATION PROCESSING MATERIAL **Changqing Chen** (Tsinghua University, China) Corresponding Author Changqing Chen (Tsinghua University, China)
WeSM0803	09:00~09:20	PHASE FIELD MODELLING OF CUBIC TO MONOCLINIC I MARTENSITIC TRANSFORMATION **Dong-Wook Lee** (Technology Innovation Institute, United Arab Emirates) Corresponding Author Dong-Wook Lee (Technology Innovation Institute, United Arab Emirates)
WeSM0804	09:20~09:40	COEXISTENCE OF FIVE DOMAINS AT SINGLE PROPAGATING INTERFACE IN NIMNGA SINGLE CRYSTALS **Chengguan ZHANG** (ENS Paris-Saclay, France) Corresponding Author Yongjun HE (ENSTA-Paris, France)

SM13	Stability and instability of materials and structures	
Moderator	Federico Bosi (University College London, United Kingdom) Shamsher Bahadur Singh (Birla Institute of Technology and Science Pilani, India)	
Room	Room 314, 3F	
WeSM1320	08:00~08:20	BUCKLING AND POSTBUCKLING RESPONSE OF NATURAL FIBER BASED FUNCTIONALLY GRADED COMPOSITE PLATES UNDER UNIAXIAL COMPRESSION **Shamsher Bahadur Singh** (Birla Institute of Technology and Science Pilani, India) Corresponding Author Shamsher Bahadur Singh (Birla Institute of Technology and Science Pilani, India)
WeSM1321	08:20~08:40	JUMPING DYNAMICS OF SPHERICAL SHELLS DRIVEN BY SNAP BUCKLING **Takara Abe** (Keio University, Japan) Corresponding Author Tomohiko Sano (Keio University, Japan)
WeSM1322	08:40~09:00	BENDING DEFORMATION OF TAPE SPRINGS BY A CURVED INDENTER **Shunsuke Nomura** (Keio University, Japan) Corresponding Author Tomohiko Sano (Keio University, Japan)
WeSM1323	09:00~09:20	BUCKLING-INDUCED ANNULAR MECHANICAL METASTRUCTURE FOR NON-PNEUMATIC TIRE **KwangJe Lee** (Seoul National University, Korea, Republic of) Corresponding Author KwangJe Lee (Seoul National University, Korea, Republic of)
WeSM1324	09:20~09:40	DIRECTED INSTABILITY AS A MECHANISM FOR FABRICATING MULTISTABLE TWISTING MICRO-STRUCTURES **Ezra Ben-Abu** (Technion, Israel) Corresponding Author Ezra Ben-Abu (Technion, Israel)
WeSM1325	09:40~10:00	BUCKLING AND POST-BUCKLING OF TWISTED STRIPS **Jarkko Niiranen** (Aalto University, Finland) Corresponding Author Jarkko Niiranen (Aalto University, Finland)

SM15	Vibrations and control of structures	
Moderator	Igor Berinskii (Tel Aviv University, Israel) / Giulio Franchini (Technology Innovation Institute, United Arab Emirates)	
Room	Room 315, 3F	
WeSM1509 (INVITED)	08:00~08:30	STRUCTURAL-ACOUSTIC CONTROL OF PROGRAMMABLE META-STRUCTURES WITH DIGITAL PIEZOELECTRIC SHUNTING **Yegao Qu** (Shanghai Jiao Tong University, China) Corresponding Author Yegao Qu (Shanghai Jiao Tong University, China)
WeSM1510 (INVITED)	08:30~09:00	WHIRLING STRING ACTUATOR FOR ACTIVE MECHANICAL METAMATERIALS **Igor Berinskii** (Tel Aviv University, Israel) Corresponding Author Igor Berinskii (Tel Aviv University, Israel)
WeSM1511	09:00~09:20	PIEZOELECTRIC ADAPTIVE VIBRATION CONTROL FOR WIND TUNNEL MODEL TAIL SUPPORT STRUCTURE **Weiguang Li** (Chang'an University, China) Corresponding Author Weiguang Li (Chang'an University, China)
WeSM1512	09:20~09:40	ADVANCING ACTIVE VIBRATION CONTROL: UNIFIED EXPERIMENTAL INSIGHTS FOR COMPOSITE STRUCTURES **Giulio Franchini** (Technology Innovation Institute, United Arab Emirates) Corresponding Author Giulio Franchini (Technology Innovation Institute, United Arab Emirates)
WeSM1513	09:40~10:00	PLANAR STRING VIBRATIONS WITH SMOOTH BOUNDARY OBSTACLES AT BOTH ENDS **Abhishek Sharma** (Indian Institute of Technology, Kanpur,India, India) Corresponding Author Abhishek Sharma (Indian Institute of Technology, Kanpur,India, India)

SM17	Metamaterials architectured materials and topology optimization	
Moderator	Gang Li (Clemson University, USA) / Xiaojia Shelly Zhang (University of Illinois at Urbana-Champaign, USA)	
Room	Room 320A, 3F	
WeSM1722	08:00~08:20	MECHANICAL FOURIER TRANSFORM FOR PROGRAMMABLE METAMATERIALS **Fei Pan** (Beihang University, China) Corresponding Author Fei Pan (Beihang University, China)
WeSM1723	08:20~08:40	MULTI-SHAPE MEMORY KIRIGAMI METAMATERIALS **HANG YANG** (National University of Singapore, Singapore) Corresponding Author Damiano Pasini (McGill University, Canada)
WeSM1724	08:40~09:00	DATA-DRIVEN DESIGN FOR METAMATERIALS AND MULTISCALE SYSTEMS: STATUS AND PROMISES **Wei Chen** (Northwestern University, USA) Corresponding Author Wei Chen (Northwestern University, USA)
WeSM1725	09:00~09:20	DEEP REINFORCEMENT LEARNING FOR THE DESIGN OF MECHANICAL METAMATERIALS WITH TUNABLE DEFORMATION AND ENERGY CHARACTERISTICS **Gang Li** (Clemson University, USA) Corresponding Author Gang Li (Clemson University, USA)
WeSM1726	09:20~09:40	TOPOLOGY OPTIMIZATION OF MATERIAL ARCHITECTURES WITH MANUFACTURING-INDUCED ANISOTROPY **Hajin Kim-Tackowiak** (Massachusetts Institute of Technology, USA) Corresponding Author Hajin Kim-Tackowiak (Massachusetts Institute of Technology, USA)

SM18	Nonlinear dynamics for design	
Moderator	Haiyan Hu (Beijing Institute of Technology, China) / Oded Gottlieb (Technion - Israel Institute of Technology, Israel)	
Room	Room 320B, 3F	
WeSM1819	08:00~08:20	SIX-DOFs HIGH-STATIC-LOW-DYNAMIC STIFFNESS VIBRATION ISOLATION **ZeQi Lu** (Shanghai University, China) Corresponding Author ZeQi Lu (Shanghai University, China)
WeSM1820	08:20~08:40	HISTORY DEPENDENT ANALYSIS OF NONLINEAR ISOLATORS VIA COMPLIANT BEAMS **Mu-Qing Niu** (Harbin Institute of Technology, China) Corresponding Author Li-Qun Chen (Harbin Institute of Technology, China)
WeSM1821	08:40~09:00	ENSURING SUPERCRITICAL HOPF IN TOOL CHATTER BY A LIMIT CYCLE DAMPER **Pankaj Wahi** (Indian Institute of Technology Kanpur, India) Corresponding Author Dhananjaykumar Devchandbhai Tandel (IIT Kanpur, India)
WeSM1822	09:00~09:20	A GRAVITY TENSOR AND GAUGE EQUATIONS FOR NEWTON'S NONLINEAR DYNAMICAL GRAVITY FIELD **Jing Tang Xing** (University of Southampton, United Kingdom) Corresponding Author Jing Tang Xing (University of Southampton, United Kingdom)
WeSM1823	09:20~09:40	IMPROVED SIMPLE MODEL OF HYDRAULIC TWISTER BASED AIRCRAFT ARRESTER GEAR **Dhananjaykumar Devchandbhai Tandel** (IIT Kanpur, India) Corresponding Author Anindya Chatterjee (Indian Institute of Technology Kanpur, India)
WeSM1824	09:40~10:00	VIBRATION CANCELING EFFECTIVENESS OF ROTARY MACHINES BY THE SYSTEM OF DUAL AUTOMATIC BALL BALANCERS **Sebastian Pakuła** (AGH University, Poland) Corresponding Author Sebastian Pakuła (AGH University, Poland)

SM01	Biomechanics and biomaterials	
Moderator	Gang Bao (Rice University, USA)	
Room	Room 321A, 3F	
WeSM0113 (INVITED)	08:00~08:30	RECURSIVE CELL-MATRIX FEEDBACK DRIVES PHENOTYPIC TRANSITIONS OF CELLS **Guy M Genin** (Washington University in St. Louis, USA) Corresponding Author Guy M Genin (Washington University in St. Louis, USA)
WeSM0114 (INVITED)	08:30~09:00	MECHANICS OF BLOOD CLOT AND A NOVEL THROMBECTOMY TECHNOLOGY FOR STROKE TREATMENT **Renee Zhao** (Stanford University, USA) Corresponding Author Renee Zhao (Stanford University, USA)
WeSM0115	09:00~09:20	EXPERIMENTAL AND COMPUTATIONAL STUDIES OF THE TIME-DEPENDENT DEFORMATION AND RUPTURE PROPERTIES OF COLLAGEN HYDROGELS **Kim Ann Busenhart** (ETH Zürich, Switzerland) Corresponding Author Kim Ann Busenhart (ETH Zürich, Switzerland)
WeSM0116	09:20~09:40	IDENTIFICATION OF NONHOMOGENEOUS SHEAR MODULUS DISTRIBUTION OF CELL NUCLEUS **Yue Mei** (Dalian Unversity of Technology, China) Corresponding Author Yue Mei (Dalian Unversity of Technology, China)

SM03	Elasticity	
Moderator	Rodrigue Desmorat (ENS Paris-Saclay, France) / Yue Ting Zhou (Tongji University, China)	
Room	Room 321B, 3F	
WeSM0310	08:00~08:20	GENERAL COVARIANT FORMULATION OF RELATIVISTIC HYPERELASTICITY **Rodrigue Desmorat** (ENS Paris-Saclay, France) Corresponding Author Rodrigue Desmorat (ENS Paris-Saclay, France)
WeSM0311	08:20~08:40	UNIFORMLY MOVING EDGE DISLOCATION IN COUPLE STRESS ELASTICITY: INFLUENCE OF INTRINSIC LENGTH SCALE ON THE ENSUING STRESS FIELD **Tanmay Kishore Bhandakkar** (Indian Institute of Technology Bombay, India) Corresponding Author Tanmay Kishore Bhandakkar (Indian Institute of Technology Bombay, India)
WeSM0312	08:40~09:00	THE ADJUSTABLE ADHESION STRENGTH OF MULTIFERROIC COMPOSITE MATERIALS VIA ELECTROMAGNETIC LOADINGS AND SHAPE EFFECT OF PUNCH **Yue Ting Zhou** (Tongji University, China) Corresponding Author Yue Ting Zhou (Tongji University, China
WeSM0313	09:00~09:20	WRINKLING ANALYSIS OF A GROWING FILM ON A HYPERELASTIC SUBSTRATE WITH FINITE THICKNESSES **Takuya Morimoto** (Shimane University, Japan) Corresponding Author Takuya Morimoto (Shimane University, Japan)
WeSM0314	09:20~09:40	HAMEL'S FIELD VARIATIONAL INTEGRATOR FOR FLEXIBLE MULTIBODY SYSTEMS **Ju Chen** (Beijing Institute of Technology, China) Corresponding Author Ju Chen (Beijing Institute of Technology, China)
WeSM0315	09:40~10:00	THERMO-ELASTIC FREE VIBRATION CHARACTERISTICS OF SANDWICH STIFFENED PLATE MADE OF GRAPHENE REINFORCED FACE SHEET **Pabitra Maji** (Indian Institute of Technology Guwahati, India) Corresponding Author Pabitra Maji (Indian Institute of Technology Guwahati, India)

SM04	Damage & fracture mechanics	
Moderator	Roberta Massabo (University of Genova, Italy) / Djimedo KONDO (Sorbonne University, France)	
Room	Room 322A, 3F	
WeSM0425 (INVITED)	08:00~08:30	ASYMPTOTIC APPROACHES FOR DEALING WITH DISTORTED CRACK GEOMETRIES **Veronique Lazarus** (Institut Polytechnique de Paris, France) Corresponding Author Veronique Lazarus (Institut Polytechnique de Paris, France)
WeSM0426 (INVITED)	08:30~09:00	POROUS PLASTICITY WITH NON-UNIFORM PORE DISTRIBUTIONS **Amine Benzerga** (Texas A&M University, USA) Corresponding Author Amine Benzerga (Texas A&M University, USA)
WeSM0427	09:00~09:20	MODELING OF FRACTURE PROPAGATION IN FLUID SATURATED POROUS MEDIA: A FVM-FEM PHASE FIELD APPROACH **Abhijit Chaudhuri** (Indian Institute of Technology Madras, India) Corresponding Author Abhijit Chaudhuri (Indian Institute of Technology Madras, India)
WeSM0428	09:20~09:40	STRAIN LOCALIZATION IN VISCOPLASTIC POROUS MATERIALS **Alok Tripathy** (Indian Institute of Technology Madras, India) Corresponding Author Alok Tripathy (Indian Institute of Technology Madras, India)
WeSM0429	09:40~10:00	DYNAMIC MECHANICAL BEHAVIOUR OF POROUS DUCTILE MATERIALS THAT TAKE INTO ACCOUNT THE INTERACTION OF VOIDS **Cédric Sartori** (LEM3, University of Lorraine, France) Corresponding Author Cédric Sartori (LEM3, University of Lorraine, France)

FM08	Flow instability and transition	
Moderator	**David Fabre** (University of Toulouse, CNRS, France) / **Ivan Padilla-Montero** (Universidad Politecnica de Madrid, Spain)	
Room	Room 322B, 3F	
WeFM0828	08:00~08:20	ROLL-UP AND LOW-FREQUENCY RADIATION OF A TWO-DIMENSIONAL SUPERSONIC MODE ON MIXING LAYERS: AN ASYMPTOTIC-BASIS DESCRIPTION FOR AEROACOUSTICS **Zhongyu Zhang** (Tianjin University, China) Corresponding Author Xuesong Wu (Imperial College London, United Kingdom)
WeFM0829	08:20~08:40	TWO MECHANISMS OF SOUND RADIATION BY INSTABILITY WAVES ON A SUBSONIC JET **YIHONG FANG** (Tianjin University, China) Corresponding Author YIHONG FANG (Tianjin University, China)
WeFM0830	08:40~09:00	IDENTIFICATION OF A NON-MODAL PERTURBATION GROWTH MECHANISM IN EXPERIMENTS WITH A LAMINAR JET **Linar Gareev** (Lomonosov Moscow State University, Russia) Corresponding Author Linar Gareev (Lomonosov Moscow State University, Russia)
WeFM0831	09:00~09:20	TRANSITION OF FLOW PAST A FRISBEE **Arnab Hazra** (Indian Institute of Technology Kanpur, India) Corresponding Author Sanjay Mittal (IIT Kanpur, India)
WeFM0832	09:20~09:40	EFFECT OF IONIC WIND ORIGINATING FROM CORONA DISCHARGE ON THE INSTABILITY OF THE WAKE PAST TWO SIDE-BY-SIDE CYLINDERS **David Fabre** (University of Toulouse, CNRS, France) Corresponding Author David Fabre (University of Toulouse, CNRS, France)

FM06	Drops, bubbles and interfaces	
Moderator	**Yoshiyuki Tagawa** (Tokyo University of Agriculture and Technology, Japan) / **Wouter Mostert** (University of Oxford, United Kingdom)	
Room	Room 323A, 3F	
WeFM0631	08:00~08:20	MULTISCALE STUDY OF ATOMIZATION BASED ON COUPLING OF LEVEL SET AND LAGRANGIAN PARTICLE TRACKING METHOD **Ya Wang** (Zhejiang University, China) Corresponding Author Kun Luo (Zhejiang University, China)
WeFM0632	08:20~08:40	TOWARDS REALISTIC NUMERICAL BAG-BREAKUP OF DROPLETS **Wouter Mostert** (University of Oxford, United Kingdom) Corresponding Author Wouter Mostert (University of Oxford, United Kingdom)
WeFM0633	08:40~09:00	LASER INDUCED BREAKUP AND ATOMIZATION OF STABLE MICRO-EMULSION DROPLET **Bal Krishan** (Indian Institute of Science, India) Corresponding Author Saptarshi Basu (Indian Institute of Science, Bangalore, India)
WeFM0634	09:00~09:20	EXPERIMENTAL INVESTIGATION OF PRIMARY BREAK-UP IN CLOSE-COUPLED GAS ATOMIZATION (CCGA) **Tiansong Cheng** (Guangdong Technion Israel Institute of Technology, China) Corresponding Author Rene van Hout (Technion - Israel Institute of Technology, Israel)
WeFM0635	09:20~09:40	EFFECT OF CROSS-SECTIONAL AREA OF VESSEL ON THE VELOCITY OF IMPACT-INDUCED FOCUSED LIQUID JET **Hiroya Watanabe** (Tokyo University of Agriculture and Technology, Japan) Corresponding Author Yoshiyuki Tagawa (Tokyo University of Agriculture and Technology, Japan)
WeFM0636	09:40~10:00	BUBBLES NEAR RIGID BOUNDARY: JETS, STRESSES AND WAVES **Siew-Wan Ohl** (University of Magdeburg, Germany) Corresponding Author Claus-Dieter Ohl (University of Magdeburg, Germany)

FM05	Convection	
Moderator	**Olga Shishkina** (Max Planck Institute for Dynamics and Self-Organization, Germany) **Joerg Schumacher** (TU Ilmenau, Germany)	
Room	Room 323B, 3F	
WeFM0521 (INVITED)	08:00~08:30	ULTIMATE RAYLEIGH-BENARD TURBULENCE **Olga Shishkina** (Max Planck Institute for Dynamics and Self-Organization, Germany) Corresponding Author Olga Shishkina (Max Planck Institute for Dynamics and Self-Organization, Germany)
WeFM0522 (INVITED)	08:30~09:00	FLUCTUATING BOUNDARY LAYERS IN HIGH-RAYLEIGH-NUMBER CONVECTION **Joerg Schumacher** (TU Ilmenau, Germany) Corresponding Author Joerg Schumacher (TU Ilmenau, Germany)
WeFM0523	09:00~09:20	BOUNDARY-LAYER DISRUPTION AND HEAT-TRANSFER ENHANCEMENT IN CONVECTION TURBULENCE BY OSCILLATING DEFORMATIONS OF BOUNDARY **Leiqi Yuan** (Peking university, China) Corresponding Author Shiyi Chen (Eastern Institute of Technology, China)
WeFM0524	09:20~09:40	SCALING TRANSITION OF THERMAL DISSIPATION IN TURBULENT CONVECTION **Jianchao He** (Beihang University, China) Corresponding Author Xi chen (Beihang University, China)
WeFM0525	09:40~10:00	FLOW STATE TRANSITION IN TWO-DIMENSIONAL TURBULENT RAYLEIGH-BéNARD CONVECTION **Xin TAO** (Xi'an Jiaotong University, China) Corresponding Author Yi-Chao XIE (Xi'an Jiaotong University, China)

FM05	Convection	
Moderator	**Emily Ching** (Chinese University of Hong Kong, Hong Kong SAR, China) **Fang Xu** (Southern University of Science and Technology, China)	
Room	Room 324A, 3F	
WeFM0526	08:00~08:20	HEAT TRANSFER IN TURBULENT VERTICAL CONVECTION: A THEORETICAL STUDY **Emily Ching** (Chinese University of Hong Kong, Hong Kong SAR, China) Corresponding Author Emily Ching (Chinese University of Hong Kong, Hong Kong SAR, China)
WeFM0527	08:20~08:40	FLOW REORIENTATION IN A CUBIC RAYLEIGH-BéNARD CONVECTION CELL **Robin Karl Barta** (DLR - German Aerospace Center, Germany) Corresponding Author Robin Karl Barta (DLR - German Aerospace Center, Germany)
WeFM0528	08:40~09:00	GLOBAL NU AND BIPHASIC PARTICLES' MOTION IN BIPHASIC THERMALLY-DRIVEN TURBULENCE **Mu Wang** (Tongji University, China) Corresponding Author Ping Wei (Tongji University, China)
WeFM0529	09:00~09:20	RESTORED LARGE-SCALE AXISYMMETRY AND MODIFIED SMALL-SCALE PROPERTIES IN TURBULENT THERMAL CONVECTION WITH POLYMER ADDITIVES **Fang Xu** (Southern University of Science and Technology, China) Corresponding Author Fang Xu (Southern University of Science and Technology, China)
WeFM0530	09:20~09:40	HEAT TRANSPORT AND FLOW MORPHOLOGY OF GEOSTROPHIC ROTATING RAYLEIGH-BéNARD CONVECTION IN THE PRESENCE OF BOUNDARY FLOW **Guang-Yu Ding** (Southern University of Science and Technology, China) Corresponding Author Ke-Qing Xia (Southern University of Science and Technology, China)

FM02	Boundary layers	
Moderator	Xuesong Wu (Imperial College London, United Kingdom) / Paul Hammerton (University of East Anglia, United Kingdom)	
Room	Room 324B, 3F	
WeFM0224 (INVITED)	08:00~08:30	DIFFERENT DYNAMIC SCENARIOS OF LAMINAR SEPARATION BUBBLES INDUCED BY HARMONIC OSCILLATIONS OF THE INFLOW CONDITIONS **Daniel Rodriguez** (Universidad Politecnica de Madrid, Spain) Corresponding Author Daniel Rodriguez (Universidad Politecnica de Madrid, Spain)
WeFM0225 (INVITED)	08:30~09:00	RESPONSE OF BOUNDARY LAYERS TO FREE-STREAM VORTICITY DISTURBANCES **Pierre Ricco** (University of Sheffield, United Kingdom) Corresponding Author Pierre Ricco (University of Sheffield, United Kingdom)
WeFM0226	09:00~09:20	AN ASYMPTOTIC THEORY ON THE KEY MECHANISM OF FUNDAMENTAL RESONANCE IN HYPERSONIC BOUNDARY LAYERS **Ming Dong** (Institute of Mechanics, Chinese Academy of Sciences, China) Corresponding Author Ming Dong (Institute of Mechanics, Chinese Academy of Sciences, China)
WeFM0227	09:20~09:40	INTERNAL STRUCTURES OF TURBULENT SPOTS **Ning Hu** (Peking University, China) Corresponding Author Cunbiao Lee (State Key Laboratory for Turbulence and Complex Systems, College of Engineering, Peking University, China)
WeFM0228	09:40~10:00	PREDICTION OF BYPASS TRANSITION FROM WALL MEASUREMENT **Jie Yao** (Beijing Institute of Technology, China) Corresponding Author Dandan Xiao (Beijing Institute of Technology, China)

FM13	Non-Newtonian and complex fluids	
Moderator	Monica S. N. Oliveira (University of Strathclyde, United Kingdom) / INNOCENT MUTABAZI (CNRS LOMC UMR6294, France)	
Room	Room 325A, 3F	
WeFM1321	08:00~08:20	MICRORHEOLOGY OF MECHANICALLY TUNABLE DNA HYDROGELS **Iliya Dimitrov Stoev** (Karlsruhe Institute of Technology, Germany) Corresponding Author Iliya Dimitrov Stoev (Karlsruhe Institute of Technology, Germany)
WeFM1322	08:20~08:40	RAPID DECAY AND LOCALIZATION: UNDERSTANDING MIXING DYNAMICS IN YIELD STRESS FLUIDS **Mohammad Reza Daneshvar Garmroodi** (Concordia University, Canada) Corresponding Author Mohammad Reza Daneshvar Garmroodi (Concordia University, Canada)
WeFM1323	08:40~09:00	RECOMBINATION TIME OF WORMLIKE MICELLES **Yusuke Koide** (Nagoya University, Japan) Corresponding Author Yusuke Koide (Nagoya University, Japan)
WeFM1324	09:00~09:20	LARGE-EDDY SIMULATION OF NON-NEWTONIAN FLUID FLOW OVER A CIRCULAR CYLINDER AT A SUB-CRITICAL CONDITION **Suhun Cho** (Gwangju Institute of Science and Technology, Korea, Republic of) Corresponding Author Solkeun Jee (Gwangju Institute of Science and Technology, Korea, Republic of)
WeFM1325	09:20~09:40	NEMATODE SUSPENSION: UNRAVELING THE SEQUENCE OF PHYSICAL PROCESSES IN LAOS OF ACTIVE FLEXIBLE FIBER SUSPENSIONS. **Nazim Ali** (Indian Institute Of Technology Ropar, India) Corresponding Author Vishwajeet Mehandia (Indian Institute of Technology Ropar, India)
WeFM1329	09:40~10:00	MOLECULAR RHEOLOGY OF NANOCONFINED OLIGOMER MELTS **Luca Biancofiore** (Bilkent University, Türkiye) Corresponding Author Ahmet Burak Yıldırım (Bilkent University, Türkiye)

FM03	Zero-emission combustion	
Moderator	Christine Mounaïm Rousselle (Univ. Orléans, France) / Chiara Galletti (University of Pisa, Italy)	
Room	Room 325B, 3F	
WeFM0309 (INVITED)	08:00~08:30	NUMERICAL CHALLENGES FOR THE PREDICTION OF THE PARTICLE SIZE DISTRIBUTION OF FLAME-SYNTHESIZED METAL-OXIDES **Benedetta Franzelli** (EM2C laboratory, CNRS, CentraleSupelec, Université ParisSaclay, France) Corresponding Author Benedetta Franzelli (EM2C laboratory, CNRS, CentraleSupelec, Université ParisSaclay, France)
WeFM0310 (INVITED)	08:30~09:00	FLASHBACK RESISTANT HYDROGEN SWIRLING FLAMES: A PATH TO ZERO EMISSIONS? **Thierry Schuller** (Institut de Mécanique des Fluides de Toulouse (IMFT), CNRS, France) Corresponding Author Thierry Schuller (Institut de Mécanique des Fluides de Toulouse (IMFT), CNRS, France)
WeFM0311	09:00~09:20	PREDICTION OF NOX EMISSIONS IN AMMONIA-HYDROGEN COMBUSTION USING CHEMICAL REACTOR NETWORK APPROACH **Rachele Lamioni** (University of Pisa, Italy) Corresponding Author Rachele Lamioni (University of Pisa, Italy)
WeFM0312	09:20~09:40	EFFECT OF HEAT TRANSFER ON EMISSIONS FROM CRACKED AMMONIA SWIRLING FLAMES **Jordan Davies** (Cardiff University, United Kingdom) Corresponding Author Jordan Davies (Cardiff University, United Kingdom)
WeFM0313	09:40~10:00	ASSESSMENT OF CURRENT PREDICTION MODELS FOR HYDROXYL RADICAL DISTRIBUTIONS IN LEAN PREMIXED HYDROGEN-AIR FLAMES **Matthieu Durand** (Institute of Fluid Mechanics of Toulouse, France) Corresponding Author Matthieu Durand (Institute of Fluid Mechanics of Toulouse, France)

FM06	Drops, bubbles and interfaces	
Moderator	Jieyun Pan (Sorbonne Université, France) / Cristian Marchioli (University of Udine, Italy)	
Room	Room 325C, 3F	
WeFM0637	08:00~08:20	THREE-DIMENSIONAL EDGE-BASED INTERFACE TRACKING (EBIT) METHOD FOR MULTIPHASE-FLOW SIMULATION WITH SURFACE TENSION **Jieyun Pan** (Sorbonne Université, France) Corresponding Author Jieyun Pan (Sorbonne Université and CNRS, Institut Jean Le Rond d'Alembert, France)
WeFM0638	08:20~08:40	EXTENDED RAYLEIGH PLESSET EQUATION: MODELING THE INTERNAL DYNAMICS OF AN INTERFACE **Joseph John Thalakkottor** (South Dakota School of Mines and Technology, USA) Corresponding Author Joseph John Thalakkottor (South Dakota School of Mines and Technology, USA)
WeFM0639	08:40~09:00	A GENERAL SURFACE ALE FORMULATION FOR FLUID DEFORMABLE SURFACES **Roger A. Sauer** (Ruhr University Bochum, Germany) Corresponding Author Roger A. Sauer (Ruhr University Bochum, Germany)
WeFM0640	09:00~09:20	PHYSICO-MATHEMATICAL MODELLING OF MULTIPLE SHELL-COATED MICROBUBBLES: EFFECT OF ANISOTROPY AND SURFACE TENSION ON ULTRASOUND **Quoc Nam Nguyen** (University of Tsukuba, Japan) Corresponding Author Tetsuya Kanagawa (Institute of Systems and Information Engineering, University of Tsukuba, Japan)
WeFM0641	09:20~09:40	NONLINEAR THREE-DIMENSIONAL MODELLING FOR ENCAPSULATED MICROBUBBLE DYNAMICS SUBJECT TO ULTRASOUND **qianxi wang** (University of Birmingham, United Kingdom) Corresponding Author qianxi wang (University of Birmingham, United Kingdom)
WeFM0642	09:40~10:00	PENGUIN HUDDLING: A CONTINUUM MODEL **Samuel Joseph Harris** (University College London, United Kingdom) Corresponding Author Samuel Joseph Harris (University College London, United Kingdom)

FM14	Computational fluid dynamics	
Moderator	**Gihun Son** (Sogang University, Korea, Republic of) / **Mathilde Bénédicte Tavares** (Ecole polytechnique, LadHyX, France)	
Room	Room 325D, 3F	
WeFM1421	08:00~08:20	A COUPLED VOLUME-OF-FLUID AND TWO-FLUID METHOD FOR ANALYSIS OF MULTISCALE TWO-PHASE FLOWS **Jaesung Park** (Sogang University, Korea, Republic of) Corresponding Author Gihun Son (Sogang University, Korea, Republic of)
WeFM1422	08:20~08:40	A COUPLING VOF/ LEVEL-SET EMBEDDED BOUNDARY METHOD TO MODEL TWO PHASE FLOWS ON ARBITRARY SOLID SURFACES: APPLICATION TO WETTING AND SOLIDIFICATION **Mathilde Bénédicte Tavares** (Ecole polytechnique, LadHyX, France) Corresponding Author Mathilde Bénédicte Tavares (Ecole polytechnique, LadHyX, France)
WeFM1423	08:40~09:00	DIRECT NUMERICAL SIMULATIONS FOR TWO-PHASE FLOWS WITH MOVING CONTACT LINES AND SURFACTANTS ABOVE THE CRITICAL MICELLE CONCENTRATION **Damir Juric** (CNRS, Université Paris Saclay, France) Corresponding Author Damir Juric (CNRS, Université Paris Saclay, France)
WeFM1424	09:00~09:20	A NUMERICAL FEASIBILITY STUDY ON THE AIRFLOW AND PARTICLE TRANSPORT CHARACTERISTICS OF CEMENT DUST EXPOSED SUBJECTS **Jinyoung Jeong** (Kyungpook National University, Korea, Republic of) Corresponding Author Sanghun Choi (Kyungpook National University, Korea, Republic of)
WeFM1425	09:20~09:40	INTEGRATED OVERSET MESH AND VOLUME OF FLUID METHOD FOR MODELING FREE-SURFACE DYNAMICS IN VERTICAL AXIS HYDROKINETIC TURBINES. **Carlos Mario Morales** (Universidad nacional de Colombia, Colombia) Corresponding Author Carlos Mario Morales (Universidad nacional de Colombia, Colombia)

MS05	Data-driven mechanics and artificial intelligence	
Moderator	**Miguel A Bessa** (Brown University, USA)	
Room	Room 503, 5F	
WeMS0516	08:00~08:20	DEEP REINFORCEMENT LEARNING FOR TRACKING A MOVING TARGET IN JELLYFISH-LIKE SWIMMING **Yihao Chen** (Peking University, China) Corresponding Author Yue Yang (Peking University, China)
WeMS0517	08:20~08:40	A HYBRID VMD AND DCNN-ADABN MODEL FOR UNTRAINED COMBINED DAMAGE DETECTION OF AN OFFSHORE JACKET STRUCTURE **zohreh mousavi** (Southern University of Science and Technology, China) Corresponding Author zohreh mousavi (Southern University of Science and Technology, China)
WeMS0518	08:40~09:00	DATA-DRIVEN MODEL RECONSTRUCTION OF ROBOTIC MANIPULATORS **Dingxu Guo** (Tongji University, China) Corresponding Author Shu Zhang (Tongji University , China)
WeMS0519	09:00~09:20	STUDY ON VORTEX CONTROL DURING RAPID MANEUVERING IN ZEBRAFISH SWIMMING **Mengchen Gao** (University of Chinese Academy of Sciences, China) Corresponding Author Yongliang Yu (University of Chinese Academy of Sciences, China)
WeMS0520	09:20~09:40	SPECTRAL OPERATOR LEARNING FOR PARAMETRIC PDES WITHOUT DATA RELIANCE **Junho Choi** (KAIST, Korea, Republic of) Corresponding Author Junho Choi (KAIST, Korea, Republic of)
WeMS0565	09:40~10:00	DESIGN OPTIMISATION OF GRADED METAMATERIALS FOR ENERGY HARVESTING VIA REINFORCEMENT LEARNING **Alberto Corigliano** (Politecnico di Milano, Italy) Corresponding Author Alberto Corigliano (Politecnico di Milano, Italy)

MS05	Data-driven mechanics and artificial intelligence	
Moderator	Michael David Graham (University of Wisconsin-Madison, USA)	
Room	Room 504, 5F	
WeMS0521	08:00~08:20	EXPERIMENTAL INVESTIGATION AND MACHINE LEARNING PREDICTION OF DROP IMPACT ON HEATED NANOSTRUCTURES **Lap Quan Au-Yeung** (University of Alberta, Canada) Corresponding Author Peichun Amy Tsai (University of Alberta, Canada)
WeMS0522	08:20~08:40	CONCURRENT OPTIMIZATION OF PLY NUMBER, LAYER THICKNESS AND FIBER ANGLE FOR VARIABLE STIFFNESS COMPOSITES ASSISTED BY ADAPTIVE MULTI-FIDELITY METAMODEL **Haichao An** (Beijing Institute of Technology, China) Corresponding Author Haichao An (Beijing Institute of Technology, China)
WeMS0523	08:40~09:00	PHYSICS-INFORMED NEURAL NETWORKS FOR PARAMETERIZED REYNOLDS-AVERAGED TURBULENT FLOW MODELLING **Liang Jiang** (Zhejiang University, China) Corresponding Author Kun Luo (Zhejiang University, China)
WeMS0524	09:00~09:20	STOCHASTIC RECONSTRUCTION OF EULERIAN AND LAGRANGIAN TURBULENCE WITH GENERATIVE DIFFUSION MODELS **Tianyi Li** (Univ. of Rome "Tor Vergata", Italy) Corresponding Author Luca Biferale (Department of Physics and INFN, University of Rome, Italy)
WeMS0525	09:20~09:40	LOCAL NEURAL OPERATOR FOR LEARNING ELASTODYNAMICS **Hongyu Li** (Xi'an Jiaotong University, China) Corresponding Author Tiejun Wang (Xi'an Jiaotong University, China)
WeMS0526	09:40~10:00	EXPLAINABLE DRAG PREDICTION ON ROUGH SURFACES USING CONVOLUTIONAL NEURAL NETWORKS **Heesoo Shin** (Inha university, Korea, Republic of) Corresponding Author Sangseung Lee (Inha University, Korea, Republic of)

MS05	Data-driven mechanics and artificial intelligence	
Moderator	Seunghwa Ryu (KAIST, Korea, Republic of) / Inwon Lee (Pusan National University, Korea, Republic of)	
Room	Room 505, 5F	
WeMS0527	08:00~08:20	HULL FORM OPTIMIZATION UTILIZING AUTOENCODER AND PRESSURE SURROGATE MODEL **Jeongbeom Seo** (Pusan National University, Korea, Republic of) Corresponding Author Inwon Lee (Pusan National University, Korea, Republic of)
WeMS0528	08:20~08:40	ENHANCING PREDICTION PERFORMANCE AND GENERALIZING TRANSVERSE BEHAVIOR OF UNIDIRECTIONAL COMPOSITES VIA STRATEGIC INPUT FEATURE AUGMENTATION **Minwoo Park** (KAIST, Korea, Republic of) Corresponding Author Seunghwa Ryu (KAIST, Korea, Republic of)
WeMS0529	08:40~09:00	TRAINING TRANSFORMER-BASED SUBGRID-SCALE MODEL FOR INVERSE CASCADE IN TWO-DIMENSIONAL TURBULENCE **Yaomin Zhao** (Peking University, China) Corresponding Author Yaomin Zhao (Peking University, China)
WeMS0530	09:00~09:20	REAL-TIME FORECAST OF AIRFOIL LIFT UNDER DYNAMIC STALL CONDITIONS **Donghyun Kim** (MIT, USA) Corresponding Author Themistoklis Sapsis (Massachusetts Institute of Technology, USA)

SM07	Multi-component, composites and hierarchical materials	
Moderator	Yin Fan (Shanghai Jiao Tong University, China) / Li MA (Harbin Institute of Technology, China)	
Room	Room 506, 5F	
WeSM0704 (INVITED)	08:00~08:30	RE-EXAMINATION FOR NONLINEAR BEHAVIOR OF POROUS SANDWICH STRUCTURES REINFORCED BY GRAPHENE PLATELETS **Chong LI** (Shanghai Jiao Tong University, China) Corresponding Author Chong LI (Shanghai Jiao Tong University, China)
WeSM0705 (INVITED)	08:30~09:00	SUPER-ASSEMBLY DESIGN OF COMPOSITE LATTICE METAMATERIALS **Li MA** (Harbin Institute of Technology, China) Corresponding Author Li MA (Harbin Institute of Technology, China)
WeSM0706	09:00~09:20	LAMINATED COMPOSITE STRUCTURES WITH CONTROLLED THERMAL-INDUCED INSTABILITY **Ji Qing Xiang** (Harbin Institute of Technology, China) Corresponding Author Ji Qing Xiang (Harbin Institute of Technology, China)
WeSM0707	09:20~09:40	BENDING PROPERITIES OF ALL-COMPOSITE HONEYCOMB SANDWICH BEAMS BASED ON THE TAILOR-FOLDING METHOD **Jian Xiong** (Harbin Institute of Technology, China) Corresponding Author Jian Xiong (Harbin Institute of Technology, China)

Plenary Lecture		
PL03	Hill prize lecture	
Moderator	Norman A. Fleck (Cambridge University, United Kingdom)	
Room	Convention Hall, 5F	
WePL0001	10:20~11:20	SHAPE PROGRAMMABLE THREE-DIMENSIONAL MESOSTRUCTURES AND FUNCTIONAL DEVICES **Yonggang Huang** (Northwestern University, USA) Corresponding Author Yonggang Huang (Northwestern University, USA)
PL04	Batchelor Prize lecture	
Moderator	Haecheon Choi (Seoul National University, Korea, Republic of)	
Room	Convention Hall, 5F	
WePL0002	11:20~12:20	TURBULENCE, MACRO-VORTICES, AND REDUCED FLOW MODELS FOR WIND ENERGY APPLICATIONS **Charles Meneveau** (Johns Hopkins University, USA) Corresponding Author Charles Meneveau (Johns Hopkins University, USA)

Time	Room	Code	Program
Thursday, August 29, 2024			
07:30 ~	Registration		
08:00 ~ 09:30	Sectional Lectures 2		
	Auditorium, 5F	Fluids	Sectional Lecture 250p
	Convention Hall, 5F	Fluids	Sectional Lecture 250p
	Grand Ballroom B, 3F	Solids	Sectional Lecture 251p
	Room 211, 2F	Solids	Sectional Lecture 251p
09:30 ~ 09:50	Coffee Break		
09:50 ~ 11:20	Oral Presentation 7		252p
	Auditorium, 5F	FM15	Turbulence 252p
	Room 211, 2F	FS05	Fluid structure interactions 252p
	Room 214, 2F	FS01	Acoustics 253p
	Room 217, 2F	FS08	Education in mechanics 253p
	Room 219, 2F	FS07	Optimization for solids and fluids 254p
	Room 306A, 3F	SM02	Tribology-contact and friction 254p
	Room 306B, 3F	SM14	Computational solid mechanics 255p
	Room 314, 3F	SM05	Geomechanics and geophysics 255p
	Room 315, 3F	SM15	Vibrations and control of structures 256p
	Room 320A, 3F	SM17	Metamaterials architectured materials and topology optimization 256p
	Room 320B, 3F	SM18	Nonlinear dynamics for design 257p
	Room 321A, 3F	SM16	Soft materials and extremely deformable structures 257p
	Room 321B, 3F	SM03	Elasticity 258p
	Room 322A, 3F	FM18	Electro- and magneto-hydrodynamics 258p
	Room 322B, 3F	FM08	Flow instability and transition 259p
	Room 323A, 3F	FM06	Drops, bubbles and interfaces 259p
	Room 324A, 3F	FM13	Non-Newtonian and complex fluids 260p
	Room 324B, 3F	FM02	Boundary layers 260p
	Room 325A, 3F	FM01	Biological fluid mechanics 261p
	Room 325B, 3F	FM07	Multiphase and particle-laden flows 261p
	Room 325C, 3F	FM16	Vortex dynamics 262p
	Room 325D, 3F	FM14	Computational fluid dynamics 262p
	Room 503, 5F	SM09	Additive manufacturing 263p
	Room 504, 5F	SM07	Multi-component, composites and hierarchical materials 263p
	Room 505, 5F	SM11	Nanostructures and MEMS 264p
	Room 506, 5F	FM09	Thin film flows 264p
11:20 ~ 12:20	Short Oral Presentation B		265p
	Auditorium, 5F	FM11	Low Reynolds number flows and suspension 265p
	Room 211, 2F	FS06	Granular materials and flows 265p
	Room 214, 2F	FS02	Emerging experimental techniques across the length and time scales 266p
	Room 217, 2F	FS03	Nonlinear dynamics and pattern formation 266p
	Room 219, 2F	FM17	Waves in fluids 267p

Time	Room	Code	Program	
11:20 ~ 12:20	Room 306A, 3F	SM13	Stability and instability of materials and structures	267p
	Room 306B, 3F	SM08	Phase transformations and thermomechanical phenomena	268p
	Room 314, 3F	SM06	Impact mechanics and wave propagation	269p
	Room 315, 3F	SM10	Multibody and vehicle dynamics	270p
	Room 320A, 3F	SM17	Metamaterials architectured materials and topology optimization	271,272p
	Room 320B, 3F	SM12	Plasticity, viscoplasticity and creep	273p
	Room 321A, 3F	SM01	Biomechanics and biomaterials	274,275p
	Room 321B, 3F	SM03	Elasticity	276p
	Room 322A, 3F	SM04	Damage & fracture mechanics	276p
	Room 322B, 3F	MS01	Chemo-mechanics and materials for energy conversion and storage	277p
	Room 323A, 3F	FM06	Drops, bubbles and interfaces	278,279p
	Room 323B, 3F	MS04	Mechanics in health and sport	280p
	Room 324A, 3F	FM10	Geophysical and environmental fluid dynamics	280p
	Room 324B, 3F	MS02	Soft matter, theory meets experiment	281p
	Room 325A, 3F	FM01	Biological fluid mechanics	281p
	Room 325B, 3F	FM07	Multiphase and particle-laden flows	282p
	Room 325C, 3F	MS08	Fluid mechanical challenges for sustainability & climate change	283p
	Room 325D, 3F	FM12	Micro- and nano-fluidics	284p
	Room 503, 5F	MS03	Nonlinear mechanical models for biological and bioinspired materials	285p
	Room 504, 5F	MS06	Fluid dynamics of disease transmission	286p
	Room 505, 5F	MS05	Data-driven mechanics and artificial intelligence	286,287p
	Room 506, 5F	FM09	Thin film flows	287p
12:20 ~ 13:10	Poster Sessions 2			
13:10 ~ 14:10	Lunch & Special Sessions			
14:10 ~ 16:10	Oral Presentation 8			288p
	Auditorium, 5F	FM15	Turbulence	288p
	Room 211, 2F	FS05	Fluid structure interactions	289p
	Room 214, 2F	FS01	Acoustics	289p
	Room 217, 2F	FS03	Nonlinear dynamics and pattern formation	290p
	Room 219, 2F	FM17	Waves in fluids	290p
	Room 306B, 3F	SM08	Phase transformations and thermomechanical phenomena	291p
	Room 314, 3F	SM05	Geomechanics and geophysics	291p
	Room 315, 3F	SM15	Vibrations and control of structures	292p
	Room 320A, 3F	SM17	Metamaterials architectured materials and topology optimization	293p
	Room 320B, 3F	SM12	Plasticity, viscoplasticity and creep	294p
	Room 321A, 3F	SM01	Biomechanics and biomaterials	295p
	Room 321B, 3F	SM03	Elasticity	295p
	Room 322A, 3F	SM04	Damage & fracture mechanics	296p
	Room 322B, 3F	FM12	Micro- and nano-fluidics	296p
	Room 323A, 3F	FM06	Drops, bubbles and interfaces	297p
	Room 323B, 3F	FM05	Convection	297p
14:10 ~ 16:10	Room 324A, 3F	FM04	Compressible flow	298p
	Room 324B, 3F	FM02	Boundary layers	298p
	Room 325A, 3F	FM01	Biological fluid mechanics	299p
	Room 325B, 3F	FM03	Zero-emission combustion	300p
	Room 325C, 3F	FM06	Drops, bubbles and interfaces	300p
	Room 325D, 3F	FM14	Computational fluid dynamics	301p
	Room 503, 5F	MS05	Data-driven mechanics and artificial intelligence	301p
	Room 504, 5F	MS05	Data-driven mechanics and artificial intelligence	302p
	Room 505, 5F	MS02	Soft matter, theory meets experiment	303p
	Room 506, 5F	SM07	Multi-component, composites and hierarchical materials	303p
16:10 ~ 16:30	Coffee Break			
16:30 ~ 18:30	Oral Presentation 9			304p
	Auditorium, 5F	FM15	Turbulence	304p
	Room 211, 2F	FS05	Fluid structure interactions	305p
	Room 214, 2F	FS06	Granular materials and flows	305p
	Room 217, 2F	SM10	Multibody and vehicle dynamics	306p
	Room 219, 2F	FM17	Waves in fluids	306p
	Room 306A, 3F	SM02	Tribology-contact and friction	307p
	Room 306B, 3F	SM14	Computational solid mechanics	308p
	Room 314, 3F	SM05	Geomechanics and geophysics	309p
	Room 315, 3F	SM15	Vibrations and control of structures	310p
	Room 320A, 3F	SM17	Metamaterials architectured materials and topology optimization	310p
	Room 320B, 3F	SM18	Nonlinear dynamics for design	311p
	Room 321A, 3F	SM16	Soft materials and extremely deformable structures	311p
	Room 321B, 3F	SM03	Elasticity	312p
	Room 322A, 3F	SM04	Damage & fracture mechanics	312p
	Room 322B, 3F	FM08	Flow instability and transition	313p
	Room 323A, 3F	FM06	Drops, bubbles and interfaces	314p
	Room 323B, 3F	FM05	Convection	315p
	Room 324A, 3F	FM04	Compressible flow	315p
	Room 324B, 3F	FM02	Boundary layers	316p
	Room 325A, 3F	FM01	Biological fluid mechanics	316p
	Room 325B, 3F	FM07	Multiphase and particle-laden flows	317p
	Room 325C, 3F	FM16	Vortex dynamics	318p
	Room 325D, 3F	FM14	Computational fluid dynamics	319p
	Room 503, 5F	MS05	Data-driven mechanics and artificial intelligence	320p
	Room 504, 5F	MS05	Data-driven mechanics and artificial intelligence	321p
	Room 505, 5F	MS05	Data-driven mechanics and artificial intelligence	322p
	Room 506, 5F	FM09	Thin film flows	323p
18:30 ~	Congress Banquet			

Thu. (Aug. 29)

Sectional Lectures 2		
Fluids	Sectional Lecture	
Moderator	Maria Vittoria Salvetti (University of Pisa, Italy)	
Room	Auditorium, 5F	
ThSLFM01	08:00~08:45	SPACE-TIME ENERGY SPECTRA AND DYNAMIC COUPLING IN TURBULENT FLOWS **Guowei He** (Chinese Academy of Sciences, China) Corresponding Author Guowei He (Chinese Academy of Sciences, China)
ThSLFM02	08:45~09:30	ATMOSPHERIC TURBULENCE AND WIND ENERGY **Jakob Mann** (DTU, Denmark) Corresponding Author Jakob Mann (DTU, Denmark)
Moderator	Jerzy M Floryan (Western Ontario, Canada)	
Room	Convention Hall, 5F	
ThSLFM03	08:00~08:45	THE REGIMES BETWEEN PARTIALLY COALESCING AND SPLASHING DROPS **Gautam Biswas** (Indian Institute of Technology Kanpur, India) Corresponding Author Gautam Biswas (Indian Institute of Technology Kanpur, India)
ThSLFM04	08:45~09:30	FROM LEONARDO TO STABFEM: THE LONG STORY OF PATH INSTABILITY OF RISING BUBBLES MADE SHORT **Jacques Magnaudet** (CNRS/Univ. of Toulouse, France) Corresponding Author Jacques Magnaudet (CNRS/Univ. of Toulouse, France)

Solids	Sectional Lecture	
Moderator	Pilar Ariza Moreno (University of Seville, Spain)	
Room	Grand Ballroom B, 3F	
ThSLSM01	08:00~08:45	ON THE FUTURE OF EXPERIMENTAL MECHANICS IN THE DIGITAL WORLD: AN EIKOLOGICAL PERSPECTIVE **Francois HILD** (ENS PARIS-SACLAY, France) Corresponding Author Francois HILD (ENS PARIS-SACLAY, France)
ThSLFM02	08:45~09:30	PROPAGATING INSTABILITIES IN SOLIDS **Henrik Myhre Jensen** (Aarhus University, Denmark) Corresponding Author Henrik Myhre Jensen (Aarhus University, Denmark)
Moderator	Stefano Lenci (Polytechnic University of Marche, Italy)	
Room	Room 211, 2F	
ThSLFM03	08:00~08:45	METAMATERIALS TO MANIPULATE WAVES AND THERMAL EFFECTS: DESIGN AND APPLICATIONS **Claudia Comi** (Politecnico di Milano, Italy) Corresponding Author Claudia Comi (Politecnico di Milano, Italy)
ThSLFM04	08:45~09:30	DIFFUSE-INTERFACE MODELLING OF DISPLACIVE TRANSFORMATIONS AT MICRO- AND MACRO-SCALE **Stanislaw Stupkiewicz** (Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland Corresponding Author Stanislaw Stupkiewicz (Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland)

Oral Presentation 7

FM15	Turbulence	
Moderator	Enrico Calzavarini (University of Lille, France) / George Papadakis (Imperial College London, United Kingdom)	
Room	Auditorium, 5F	
ThFM1536 (INVITED)	09:50~10:20	PARTICLE TRANSPORT ON FREE-SURFACE TURBULENCE **Filippo Filippo Coletti** (ETH Zurich, Switzerland) Corresponding Author Filippo Filippo Coletti (ETH Zurich, Switzerland)
ThFM1537	10:20~10:40	ACCELERATIONS OF LARGE INERTIAL PARTICLES IN TURBULENCE **Enrico Calzavarini** (University of Lille, France) Corresponding Author Enrico Calzavarini (University of Lille, France)
ThFM1538	10:40~11:00	PREFERENTIAL CONCENTRATION OF PARTICLES IN DECAYING ISOTROPIC TURBULENCE **Abishek Sarkar** (IIT Gandhinagar, India) Corresponding Author Abishek Sarkar (IIT Gandhinagar, India)
ThFM1539	11:00~11:20	RESOLVENT FRAMEWORK FOR TURBULENT PIPE FLOW LADEN WITH LOW-INERTIA PARTICLES **George Papadakis** (Imperial College London, United Kingdom) Corresponding Author George Papadakis (Imperial College London, United Kingdom)
FS05	Fluid structure interactions	
Moderator	Yegao Qu (Shanghai Jiao Tong University, China) / Daegyoum Kim (KAIST, Korea, Republic of)	
Room	Room 211, 2F	
ThFS0536 (INVITED)	09:50~10:20	THREE DECADES OF FLEXIBLE CYLINDER VORTEX-INDUCED VIBRATIONS RESEARCH **Francisco Huera-Huarte** (Universitat Rovira i Virgili, Spain) Corresponding Author Francisco Huera-Huarte (Universitat Rovira i Virgili, Spain)
ThFS0537	10:20~10:40	NUMERICAL AND EXPERIMENTAL INVESTIGATION OF OPTIMIZED NATURE-INSPIRED ENERGY HARVESTER **Amirreza Shahsavari** (Pusan National University, Korea, Republic of) Corresponding Author Kyung Chun Kim (Pusan National University, Korea, Republic of)
ThFS0538	10:40~11:00	MODIFICATION OF VORTEX-INDUCED VIBRATIONS OF AN ELASTIC CYLINDER LOCATED CLOSE TO RIGID PLATES **Oleg Olegovich Ivanov** (Lomonosov Moscow State University, Russia) Corresponding Author Oleg Olegovich Ivanov (Lomonosov Moscow State University, Russia)
ThFS0539	11:00~11:20	VIV RESPONSE OF A CIRCULAR CYLINDER SUBJECTED TO PULSATILE FLOW **Huan Ping** (Shanghai maritime university, China) Corresponding Author Kai Zhang (Shanghai Jiao Tong University, China)

FS01	Acoustics	
Moderator	Michael L. Calvisi (University of Colorado, Colorado Springs, USA) / Christophe Bailly (Ecole Centrale de Lyon, France)	
Room	Room 214, 2F	
ThFS0111 (INVITED)	09:50~10:20	ACOUSTIC CONTROL OF AN ENCAPSULATED MICROBUBBLE USING A KOOPMAN LINEAR QUADRATIC REGULATOR **Michael L. Calvisi** (University of Colorado, Colorado Springs, USA) Corresponding Author Michael L. Calvisi (University of Colorado, Colorado Springs, USA)
ThFS0112	10:20~10:40	ANATOMY OF PIERCE'S WAVE EQUATION **Christophe Bailly** (Ecole Centrale de Lyon, France) Corresponding Author Christophe Bailly (Ecole Centrale de Lyon, France)
ThFS0113	10:40~11:00	PSE WAVEPACKET MODELS FOR SUPERSONIC TWIN JETS AND THEIR COMPARISON AGAINST EXPERIMENTALLY-EDUCED COHERENT STRUCTURES **Ivan Padilla-Montero** (Universidad Politecnica de Madrid, Spain) Corresponding Author Ivan Padilla-Montero (Universidad Politecnica de Madrid, Spain)
ThFS0114	11:00~11:20	EXPERIMENTAL STUDY ON ACOUSTIC RESONANCE OF SUBSONIC AND SLIGHTLY UNDEREXPANDED IMPINGING JETS **Xiangru Li** (Tsinghua University, China) Corresponding Author Xiangru Li (Tsinghua University, China)
FS08	Education in mechanics	
Moderator	Tomohiko Sano (Keio University, Japan) / Amelie Fau (ENS Paris-Saclay, France)	
Room	Room 217, 2F	
ThFS0818 (INVITED)	09:50~10:20	MORPHING STRUCTURES INSPIRED BY PLANTS AND TOYS **Tomohiko Sano** (Keio University, Japan) Corresponding Author Tomohiko Sano (Keio University, Japan)
ThFS0819	10:20~10:40	NAMAZU, A SHAKING TABLE FOR EDUCATION **Amelie Fau** (ENS Paris-Saclay, France) Corresponding Author Amelie Fau (ENS Paris-Saclay, France)
ThFS0820	10:40~11:00	MODELING WALL TRANSFER ON SMOOTH AND ROUGH SURFACES **françois chedevergne** (ONERA, France) Corresponding Author françois chedevergne (ONERA, France)

FS07	Optimization for solids and fluids	
Moderator	Taraneh Sayadi (CNAM/Sorbonne University, France)	
Room	Room 219, 2F	
ThFS0716 (INVITED)	09:50~10:20	DATA-CONSISTENT TURBULENCE MODELLING FOR LINEAR ANALYSES AROUND TURBULENT MEAN-FLOWS **Vincent Mons** (ONERA, France) Corresponding Author Vincent Mons (ONERA, France)
ThFS0717	10:20~10:40	SHAPE OPTIMIZATION OF GRAND RESISTANCE TENSOR ENTRIES FOR A RIGID BODY IN A STOKES FLOW **Clément Moreau** (CNRS, France) Corresponding Author Clément Moreau (CNRS, France)
ThFS0718	10:40~11:00	AUTOMATIC ADJOINT SENSITIVITY ANALYSIS FOR UNSTEADY AERODYNAMIC ANALYSIS AND OPTIMIZATION **Mark Zenta Sperry** (University of California San Diego, USA) Corresponding Author Mark Zenta Sperry (University of California San Diego, USA)
ThFS0719	11:00~11:20	OPTIMISATION OF THE RAYLEIGH-BENARD INSTABILITY WITH MELTING BOUNDARY **Taraneh Sayadi** (CNAM/Sorbonne University, France) Corresponding Author Taraneh Sayadi (CNAM/Sorbonne University, France)
SM02	Tribology-contact and friction	
Moderator	Lucia Nicola (University of Padova, Italy) / Qian Jane Wang (Northwestern University, USA)	
Room	Room 306A, 3F	
ThSM0214 (INVITED)	09:50~10:20	POLISHING OF DIAMONDS: ADHESIVE CONTACT AND WEAR **Feodor M. Borodich** (Chongqing University, China) Corresponding Author Feodor M. Borodich (Chongqing University, China)
ThSM0215	10:20~10:40	SEAL UPDATED NUMERICAL METHOD CONSIDERING CONTACT WEAR BEHAVIORS TO REVEAL LUBRICATION TRANSITION MECHANISM **JIAN FU** (Beihang university, China) Corresponding Author JIAN FU (Beihang university, China)
ThSM0216	10:40~11:00	CONTACT GEOMETRY AND CONTACT TIME EFFECT ON 690TT ALLOY/405 STAINLESS STEEL IMPACT-SLIDING FRETTING WEAR PROCESSES **Xue Mi** (Nuclear Power Institute of China, China) Corresponding Author Xue Mi (Nuclear Power Institute of China, China)
ThSM0217	11:00~11:20	REVEALING THE ORIGIN OF SURFACE DAMAGE IN EXTREME TRIBOLOGICAL CONTACTS USING ENSEMBLE AVERAGED IMAGE CORRELATION **Deepika Gupta** (Indian Institute of Science, India) Corresponding Author Koushik Viswanathan (Indian Institute of science bangalore, India)

SM14	Computational solid mechanics	
Moderator	Jacinto Ulloa (California Institute of Technology, USA) / Emilio Martinez-Paneda (University of Oxford, United Kingdom)	
Room	Room 306B, 3F	
ThSM1430 (INVITED)	09:50~10:20	DATA-DRIVEN MODELING OF MATERIALS WITH STRAIN LOCALIZATION **Jacinto Ulloa** (California Institute of Technology, USA) Corresponding Author Jacinto Ulloa (California Institute of Technology, USA)
ThSM1431	10:20~10:40	ADAPTIVE UNIFIED PHASE-FIELD MODEL FOR UNSTRUCTURED CONFORMAL MESHES BASED ON MULTI-LEVEL MARKED GRID REFINEMENT **Anshul Pandey** (Indian Institute of Technology Ropar, India) Corresponding Author Sachin Kumar (Indian Institute of Technology Ropar, India)
ThSM1432	10:40~11:00	OPTIMIZATION AND FINITE ELEMENT MODELLING OF AUXETIC SHELL PANELS USING HIGHER ORDER SHEAR DEFORMATON THEORY **Krishan Kumar Gupta** (Indian Institute of Technology Delhi, India) Corresponding Author Krishan Kumar Gupta (Indian Institute of Technology Delhi, India)
SM05	Geomechanics and geophysics	
Moderator	Takashi Matsushima (University of Tsukuba, Japan) / John Rudnicki (Northwestern University, USA)	
Room	Room 314, 3F	
ThSM0511 (INVITED)	09:50~10:20	A UNIFIED PERSPECTIVE ON RATE AND STATE, CRITICAL STATE, AND THERMODYNAMIC STATE USING HYDRODYNAMICS **Itai Einav** (The University of Sydney, Australia) Corresponding Author Itai Einav (The University of Sydney, Australia)
ThSM0512	10:20~10:40	GAS-LIQUID TWO-PHASE FLOW ANALYSIS FOR SIMULATION OF SOIL-WATER RETENTION TEST **Shuji Iwaba** (Tohoku University, Japan) Corresponding Author Shotaro Yamada (Tohoku University, Japan)
ThSM0513	10:40~11:00	CALIBRATING ROLLING RESISTANCE TO IMITATE STRESS-STRAIN RESPONSE OF ANGULAR PARTICLES: POTENTIAL AND LIMITATIONS **Usman Ali** (Yokohama National University, Japan) Corresponding Author Mamoru Kikumoto (Yokohama National University, Japan)

SM15	Vibrations and control of structures	
Moderator	Zhongqing SU (The Hong Kong Polytechnic University, Hong Kong SAR, China) / LIN DU (Northwewern Polytechnical University, China)	
Room	Room 315, 3F	
ThSM1514 (INVITED)	09:50~10:20	WHEN VIBRATION GOES BEYOND GIGAHERTZ: AN OPTOACOUSTIC INSIGHT INTO LATTICE DYNAMICS **Zhongqing SU** (The Hong Kong Polytechnic University, Hong Kong SAR, China) Corresponding Author Zhongqing SU (The Hong Kong Polytechnic University, Hong Kong SAR, China)
ThSM1515	10:20~10:40	DYNAMICS AND CONTROL OF CONTINUUM STRUCTURES FOR IN-SPACE ASSEMBLY **Yuhang Liu** (Beijing Institute of Technology, China) Corresponding Author Kai Luo (Beijing Institute of Technology, China)
ThSM1516	10:40~11:00	VIBRATION ANALYSIS OF FLEXIBLE DEPLOYABLE MAST FOR ATTITUDE MANEUVER OF LARGE SPACECRAFT **LIN DU** (Northwewern Polytechnical University, China) Corresponding Author LIN DU (Northwewern Polytechnical University, China)
SM17	Metamaterials architectured materials and topology optimization	
Moderator	Alejandro Marcos Aragón (Delft University of Technology, Netherlands) / Zhan Kang (Dalian University of Technology, China)	
Room	Room 320A, 3F	
ThSM1727 (INVITED)	09:50~10:20	CUT LAYOUT OPTIMIZATION FOR DESIGN OF KIRIGAMI METAMATERIALS UNDER LARGE STRETCHING **Zhan Kang** (Dalian University of Technology, China) Corresponding Author Zhan Kang (Dalian University of Technology, China)
ThSM1728	10:20~10:40	MULTI-MATERIAL TOPOLOGY OPTIMIZATION OF EAPs AND ELECTRODES ACCOUNTING FOR THE INFLUENCE OF THE SURROUNDING SPACE **Daniel Hård** (Lund University, Sweden) Corresponding Author Daniel Hård (Lund University, Sweden)
ThSM1729	10:40~11:00	MULTISCALE TOPOLOGY OPTIMIZATION OF ELECTRO-PERMANENT MAGNET **Ahmad Ramadoni** (Gwangju Institute of Science and Technology, Korea, Republic of) Corresponding Author Jaewook Lee (Gwangju Institute of Science and Technology, Korea, Republic of)

SM18	Nonlinear dynamics for design	
Moderator	Jerzy Warminski (Lublin University of Technology, Poland) / Pedro Ribeiro (Fac. Eng. Un. Porto, Portugal)	
Room	Room 320B, 3F	
ThSM1825 (INVITED)	09:50~10:20	SOME NEW RESULTS ON THE NONLINEAR DYNAMICS OF CURVED BEAMS **Stefano Lenci** (Polytechnic University of Marche, Italy) Corresponding Author Stefano Lenci (Polytechnic University of Marche, Italy)
ThSM1826 (INVITED)	10:20~10:50	INFLUENCE OF SYMMETRY, SYMMETRY BREAKING AND NOISE ON THE NONLINEAR VIBRATIONS AND STABILITY OF SLENDER STRUCTURES **Paulo Batista Gonçalves** (Pontifical Catholic University of Rio de Janeiro, PUC-Rio, Brazil) Corresponding Author Paulo Batista Gonçalves (Pontifical Catholic University of Rio de Janeiro, PUC-Rio, Brazil)
ThSM1827 (INVITED)	10:50~11:20	ADAPTIVE MODELING FOR DESIGN INTEGRATING NONLINEAR DYNAMICAL RESPONSE **C. Nataraj** (Villanova University, USA) Corresponding Author C. Nataraj (Villanova University, USA)
SM16	Soft materials and extremely deformable structures	
Moderator	Christian Hellmich (TU Wien, Austria) / Anna Lee (POSTECH, Korea, Republic of)	
Room	Room 321A, 3F	
ThSM1622 (INVITED)	09:50~10:20	SOFT MATERIALS AND EXTREMELY DEFORMABLE STRUCTURES IN BIOLOGY **Christian Hellmich** (TU Wien, Austria) Corresponding Author Christian Hellmich (TU Wien, Austria)
ThSM1623	10:20~10:40	STIMULUS-RESPONSIVE ANISOTROPIC HYDROGELS WITH ULTRA-HIGH MAGNETICALLY RESPONSIVE 2D MATERIALS **Chaemin Kim** (Pohang University of Science and Technology, Korea, Republic of) Corresponding Author Anna Lee (POSTECH, Korea, Republic of)
ThSM1624	10:40~11:00	MULTI-PHYSICS MODELING FOR SELF-OSCILLATIONS IN IMMERSED PHOTOACTIVE LIQUID CRYSTAL ELASTOMER BEAMS **Reza Norouzikudiani** (Scuola Superiore Sant'Anna, Italy) Corresponding Author Antonio DeSimone (The BioRobotics Institute, Scuola Superiore Sant'Anna, Italy)
ThSM1625	11:00~11:20	PROGRAMMABLE SHAPE MORPHING OF SOFT CELLULAR METAMATERIALS **Zhaohang Zhang** (University of Groningen, Netherlands) Corresponding Author Anastasiia O. Krushynska (University of Groningen, Netherlands)

SM03	Elasticity	
Moderator	Santosh Kapuria (Indian Institute of Technology Delhi, India) / Peter Schiavone (University of Alberta, Canada)	
Room	Room 321B, 3F	
ThSM0316 (INVITED)	09:50~10:20	AN ELLIPTIC INCOMPRESSIBLE LIQUID INCLUSION IN A COMPRESSIBLE HYPERELASTIC SOLID OF HARMONIC TYPE **Peter Schiavone** (University of Alberta, Canada) Corresponding Author Peter Schiavone (University of Alberta, Canada)
ThSM0317	10:20~10:40	POLYNOMIAL INCLUSIONS: MOTIVATIONS, APPLICATIONS AND OPEN PROBLEMS **Tianyu Yuan** (Chengdu University, China) Corresponding Author Liping Liu (Rutgers University, USA)
ThSM0318	10:40~11:00	SOME CONSIDERATIONS OF THE ENERGY-RELEASE RATE AND THE M-INTEGRAL: A 2-D CIRCULAR MISFITTING HOLLOW INCLUSION EMBEDDED IN A FINITE MATRIX **Y. Eugene Pak** (SUNY Korea, Korea, Republic of) Corresponding Author Y. Eugene Pak (SUNY Korea, Korea, Republic of)
FM18	Electro- and magneto-hydrodynamics	
Moderator	Antoine Sellier (LadHyX, France) / Gunter Gerbeth (Helmholtz-Zentrum Dresden-Rossendorf, Germany)	
Room	Room 322A, 3F	
ThFM1818 (INVITED)	09:50~10:20	OPERANDO VISUALIZATION AND NUMERICAL SIMULATION OF TRANSPORT PHENOMENA IN SODIUM-ZINC MOLTEN SALT BATTERIES WITH LIQUID ELECTROLYTE **Gunter Gerbeth** (Helmholtz-Zentrum Dresden-Rossendorf, Germany) Corresponding Author Gunter Gerbeth (Helmholtz-Zentrum Dresden-Rossendorf, Germany)
ThFM1819	10:20~10:40	AXISYMMETRIC VISCOUS MHD FLOW ABOUT A TRANSLATING SOLID SLIP SPHERE **Antoine Sellier** (LadHyX, France) Corresponding Author Antoine Sellier (LadHyX, France)
ThFM1820	10:40~11:00	SEMI-ANALYTICAL SOLUTIONS FOR MAGNETO-FLUID-SOLID INTERACTION DYNAMICS OF RECTANGULAR COLUMN **Jing-Yu Fu** (University of Chinese Academy of Sciences, China) Corresponding Author Nian-Mei Zhang (University of Chinese Academy of Sciences, China)
ThFM1821	11:00~11:20	MAGNETIC AND FLUID ANALYSIS IN MAGNETIC FLUIDS CONSIDERING CONSTANT VECTOR FIELD CONDITIONS AND MULTIPLICITY **Yo Mizuta** (Hokkaido University, Japan) Corresponding Author Yo Mizuta (Hokkaido University, Japan)

FM08	Flow instability and transition	
Moderator	Rich Kerswell (University of Cambridge, United Kingdom) / Viswanathan Shankar (Indian Institute of Technology Kanpur, India)	
Room	Room 322B, 3F	
ThFM0833 (INVITED)	09:50~10:20	TRIGGERING ELASTIC AND ELASTO-INERTIAL TURBULENCE IN A STRAIGHT CHANNEL **Rich Kerswell** (University of Cambridge, United Kingdom) Corresponding Author Rich Kerswell (University of Cambridge, United Kingdom)
ThFM0834	10:20~10:40	ELASTOINERTIAL AND PURELY ELASTIC INSTABILITIES IN A FAMILY OF RECTILINEAR VISCOELASTIC CHANNEL FLOWS DEVOID OF CENTERLINE SYMMETRY **Viswanathan Shankar** (Indian Institute of Technology Kanpur, India) Corresponding Author Viswanathan Shankar (Indian Institute of Technology Kanpur, India)
ThFM0835	10:40~11:00	ONSET OF TRANSITION AND DRAG REDUCTION IN VISCOELASTIC CHANNEL FLOW **Alexia Martinez Ibarra** (University of Nebraska - Lincoln, USA) Corresponding Author Jae Sung Park (University of Nebraska - Lincoln, USA)
ThFM0846	11:00~11:20	WHAT DOES NATURE MINIMIZE IN EVERY INCOMPRESSIBLE FLOW? **Haithem Taha** (University of California, Irvine, USA) Corresponding Author Haithem Taha (University of California, Irvine, USA)
FM06	Drops, bubbles and interfaces	
Moderator	Ken Yamamoto (Osaka University, Japan) / Stephane Zaleski (Sorbonne Université, France)	
Room	Room 323A, 3F	
ThFM0643 (INVITED)	09:50~10:20	DIRECT NUMERICAL SIMULATIONS OF LEIDENFROST DROP IMPACTING ONTO SUPERHEATED LIQUID POOL: AN EARLY STAGE STUDY **Ming-Jiu Ni** (University of Chinese Academy of Sciences, China) Corresponding Author Ming-Jiu Ni (University of Chinese Academy of Sciences, China)
ThFM0644	10:20~10:40	WAVES OF A LEIDENFROST DROP BASE **Ken Yamamoto** (Osaka University, Japan) Corresponding Author Ken Yamamoto (Osaka University, Japan)
ThFM0645	10:40~11:00	SUPPRESSION OF THE LEIDENFROST EFFECT WITH IONIC LIQUID DROPS **Lihui Liu** (Beihang University, China) Corresponding Author Peichun Amy Tsai (University of Alberta, Canada)
ThFM0646	11:00~11:20	MANIPULATION OF CONTACT ANGLE HYSTERESIS AT ELECTRIFIED IONIC LIQUID-SOLID INTERFACES **Dongshi GUAN** (Institute of Mechanics, Chinese Academy of Sciences, China) Corresponding Author Dongshi GUAN (Institute of Mechanics, Chinese Academy of Sciences, China)

FM13	Non-Newtonian and complex fluids	
Moderator	**Prabhu Nott** (Indian Institute of Science, India) / **Anke Lindner** (PMMH-ESPCI; CNRS, France)	
Room	Room 324A, 3F	
ThFM1326 (INVITED)	09:50~10:20	TOWARDS A UNIVERSAL LAW FOR BLOOD FLOW **Chaouqi Misbah** (CNRS and Univ. Grenoble, France) Corresponding Author Chaouqi Misbah (CNRS and Univ. Grenoble, France)
ThFM1327	10:20~10:40	DAM-BREAK OF SHEAR-THICKENING SUSPENSIONS: THE 'LIQUID WALL' **Yoel Forterre** (Aix-Marseille University, France) Corresponding Author Yoel Forterre (Aix-Marseille University, France)
ThFM1328	10:40~11:00	BUBBLES IN YIELD-STRESS FLUIDS: RECENT DIRECTIONS **Ian Frigaard** (University ofBritish Columbia, Canada) Corresponding Author Ian Frigaard (University ofBritish Columbia, Canada)
FM02	Boundary layers	
Moderator	Ivan Marusic (University of Melbourne, Australia) / Myoungkyu Lee (University of Houston, USA)	
Room	Room 324B, 3F	
ThFM0229 (INVITED)	09:50~10:20	EXAMINING THE UNIVERSALITY OF THE LOGARITHMIC REGION IN A HIGH REYNOLDS NUMBER ADVERSE-PRESSURE-GRADIENT TURBULENT BOUNDARY LAYER **Ivan Marusic** (University of Melbourne, Australia) Corresponding Author Ivan Marusic (University of Melbourne, Australia)
ThFM0230	10:20~10:40	CORRELATIONS BETWEEN VELOCITY AND WALL-PRESSURE FLUCTUATIONS IN HIGH REYNOLDS NUMBER WALL-BOUNDED TURBULENCE **Myoungkyu Lee** (University of Houston, USA) Corresponding Author Myoungkyu Lee (University of Houston, USA)
ThFM0231	10:40~11:00	PREDICTION OF BOUNDARY LAYER THICKNESS AND FRICTION VELOCITY BY SYMMETRY ARGUMENTS **Chenning Tong** (Clemson University, USA) Corresponding Author Chenning Tong (Clemson University, USA)

FM01	Biological fluid mechanics	
Moderator	**David Saintillan** (University of California San Diego, USA) / **Franck Plouraboué** (CNRS IMFT, France)	
Room	Room 325A, 3F	
ThFM0117 (INVITED)	09:50~10:20	DYNAMIC SELF-ORGANIZATION IN ACTIVE NEMATIC DROPS **David Saintillan** (University of California San Diego, USA) Corresponding Author David Saintillan (University of California San Diego, USA)
ThFM0118	10:20~10:40	SPATIO-TEMPORAL PATTERNS OF LOCALIZED BIOCONVECTION **Makoto Iima** (Hiroshima University, Japan) Corresponding Author Makoto Iima (Hiroshima University, Japan)
ThFM0119	10:40~11:00	ACTIVITY, INSTABILITY AND REORGANIZATION WITHIN VISCOUS MEMBRANES **Harishankar Manikantan** (University of California, Davis, USA) Corresponding Author Harishankar Manikantan (University of California, Davis, USA)
ThFM0120	11:00~11:20	HYDRODYNAMICS OF PLANT DISPERSAL BY RAIN **Ana-Maria Maria Bratu** (CNRS SCTD 3194, France) Corresponding Author Ana-Maria Maria Bratu (CNRS SCTD 3194, France)
FM07	Multiphase and particle-laden flows	
Moderator	Jacek Pozorski (Polish Academy of Sciences, Poland) / Gaetano Sardina (Chalmers University of Technology, Sweden)	
Room	Room 325B, 3F	
ThFM0728 (INVITED)	09:50~10:20	DROPLET EVAPORATION AND CONDENSATION PROCESSES IN TURBULENT CLOUDS **Gaetano Sardina** (Chalmers University of Technology, Sweden) Corresponding Author Gaetano Sardina (Chalmers University of Technology, Sweden)
ThFM0729	10:20~10:40	SPATIALLY AND TEMPORALLY RESOLVED MEASUREMENTS OF FIBER-FLOW INTERACTIONS IN CO-AXIAL JETS **David Hasin** (Technion - Israel Institute of Technology, Israel) Corresponding Author David Hasin (Technion - Israel Institute of Technology, Israel)
ThFM0730	10:40~11:00	ELASTO-INERTIAL ROTATION AND MIGRATION OF SPHEROIDS IN VISCOELASTIC FLUIDS **Yansong Li** (Tsinghua University, China) Corresponding Author Lihao ZHAO (Tsinghua University, China)
ThFM0731	11:00~11:20	DYNAMICS OF NON-SPHERICAL PARTICLE MIGRATION AND ORIENTATION IN ELASTOVISCOPLASTIC (EVP) CHANNEL FLOWS **Shahriar Habibi** (KTH Royal Institute of Technology, Sweden) Corresponding Author Shahriar Habibi (KTH Royal Institute of Technology, Sweden)

FM16	Vortex dynamics	
Moderator	**Haecheon Choi** (Seoul National University, Korea, Republic of) / **Mark Andrew Stremler** (Virginia Tech, USA)	
Room	Room 325C, 3F	
ThFM1617 (INVITED)	09:50~10:20	EFFECT OF THE SPANWISE DOMAIN SIZE ON THE FLOW CHARACTERISTICS BEHIND A CIRCULAR CYLINDER AT RE = 220 **Daeun Song** (Seoul National University, Korea, Republic of) Corresponding Author Haecheon Choi (Seoul National University, Korea, Republic of)
ThFM1618	10:20~10:40	ON CONSERVATION OF VORTICITY FOR FLUID SYSTEMS WITH BOUNDARIES AND INTERFACES **Mark Andrew Stremler** (Virginia Tech, USA) Corresponding Author Mark Andrew Stremler (Virginia Tech, USA)
ThFM1619	10:40~11:00	OSCILLATING-AIRFOIL THEORY FOR LARGE-AMPLITUDE MOTIONS **Eric John Limacher** (University of Calgary, Canada) Corresponding Author Eric John Limacher (University of Calgary, Canada)
FM14	Computational fluid dynamics	
Moderator	**Jung-Il Choi** (Yonsei University, Korea, Republic of) / **Venkata Satya Sekhar Tatavarthi** (IIT BHUBANESWAR, India)	
Room	Room 325D, 3F	
ThFM1426 (INVITED)	09:50~10:20	REAL-TIME HIGH-FIDELITY SIMULATIONS OF URBAN MICROCLIMATES **Jung-Il Choi** (Yonsei University, Korea, Republic of) Corresponding Author Jung-Il Choi (Yonsei University, Korea, Republic of)
ThFM1427	10:20~10:40	THERMO-FLOW CHARACTERIZATION IN PIPELINES USING MIXING RULES FOR HYDROGEN AND NATURAL GAS **Seong-Han Bae** (Sungkyunkwan University, Korea, Republic of) Corresponding Author Youn-Jea Kim (Sungkyunkwan University, Korea, Republic of)
ThFM1428	10:40~11:00	THE INFLUENCE OF TAYLOR COLUMN ON HEAT TRANSFER IN A ROTATING FLUID **Venkata Satya Sekhar Tatavarthi** (IIT BHUBANESWAR, India) Corresponding Author Venkata Satya Sekhar Tatavarthi (IIT BHUBANESWAR, India)
ThFM1429	11:00~11:20	A PARAMETRIC STUDY OF AIR-COOLING THERMAL MANAGEMENT IN BATTERY CHARGING SLOT WITH COMPUTATIONAL FLUID DYNAMICS **Eun Yong Yang** (Kyungpook National University, Korea, Republic of) Corresponding Author Sanghun Choi (Kyungpook National University, Korea, Republic of)

SM09	Additive manufacturing	
Moderator	**Jesper Hattel** (Technical University of Denmark (DTU), Denmark) / **Ferdinando Auricchio** (University of Pavia, Italy)	
Room	Room 503, 5F	
ThSM0910 (INVITED)	09:50~10:20	ACHIEVING TWO-PHASE MORPHING IN SELF-ACTUATING STRUCTURES USING MULTI-MATERIAL 4D PRINTING **HOOMIN LEE** (Hanyang University, Korea, Republic of) Corresponding Author GIL HO YOON (Hanyang University, Korea, Republic of)
ThSM0911 (INVITED)	10:20~10:50	3D PRINTING OF STIFF, STRONG, AND TOUGH BIOCERAMIC BONE SCAFFOLDS **Mohammad Mirkhalaf** (QUT, Australia) Corresponding Author Mohammad Mirkhalaf (QUT, Australia)
ThSM0912 (INVITED)	10:50~11:20	INTERPRETING MATERIAL PATTERNS IN METAL ADDITIVE MANUFACTURING **Puli Saikiran** (Indian Institute of Science, Bangalore, India) Corresponding Author Koushik Viswanathan (Indian Institute of science bangalore, India)
SM07	Multi-component, composites and hierarchical materials	
Moderator	**Yin Fan** (Shanghai Jiao Tong University, China) / **Jian Xiong** (Harbin Institute of Technology, China)	
Room	Room 504, 5F	
ThSM0708	09:50~10:20	MICROSTRUCTURAL CHARACTERIZATION OF PVA FIBER-MATRIX INTERFACE AND CORRELATION WITH ITS MECHANICAL PROPERTY **JEEWOO SUH** (Yonsei university, Korea, Republic of) Corresponding Author Tong-Seok Han (Yonsei university, Korea, Republic of)
ThSM0709	10:20~10:40	APPLICATION OF MULTISCALE ANALYSIS FRAMEWORK FOR EVALUATING TENSILE STRENGTH SLAG-BLENDED CEMENT PASTE WITH COMPARISON BETWEEN EXPERIMENT AND SIMULATION **Se-Yun Kim** (Yonsei university, Korea, Republic of) Corresponding Author Tong-Seok Han (Yonsei university, Korea, Republic of)
ThSM0710	10:40~11:00	RAPID CURATION OF EPOXY NANOCOMPOSITE VISCOELASTICITY THROUGH BROADBAND CHIRP SUPERPOSITION **Richard Sheridan** (Duke University, USA) Corresponding Author L. Catherine Brinson (Duke University, USA)

SM11		Nanostructures and MEMS
Moderator		M Taher Saif (University of Illinois at Urbana-Champaign, USA) Manas Chandra Ray (Indian Institute of Technology Kharagpur, India)
Room		Room 505, 5F
ThSM1109 (INVITED)	09:50~10:20	ON ELECTROMECHANICAL RESPONSE OF BN- DOPED CNTS VIA MD SIMULATIONS **Shailesh Ishwarlal Kundalwal** (IIT Indore, India) Corresponding Author Shailesh Ishwarlal Kundalwal (IIT Indore, India)
ThSM1110	10:20~10:40	PROGRAMMING 3D CURVED MESOSURFACES USING MICROLATTICE DESIGNS **Yihui Zhang** (Tsinghua University, China) Corresponding Author Yihui Zhang (Tsinghua University, China)
ThSM1111	10:40~11:00	CHARACTERIZATION THE MECHANICAL PROPERTIES OF THIN FILMS USING FEA-ASSISTED MEMBRANE DEFLECTION EXPERIMENTS **Hojang Kim** (KAIST, Korea, Republic of) Corresponding Author Gi-Dong Sim (KAIST, Korea, Republic of)
FM09		Thin film flows
Moderator		Georg F. DIETZE (CNRS - Université Paris-Saclay, France) / Stéphane Popinet (CNRS & Sorbonne Université, France)
Room		Room 506, 5F
ThFM0917 (INVITED)	09:50~10:20	A GENERALIZED TIME-IMPLICIT MODEL FOR FILM FLOWS WITH STRONG SURFACE FORCES **Stéphane Popinet** (CNRS & Sorbonne Université, France) Corresponding Author Stéphane Popinet (CNRS & Sorbonne Université, France)
ThFM0918	10:20~10:40	LINEAR FEEDBACK CONTROL OF A LIQUID FILM OVER A SUBSTRATE MOVING AGAINSTS GRAVITY **Fabio Pino** (The von Karman Institute for Fluid Dynamics, Belgium) Corresponding Author Fabio Pino (The von Karman Institute for Fluid Dynamics, Belgium)
ThFM0919	10:40~11:00	COUPLING OF A THIN FILM SOLVER WITH OPENFOAM TO RESOLVE LIQUID-GAS INTERACTION PROBLEMS **David Barreiro** (Universidade da Coruña, Spain) Corresponding Author David Barreiro (Universidade da Coruña, Spain)
ThFM0920	11:00~11:20	TRANSITIONAL ROTATING FILM FLOW: UNVEILING 3D WAVE DYNAMICS **Dong Ju Kim** (KAIST, Korea, Republic of) Corresponding Author Daegyoum (KAIST, Korea, Republic of)

Short Oral Presentation B		
FM11		Low Reynolds number flows and suspension
Moderator		Jae-Sung Kwon (Incheon National University, Korea, Republic of)
Room		Auditorium, 5F
ThPF1101.158	11:20~11:23	RECONFIGURABLE ACOUSTOFLUIDIC SYSTEMS WITH VACUUM PRESSURE-ASSISTED REVERSIBLE BONDING **Woohyuk Kim** (Chonnam National University, Korea, Republic of) Corresponding Author Jinsoo Park (Chonnam National University, Korea, Republic of)
ThPF1102.159	11:23~11:26	2D JANUS DROPS IN SHEAR: DEFORMATION, ROTATION AND THEIR COUPLING **Chun-Yu Zhang** (University of Science and Technology of China, China) Corresponding Author Hang Ding (University of Science and Technology of China, China)
ThPF1103.160	11:26~11:29	AN ARBITRARY STOKES FLOW PAST A POROUS PARTICLE USING BRINKMAN MODEL **Sri Padmavati Bhavaraju** (University of Hyderabad, India) Corresponding Author Sri Padmavati Bhavaraju (University of Hyderabad, India)
FS06		Granular materials and flows
Moderator		Jerzy Rojek (Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland) / Devang Khakhar (IIT Bombay, India)
Room		Room 211, 2F
ThPX0601.232	11:20~11:23	MICROMECHANIC SIMULATION OF UNDERWATER BARCHANS WITH A COMBINED FINITE ELEMENT AND DISCRETE ELEMENT METHOD **Pawel Deren** (The University of Electro-Communications, Japan) Corresponding Author Pawel Deren (The University of Electro-Communications, Japan)
ThPX0602.233	11:23~11:26	A WALL FRICTION MODEL FOR DENSE GRANULAR FLOWS IN A CONFINED ANNULAR SHEAR CELL **Cheng-Chuan Lin** (National Taipei University of Technology, China-Taipei) Corresponding Author Cheng-Chuan Lin (National Taipei University of Technology, China-Taipei)
ThPX0603.234	11:26~11:29	DISCRETE ELEMENT SIMULATION FOR THE EFFECT OF STONE BOX ON BURDEN SIZE DISTRIBUTION DURING CHARGING AND DISCHARGING PROCESSES IN THE FURNACE-TOP HOPPER OF BLAST FURNACE **Li-Shin Lu** (National Quemoy University, China-Taipei) Corresponding Author Li-Shin Lu (National Quemoy University, China-Taipei)

FS02	Emerging experimental techniques across the length and time scales	
Moderator	Francois HILD (ENS PARIS-SACLAY, France)	
Room	Room 214, 2F	
ThPX0201.217	11:20~11:23	SUPERSONIC EJECTOR DESIGN FOR BOIL-OFF GAS REMOVAL IN LNG FUELLED SHIP **Hanyoun Kim** (Pusan National University, Korea, Republic of) Corresponding Author Kyung Chun Kim (Pusan National University, Korea, Republic of)
ThPX0202.218	11:23~11:26	ANALYSIS ON THREE-DIMENSIONAL FLOW CHARACTERISTICS IN BUBBLY FLOW INDUCED BY A VERTICALLY PLUNGED JET USING TIME-RESOLVED 3-D LPT TECHNIQUE **Jinho Oh** (Pusan National University, Korea, Republic of) Corresponding Author Kyung Chun Kim (Pusan National University, Korea, Republic of)
ThPX0203.219	11:26~11:29	THERMOHYDRAULIC PERFORMANCE ENHANCEMENT IN MINICHANNEL HEAT EXCHANGERS USING SUPERCRITICAL CO2 AS A COOLANT **Ahmad Ali Awais** (Pusan National University, Korea, Republic of) Corresponding Author Kyung Chun Kim (Pusan National University, Korea, Republic of)
ThPX0204.220	11:29~11:32	THE EFFECT OF NON-EQUILIBRIUM DBD PLASMA ON SWIRLING FLAME **Amir Mardani** (Sharif university of Technology, Iran) Corresponding Author Amir Mardani (Sharif university of Technology, Iran)
ThPX0205.221	11:32~11:35	INTRA-VOXEL WALL BOUNDARY ESTIMATION USING PARTIAL VOLUME EFFECTS OF 4D FLOW MRI **SeongJu Lee** (Hanyang University, Korea, Republic of) Corresponding Author Simon Song (Hanyang University, Korea, Republic of)
ThPX0206.222	11:35~11:38	MULTI-PHYSICS MEASUREMENT IN NATURAL CONVECTION USING NON_BUOYANT ENCAPSULIZED PHOSPHOR PARTICLES **Kyung Chun Kim** (Pusan National University, Korea, Republic of) Corresponding Author Kyung Chun Kim (Pusan National University, Korea, Republic of)
FS03	Nonlinear dynamics and pattern formation	
Moderator	Oleg Gendelman (Technion - Israel Institute of Technology, Israel) / Alexander Jakov Fidlin (Karlsruhe Institute of Technology, Germany)	
Room	Room 217, 2F	
ThPX0301.224	11:20~11:23	AN ASYMPTOTIC UPSCALING OF TRANSPORT THROUGH THE BACTERIAL MEMBRANE **Molly Brennan** (University College London, United Kingdom) Corresponding Author Molly Brennan (University College London, United Kingdom)
ThPX0302.225	11:23~11:26	A NOVEL MATHEMATICAL ANALYSIS METHOD FOR NONLINEAR CONTINUUM MECHANICS PROBLEMS **Peng Yue** (Ocean University of China, China) Corresponding Author Bin Chen (Center for High Pressure Science & Technology Advanced Research (Shanghai), China)

FM17	Waves in fluids	
Moderator	Yeunwoo Cho (Korea Advanced Institute of Science and Technology, Korea, Republic of)	
Room	Room 219, 2F	
ThPF1701.205	11:20~11:23	THE DYNAMICS OF UNSTEADY FLOW WITH IN-LINE OSCILLATION PAST A CYLINDER **Zifang Li** (Shanghai University, China) Corresponding Author **Bofu Wang** (Shanghai University, China)
SM13	Stability and instability of materials and structures	
Moderator	Jonghyun Ha (Ajou University, Korea, Republic of)	
Room	Room 306A, 3F	
ThPS1301.358	11:20~11:23	TENSEGRITY STRUCTURE OPTIMIZATION BY USING DEEP LEARNING **Aishwary Katre** (IIT Madras, India) Corresponding Author Aishwary Katre (IIT Madras, India)
ThPS1302.359	11:23~11:26	IMPACT OF DIVERSE FIBER DENSITY DISTRIBUTION ON BUCKLING RESPONSE OF DEFECTED VARIABLE FIBER SPACING COMPOSITE LAMINATES UNDER UNCERTAIN THERMAL ENVIRONMENT **Prateek Chandrakar** (Indian Institute of Technology Kharagpur, India) Corresponding Author Prateek Chandrakar (Indian Institute of Technology Kharagpur, India)
ThPS1303.360	11:26~11:29	BUCKLING AND POST-BUCKLING BEHAVIOURS IN STRETCHED AND TWISTED RIBBON **Hao Liu** (Huazhong University of Science and Technology, China) Corresponding Author Dabiao Liu (Huazhong University of Science and Technology, China)
ThPS1304.361	11:29~11:32	VISCOELASTIC INSTABILITY CRITERION OF SOLID PROPELLANT **Kuangwei Deng** (National University of Defense Technology, China) Corresponding Author Zhibin Shen (National University of Defense Technology, China)
ThPS1305.362	11:32~11:35	CRYOGENIC STRENGTH OF INSULATION MATERIAL FOR LNG CARGO CONTAINMENT SYSTEM **changyong SONG** (Mokpo National University, Korea, Republic of) Corresponding Author changyong SONG (Mokpo National University, Korea, Republic of)
ThPS0106.363	11:35~11:38	ANALYTICAL STUDY OF THE FOLD GENERATION AND PROPAGATION OF CELL SHEETS **Xiaoyi Chen** (BNU-HKBU United International College, China) Corresponding Author Xiaoyi Chen (BNU-HKBU United International College, China)

SM08	Phase transformations and thermomechanical phenomena	
Moderator	Yun Seok Heo (Hongik University, Korea, Republic of)	
Room	Room 306B, 3F	
ThPS0802.330	11:20~11:23	A STUDY ABOUT FILTER FORM SOLUTION FOR SOLVING INVERSE HEAT CONDUCTION PROBLEM IN SEQUENTIAL TIME DOMAIN **TRUONG NHUT HUYNH** (Kyung Hee University, Korea, Republic of) Corresponding Author Jin-Gyun Kim (Department of Mechanical Engineering (Integrated Engineering), Kyung Hee University, 1732, Deogyeongdaero, Giheung-gu, Yongin-si, Gyeonggi-do 17104, South Korea, Korea, Republic of)
ThPS0803.331	11:23~11:26	STUDY ON ACTION-PINN TO PREDICT THE BEHAVIOR OF THE SYSTEM HAVING PHASE TRANSITION **Semin Lee** (Ulsan National Institute of Science and Technology, Korea, Republic of) Corresponding Author Hayoung Chung (Ulsan National Institute of Science and Technology, Korea, Republic of)

Monday, Aug 26 | Tuesday, Aug 27 | Wednesday, Aug 28 | Thursday, Aug 29 | Friday, Aug 30

SM06	Impact mechanics and wave propagation	
Moderator	Yongnam Song (Korea University, Korea, Republic of)	
Room	Room 314, 3F	
ThPS0601.305	11:20~11:23	NUMERICAL STUDY OF NONLINEAR WAVE PROPAGATION IN THROW-OFF TIMOSHENKO BEAM **Deepesh Raj** (Indian Institute of Technology Kharagpur, India) Corresponding Author Mira Mitra (Indian Institute of Technology Kharagpur, India)
ThPS0602.306	11:23~11:26	MOLECULAR DYNAMICS SIMULATIONS OF PLANAR SHOCK WAVE IN SINGLE CRYSTALLINE ALUMINUM **Lee Yurim** (Yonsei University, Korea, Republic of) Corresponding Author Keonwook Kang (Yonsei University, Korea, Republic of)
ThPS0603.307	11:26~11:29	NUMERICAL INVESTIGATION OF SEISMIC WAVE PROPAGATION IN DRY, CONFINED GRANULAR MEDIA **Kokkonda Vikas** (Indian Institute of Technology Kanpur, India) Corresponding Author Kokkonda Vikas (Indian Institute of Technology Kanpur, India)
ThPS0604.308	11:29~11:32	HYPERVELOCITY IMPACT ON CFRP COMPOSITE MATERIAL IN LOW EARTH ORBIT ENVIRONMENT AND THREAT PREDICTION OF CFRP FRAGMENT BASED ON ENERGY DENSITY **Yesol Jang** (Seoul National University, Korea, Republic of) Corresponding Author Gun Jin Yun (Seoul National University, Korea, Republic of)
ThPS0605.309	11:32~11:35	MOLECULAR DYNAMICS DRIVEN HUGONIOT STATE AND MIE-GRUNEISEN EOS EQUATION OF STATE CALCULATION IN MATERIAL POINT METHOD FRAMEWORK FOR HYPERVELOCITY IMPACT ANALYSIS **Seongik Kim** (Seoul national university, Korea, Republic of) Corresponding Author Gun Jin Yun (Seoul national university, Korea, Republic of)
ThPS0606.310	11:35~11:38	ADAPTIVE INTERPOLATION COVER FOR WAVE PROPAGATION **JEEHWAN LEE** (Seoul National University, Korea, Republic of) Corresponding Author Do-Nyun Kim (Department of Mechanical Engineering, Seoul National University, Korea, Republic of)
ThPS0607.311	11:38~11:41	NOVEL LOW-FREQUENCY WIDE BANDGAP PERIODIC PIPE SEISMIC METAMATERIAL BASED ON NEGATIVE POISSON'S RATIO MATERIALS **Pengfei Li** (Tongji University, China) Corresponding Author Fan Yang (Tongji University, China)
ThPS0608.312	11:41~11:44	HIGHER-ORDER ELASTIC TOPOLOGICAL INSULATORS WITH RECONFIGURABLE ROUTE TOPOLOGICAL INTERFACE STATES AND TUNABLE TOPOLOGICAL CORNER STATES **Gang Zhang** (Lanzhou University, China) Corresponding Author Yuanwen Gao (Lanzhou University, China)
ThPS0609.313	11:44~11:47	EFFECT OF SURFACE ROUGHNESS ON ROAD MATERIALS EVALUATION WITH ULTRASONIC WAVE **Atsuya Kobu** (Meijo University, Japan) Corresponding Author Atsuya Kobu (Meijo University, Japan)

SM10	Multibody and vehicle dynamics	
Moderator	Ikhyun Kim (Keimyung University, Korea, Republic of)	
Room	Room 315, 3F	
ThPS1001.339	11:20~11:23	NONLINEAR QUARTER CAR MODEL WITH FLEXIBLE STRUT TOP MOUNT BUSHING (STMB) AND ASSOCIATED DYNAMICS **Pankaj Wahi** (Indian Institute of Technology Kanpur, India) Corresponding Author Pankaj Wahi (Indian Institute of Technology Kanpur, India)
ThPS1002.340	11:23~11:26	SEQUENTIAL COUPLING METHOD FOR DYNAMICS OF BIOLOGUCALLY INSPIRED ROBOTS WITH FLEXIBLE COMPONENTS. **Shucheng Zhang** (Northwestern Polytechnical University, China) Corresponding Author Zichen Deng (Northwestern Polytechnical University, China)
ThPS1003.341	11:26~11:29	SURROGATE MODELLING OF REDUCED BICYCLE DYNAMICS **Xuyuan Miao** (Peking University, China) Corresponding Author Caishan Liu (Peking University, China)
ThPS1004.342	11:29~11:32	STABILIZED CO-SIMULATION ALGORITHM: A REVIEW **Pu Li** (Xi'an Jiaotong University, China) Corresponding Author Pu Li (Xi'an Jiaotong University, China)
ThPS1005.343	11:32~11:35	EVALUATION OF VEHICLE MOTION AFTER FRONT SIDE IMPUCT USING MODEL COLLISION TESTS AND THEORETICAL ANALYSIS **Satoko Tsuruta** (Meijo University, Japan) Corresponding Author Satoko Tsuruta (Meijo University, Japan)
ThPS1006.344	11:35~11:38	BRAKING PERFORMANCE EVALUATION OF THE λ-TYPE ENFORCEMENT DEVICE FOR AUTOMOBILE **Takeru Asai** (Meijo University, Japan) Corresponding Author Takeru Asai (Meijo University, Japan)

SM17	Metamaterials architectured materials and topology optimization	
Moderator	Zhan Kang (Dalian University of Technology, China) / Alejandro Marcos Aragón (Delft University of Technology, Netherlands)	
Room	Room 320A, 3F	
ThPS1717.423	11:20~11:23	MODELING UNCERTAINTIES IN LARGE-SCALE DENSITY-BASED TOPOLOGY OPTIMIZATION PROBLEMS **Boyan Lazarov** (Lawrence Livermore National Laboratory, USA) Corresponding Author Boyan Lazarov (Lawrence Livermore National Laboratory, USA)
ThPS1718.424	11:23~11:26	DATA-DRIVEN STRATEGIES TO NAVIGATE THE BIAS-VARIANCE LANDSCAPE IN MECHANICAL METAMATERIAL DESIGN **Namjung Kim** (Gachon University, Korea, Republic of) Corresponding Author Namjung Kim (Gachon University, Korea, Republic of)
ThPS1719.425	11:26~11:29	SENSITIVITY IN TOPOLOGY OPTIMIZATION OF HEAT SINKS FOR IC CHIP COOLING **Safi Ahmed** (Kyungpook National University, Korea, Republic of) Corresponding Author CHEOL WOO PARK (Kyungpook National University, Korea, Republic of)
ThPS1720.426	11:29~11:32	DYNAMICALLY CONFIGURED PHYSICS-INFORMED NEURAL NETWORK IN TOPOLOGY OPTIMIZATION APPLICATIONS **Jichao Yin** (Hunan University, China) Corresponding Author Hu Wang (Hunan University, China)
ThPS1721.427	11:32~11:35	SOUND RADIATION OF VARIABLE THICKNESS PLATE STRUCTURE **Feng-Lian Li** (Beijing Information Science and Technology University, China) Corresponding Author Feng-Lian Li (Beijing Information Science and Technology University, China)
ThPS1722.428	11:35~11:38	FLEXURAL WAVE PROPAGATION IN CANONICAL QUASICRYSTALLINE-GENERATED WAVEGUIDES **zhijiang Chen** (Chongqing university, China) Corresponding Author zhijiang Chen (Chongqing university, China)
ThPS1723.429	11:38~11:41	BI-DIRECTIONAL HOMOGENIZATION METHOD FOR THE DESIGN OF MULTISCALE METAMATERIALS **Senlin Huo** (National University of Defense Technology, China) Corresponding Author Bingxiao Du (College of Aerospace Science and Engineering, National University of Defense Technology, China)
ThPS1724.430	11:41~11:44	GRAPH-BASED MACHINE LEARNING IN THE DESIGN OF LATTICE-BASED AUXETIC METAMATERIALS **Chonghui Zhang** (McGill University, Canada) Corresponding Author Yaoyao Fiona Zhao (McGill University, Canada)
ThPS1725.431	11:44~11:47	TOPOLOGICAL PHONONS AND PHASE TRANSITION MECHANISM IN HFO2-BASED FERROELECTRIC FILMS **Jin Huang** (Xidian University, China) Corresponding Author Yichun Zhou (Xidian University, China)

ThPS1726.432	11:47~11:50	TOPOLOGY OPTIMIZATION OF SELF-SUPPORTING METAMATERIAL VIA ADDITIVE MANUFACTURING **Bing Yi** (Central South University, China) Corresponding Author Bing Yi (Central South University, China)
ThPS1727.433	11:50~11:53	TOPOLOGY OPTIMIZATION CONSIDERING PARTICLE-STRUCTURE CONTACT **Young Hun Choi** (Hanyang University, Korea, Republic of) Corresponding Author Gil Ho Yoon (Hanyang University, Korea, Republic of)
ThPS1728.434	11:53~11:56	COSSERAT MODELING FOR TUNABLE BENDING SHAPE OF 2D LATTICES **Linghui He** (University of Science and Technology of China, China) Corresponding Author Linghui He (University of Science and Technology of China, China)
ThPS1729.435	11:56~11:59	A NOVEL COMPATIBLE BOUNDARY CONDITION-BASED APPROACH FOR MECHANICAL CLOAK DESIGN AND ITS APPLICATION IN MULTI-PHYSICS CLOAKING **Xu bing Cheng** (Dalian University of Technology, China) Corresponding Author Zongliang Du (Dalian University of Technology, China)
ThPS1730.436	11:59~12:02	PROBLEM-INDEPENDENT MACHINE LEARNING (PIML) ENHANCED 3D LARGE-SCALE NON-UNIFORM LATTICE STRUCTURES OPTIMIZATION VIA MOVING MORPHABLE COMPONENTS APPROACH **Wu Xu** (Dalian University of Technology, China) Corresponding Author Wu Xu (Dalian University of Technology, China)
ThPS1731.437	12:02~12:05	ACOUSTIC BARRIER DESIGN WITH TOPOLOGY OPTIMIZATION BASED ON DEEP REINFORCEMENT LEARNING **Myung-Jin Choi** (Hanyang University, Korea, Republic of) Corresponding Author Gil Ho Yoon (Hanyang University, Korea, Republic of)
ThPS1732.438	12:05~12:08	ENHANCING DESTRUCTIVE INTERFERENCE PHONONIC CRYSTAL STRUCTURE PERFORMANCE THROUGH TOPOLOGY OPTIMIZATION **Tam yee Ha** (Hanyang University, Korea, Republic of) Corresponding Author Gil Ho Yoon (Hanyang University, Korea, Republic of)
ThPS1733.439	12:08~12:11	ISOGEOMETRIC DESIGN OPTIMIZATION OF ROTATIONAL SYMMETRIC LATTICE STRUCTURES FOR EXTREMAL BAND GAPS **Seonho Cho** (Seoul National University, Korea, Republic of) Corresponding Author Seonho Cho (Seoul National University, Korea, Republic of)
ThPS1734.440	12:11~12:14	CELLULAR STRUCTURE TO REDUCE THE DYNAMIC INSTABILITY BY USING TOPOLOGY OPTIMIZATION **Sol Ji Han** (Hanyang University, Korea, Republic of) Corresponding Author Akihiro Takezawa (Waseda University, Japan)

SM12	Plasticity, viscoplasticity and creep	
Moderator	Gil Ho Yoon (Hanyang University, Korea, Republic of)	
Room	Room 320B, 3F	
ThPS1201.353	11:20~11:23	A NONLINEAR FRACTIONAL VISCOELASTIC-PLASTIC MODEL FOR CREEP AND PERMANENT DEFORMATION OF ASPHALT MIXTURES **Wenbo Luo** (Changsha University, China) Corresponding Author Wenbo Luo (Changsha University, China)
ThPS1202.354	11:23~11:26	PLASTIC DEFORMATION MECHANISM OF THE TOPOLOGICALLY CLOSE-PACKED PHASES WITHIN SINGLE-CRYSTAL SUPERALLOY DURING INTERDIFFUSION WITH OUTER THERMAL BARRIER COATING **Junkai Liu** (Xidian University, China) Corresponding Author Junkai Liu (Xidian University, China)
ThPS1203.355	11:26~11:29	AN EXACT SOLUTION FOR A SPHERICAL CAVITY EXPANDING IN A GENERALIZED GREEN'S INFINITE MEDIUM **Marina Rynkovskaya** (RUDN University, Russia) Corresponding Author Marina Rynkovskaya (RUDN University, Russia)
ThPS1204.356	11:29~11:32	STATIONARY PLANAR IDEAL FLOWS OF MATERIALS OBEYING THE DOUBLE SLIP AND ROTATION MODEL **Sergey Alexandrov** (Beihang University, China) Corresponding Author Sergey Alexandrov (Beihang University, China)
ThPS1205.357	11:32~11:35	THREE METHOD COMPARISON USED FOR CALIBRATION OF DRUCKER-PRAGER CAP CONSTITUTIVE MODEL FOR CERAMIC POWDER COMPACTION **Jean-Philippe BAYLE** (Atomic energy commissariat, France) Corresponding Author Jean-Philippe BAYLE (Atomic energy commissariat, France)

SM01	Biomechanics and biomaterials	
Moderator	Heung Soo Kim (Dongguk University, Korea, Republic of)	
Room	Room 321A, 3F	
ThPS0101.244	11:20~11:23	COMPRESSIBILITY AND ORTHOTROPY EFFECTS ON DECAY OF END LOADS IN BIOMATERIALS **Neta Jordan Blum** (Technion, Israel) Corresponding Author Neta Jordan Blum (Technion, Israel)
ThPS0102.245	11:23~11:26	KINEMATIC AND KINETIC ANALYSIS OF METATARSOPHALANGEAL JOINT DURING LEVEL AND STAIR WALKING **Sang Woo Jung** (Sogang University, Korea, Republic of) Corresponding Author Choongsoo Shin (Sogang University, Korea, Republic of)
ThPS0103.246	11:26~11:29	ON STABILITY OF THE BONE REMODELLING ALGORITHM **Aaditya C Iyer** (Indian Institute of Technology Madras, India) Corresponding Author Aaditya C Iyer (Indian Institute of Technology Madras, India)
ThPS0104.247	11:29~11:32	ANALYZING THE EFFECT OF BOUNDARY CONDITIONS ON BONE CONDUCTION HEARING THROUGH FINITE ELEMENT MODELING OF CADAVER HEAD EXPERIMENTS **Hyun Seong Shin** (Sogang University, Korea, Republic of) Corresponding Author Namkeun Kim (Sogang University, Korea, Republic of)
ThPS0105.248	11:32~11:35	A SEMI-ANALYTICAL STUDY ON MODE-I FRACTURE OF A CIRCULAR CRACK IN A POROVISCOELASTIC MATERIAL **Yu-Yun Lin** (National Cheng Kung University, China-Taipei) Corresponding Author Yu-Yun Lin (National Cheng Kung University, China-Taipei)
ThPS0106.249	11:35~11:38	OPTIMIZATION OF ARTICULAR CARTILAGE MATERIAL PROPERTIES FOR THE PORCINE HIP JOINTS USING FINITE ELEMENT ANALYSIS **Hyunjoon Hwang** (Korea University, Korea, Republic of) Corresponding Author Yongnam Song (Korea University, Korea, Republic of)
ThPS0107.250	11:38~11:41	EFFECTS OF SOAKING SOLUTION ON ANTERIOR CRUCIATE LIGAMENT HYDRATION, MECHANICS, AND MAGNETIC RESONANCE IMAGING **Charlotte Andreasen** (University of Michigan, USA) Corresponding Author Charlotte Andreasen (University of Michigan, USA)
ThPS0108.251	11:41~11:44	INVESTIGATING BISTABILITY IN A 5DOF MODEL OF THE HUMAN MIDDLE EAR WITH AN IMPLANT **Robert Zablotni** (Lublin University of Technology, Poland) Corresponding Author Robert Zablotni (Lublin University of Technology, Poland)
ThPS0109.252	11:44~11:47	IN SILICO INVESTIGATION OF THE STRUCTURAL BEHAVIOR OF PROXIMAL FEMUR AFTER THE BONE SCAFFOLD IMPLANTATION **Jun Won Choi** (Keimyung University, Korea, Republic of) Corresponding Author Jung Jin Kim (Keimyung University, Korea, Republic of)
ThPS0110.253	11:47~11:50	THE PATIENT-SPECIFIC DOMINANT LOAD SEARCH METHOD FOR REGION OF INTEREST USING OPTIMIZATION **Jisun Kim** (Keimyung University, Korea, Republic of) Corresponding Author Jung Jin Kim (Keimyung University, Korea, Republic of)
ThPS0111.254	11:50~11:53	ROLE OF RIGHT VENTRICULAR DYSFUNCTIONS ON BI-VENTRICULAR PERFORMANCE IN THE CONTEXT OF HFPEF **Jijo Derick Abraham** (Indian Institute of Technology Delhi, India, India) Corresponding Author Jijo Derick Abraham (Indian Institute of Technology Delhi, India, India)
ThPS0112.255	11:53~11:56	OPTIMIZING VORONOI TESSELLATION STRUCTURE FOR ENHANCED ENERGY ABSORPTION USING BAYESIAN OPTIMIZATION **Youngtaek Oh** (Ulsan National Institute of Science and Technology, Korea, Republic of) Corresponding Author Hayoung Chung (Ulsan National Institute of Science and Technology, Korea, Republic of)
ThPS0113.256	11:56~11:59	MULTISCALE MODEL FOR THE ELASTIC PROPERTIES OF DNA NANOTUBE **Han-Lin Liu** (Shanghai University, China) Corresponding Author Neng-Hui Zhang (Shanghai University, China)
ThPS0114.257	11:59~12:02	THE HARMONY EFFECTS OF ELECTRICAL STIMULATION, ROS SCAVENGING AND BIODEGRADABLE MICRONEEDLE METAL FOR ACCELERATED WOUND HEALING **Hee Jae Hwang** (MIT, USA) Corresponding Author Hyung-Seop Han (Korea Institute of Science and Technology, Korea, Republic of)
ThPS0115.258	12:02~12:05	ANALYTICAL MODAL ANALYSIS OF FRACTAL TREES WITH AUXILIARY P-FUNCTIONS **Cheng Ning Loong** (The Hong Kong University of Science and Technology, Hong Kong SAR, China) Corresponding Author Cheng Ning Loong (The Hong Kong University of Science and Technology, Hong Kong SAR, China)
ThPS0116.259	12:05~12:08	EXPERIMENTAL INVESTIGATION AND MODELLING OF FATIGUE DAMAGE IN METAMATERIALS FOR BIOMEDICAL APPLICATIONS **Anna Falkowska** (Bialystok University of Technology, Poland) Corresponding Author Anna Falkowska (Bialystok University of Technology, Poland)
ThPS0117.260	12:08~12:11	MODIFICATION OF NATURE-DERIVED POLYMERIC MATERIAL TO HYBRID BIONANOCOMPOSITE FOR IN VITRO ANTICANCER ACTIVITY **Dong-Kil Shin** (Yeungnam Univ., Korea, Republic of) Corresponding Author Dong-Kil Shin (Yeungnam Univ., Korea, Republic of)

SM03	Elasticity	
Moderator	Santosh Kapuria (Indian Institute of Technology Delhi, India) / Peter Schiavone (University of Alberta, Canada)	
Room	Room 321B, 3F	
ThPF0510.274	11:20~11:23	POLLUTION OVERTURNING INSTABILITY IN AN INCOMPRESSIBLE FLUID WITH A MAXWELL-CATTANEO-MARIANO MODEL FOR THE POLLUTANT FIELD **Martina Pia Nunziata** (University of Salerno, Italy) Corresponding Author Martina Pia Nunziata (University of Salerno, Italy)
ThPF0511.275	11:23~11:26	MULTIPLE CHAOS TRANSITIONS FOR NATURAL CONVECTION INSIDE A HORIZONTAL ANNULUS AT PRANDTL NUMBER 0.05 **Jin Ho Oh** (Kyungpook National University, Korea, Republic of) Corresponding Author Il Seouk Park (Kyungpook National University, Korea, Republic of)
ThPF0512.276	11:26~11:29	HEAT TRANSFER MODULATION IN RAYLEIGH-B'{E}NARD CONVECTION BY AN OSCILLATORY BOTTOM PLATE **Zheheng Liu** (Harbin Institute of Technology, Shenzhen, China) Corresponding Author Zheng Zhong (Harbin Institute of Technology, Shenzhen, China)
SM04	Damage & fracture mechanics	
Moderator	Keonwook Kang (Yonsei University, Korea, Republic of)	
Room	Room 322A, 3F	
ThPS0421.297	11:20~11:23	STUDY OF THE INFLUENCE OF THE ABSORBING LAYER MATERIAL ON THE EFFICIENCY OF LASER SHOCK PEENING **Elena Gachegova** (Institute of Continuous Media Mechanics of the Ural Branch of Russian Academy of Science, Russia) Corresponding Author Elena Gachegova (Institute of Continuous Media Mechanics of the Ural Branch of Russian Academy of Science, Russia)
ThPS0422.298	11:23~11:26	EFFECT OF IN-PLANE CONSTRAINT ON ΔCTODp FOR FATIGUE ANALYSIS **Guangxv - Chen** (tongji university, China) Corresponding Author Keke Tang (tongji university, China)
ThPS0423.299	11:26~11:29	INTERPRETABLE VISION TRANSFORMER FOR DAMAGE DETECTION OF LAMINATED COMPOSITES **Muhammad Muzammil Azad** (Dongguk University, Korea, Republic of) Corresponding Author Heung Soo Kim (Dongguk University, Korea, Republic of)
ThPS0424.300	11:29~11:32	QUANTITATIVE EVALUATION OF VOIDS/CRACKS MULTIPLE DEFECTS IN BULK SUPERCONDUCTOR BASED ON SURFACE MAGNETIC FIELD AND DISPLACEMENT SIGNALS **Dongming An** (Hohai University, China) Corresponding Author Xiaofan GOU (Hohai University, China)
ThPS0425.301	11:32~11:35	DYNAMIC FRACTURE TOUGHNESS MEASUREMENTS OF GRAPHITE MATERIALS WITH VARYING GRAIN SIZES **Boyuan Cao** (Beijing Institute of Technology, Beijing, China, China) Corresponding Author Guangyan Liu (Beijing Institute of Technology, China)

MS01	Chemo-mechanics and materials for energy conversion and storage	
Moderator	Hansohl Cho (KAIST, Korea, Republic of)	
Room	Room 322B, 3F	
ThPM0101.001	11:20~11:23	COMPARATIVE ANALYSIS OF CH_4 (METHANE) AND H_2 (HYDROGEN) MIXTURES **See Jo Kim** (Andong National University, Korea, Republic of) Corresponding Author See Jo Kim (Andong National University, Korea, Republic of)
ThPM0102.002	11:23~11:26	GRADIENT STRUCTURE ELECTRODE DESIGN BY MULTI-PHYSICS SIMULATION AMPLIFIES THE FAST-CHARGING PERFORMANCE OF THICK ELECTRODES **Yong Ni** (University of Science and Technology of China, China) Corresponding Author Yong Ni (University of Science and Technology of China, China)
ThPM0103.003	11:26~11:29	OPTIMIZED PH GRADIENT BASED ENERGY HARVESTING SYSTEMS FOR COST REDUCTION OF CARBON CAPTURING PROCESS **Nan Wu** (ESPCI Paris, France) Corresponding Author Nan Wu (ESPCI Paris, France)
ThPM0104.004	11:29~11:32	MULTIPHYSICS MODELLING OF FULL CELL STRUCTURAL BATTERY COMPOSITES **Carl Larsson** (Chalmers University of Technology, Sweden) Corresponding Author Carl Larsson (Chalmers University of Technology, Sweden)
ThPM0105.005	11:32~11:35	THERMO-PRESSURE SYNERGISTIC CURE FOR HIGH-ENERGY SOLID ROCKET MOTORS **Dong Wu** (National University of Defense Technology, China) Corresponding Author Da-peng Zhang (1. College of Aerospace Science and Engineering, National University of Defense Technology; 2.Hunan Key Laboratory of Intelligent Planning and Simulation for Aerospace Missions, China)
ThPM0106.006	11:35~11:38	THICKNES-DEPENDENTFAILURE BEHAVIOR OF ELECTRODES UNDER MECHANICAL OR THERMAL LOADING **Lihong Liang** (Beijing University of Chemical Technology, China) Corresponding Author Lihong Liang (Beijing University of Chemical Technology, China)
ThPM0107.007	11:38~11:41	A COHESIVE PHASE FIELD MODEL FOR MECHANICAL FAILURE OF PARTICEL-BINDER INTERFACE IN LITHIUM-ION BATTERIES **Feng Hao** (Shandong University, China) Corresponding Author Feng Hao (Shandong University, China)

FM06	Drops, bubbles and interfaces	
Moderator	Ken Yamamoto (Osaka University, Japan) / **Stephane Zaleski** (Sorbonne Université, France)	
Room	Room 323A, 3F	
ThPF0620.099	11:20~11:23	EXPERIMENTAL STUDY ON COALESCENCE OF TWO THETHERED BUBBLES **Clément Pierre, Robert COMBE** (Seoul National University, Korea, Republic of) Corresponding Author Clément Pierre, Robert COMBE (Seoul National University, Korea, Republic of)
ThPF0621.100	11:23~11:26	RECENT PROGRESS IN UNDERSTANDING THE EVOLUTION OF GAS BUBBLES DURING WATER ELECTROLYSIS **Gerd Mutschke** (Helmholtz-Zentrum Dresden-Rossendorf, Germany) Corresponding Author Gerd Mutschke (Helmholtz-Zentrum Dresden-Rossendorf, Germany)
ThPF0622.101	11:26~11:29	GAS ENTRAPMENT AS DROP IMPACTING ON A)LIQUID POOL **Zhen Jian** (Xi'an Jiaotong University, China) Corresponding Author Zhen Jian (Xi'an Jiaotong University, China)
ThPF0623.102	11:29~11:32	THE GEOMETRIC SHAPE OF FLOWING SOAP FILM CHANNELS **ILDOO KIM** (Konkuk University, Korea, Republic of) Corresponding Author ILDOO KIM (Konkuk University, Korea, Republic of)
ThPF0624.103	11:32~11:35	LINEAR STABILITY ANALYSIS OF A NEWTONIAN DROPLET SURROUNDED BY A NEWTONIAN FLUID **Jorge César Brändle de Motta** (Univ Rouen Normandie, INSA Rouen Normandie, CNRS, CORIA UMR 6614, France) Corresponding Author Jorge César Brändle de Motta (Univ Rouen Normandie, INSA Rouen Normandie, CNRS, CORIA UMR 6614, France)
ThPF0625.104	11:35~11:38	SHRINKING INSTABILITIES OF A THREE-LAYER HELE-SHAW PROBLEM **Meng Zhao** (Huazhong University of Science and Technology, China) Corresponding Author Meng Zhao (Huazhong University of Science and Technology, China)
ThPF0626.105	11:38~11:41	SURFACTANT EFFECT ON COLLOIDAL DROPLET DRYING: DEPOSITION PATTERN AND FLOW TYPE **Chih-Ang Chung** (National Central University, China-Taipei) Corresponding Author Chih-Ang Chung (National Central University, China-Taipei)
ThPF0627.106	11:41~11:44	COMPRESSIBLE PHASE MODELING FOR POLYTROPIC BUBBLE **Varnit Kapoor** (Indian Institute of Technology Delhi, India) Corresponding Author Varnit Kapoor (Indian Institute of Technology Delhi, India)
ThPF0628.107	11:44~11:47	HALOS AROUND DROPLETS ON POROUS MEDIA: COMPETITION BETWEEN IMBIBITION AND EVAPORATION **Olivier Vincent** (CNRS & Univ. Lyon 1, France) Corresponding Author Olivier Vincent (CNRS & Univ. Lyon 1, France)
ThPF0629.108	11:47~11:50	IMPACT OF NANOBUBBLES OVER THE ANTI-SOLVENT CRYSTALLIZATION OF GLYCINE **Aakriti Sharma** (Indian Institute of Technology,Ropar, India) Corresponding Author Neelkanth Nirmalkar (Indian Institute of Technology, Ropar, India)
ThPF0630.109	11:50~11:53	DEVELOPMENT OF A NEW EMPIRICAL EQUATION OF THE DRAG COEFFICIENT FOR RISING BUBBLES USING DIFFERENT TYPES OF GASES **KROY SOPHANNA** (Chungnam National University, Korea, Republic of) Corresponding Author Shin Weon Gyu (Chungnam National University, Korea, Republic of)

MS04	Mechanics in health and sport	
Moderator	Guy M Genin (Washington University in St. Louis, USA) / Songbai Ji (Worcester Polytechnic Institute, USA)	
Room	Room 323B, 3F	
ThPM0401.020	11:20~11:23	USING DIFFUSOMETRY IN DEVELOPING MULTI-WELL MICROCHIP FOR RAPID ANTIMICROBIAL SUSCEPTIBILITY TESTING **Jhih-Cheng Wang** (ChiMei Medical Center, China-Taipei) Corresponding Author Jhih-Cheng Wang (ChiMei Medical Center, China-Taipei)
ThPM0402.021	11:23~11:26	THE PAPER CUT PARADOX: EXPLAINING WHY THIN PAPER DOES NOT CUT **Kaare Hartvig Jensen** (Technical University of Denmark, Denmark) Corresponding Author Kaare Hartvig Jensen (Technical University of Denmark, Denmark)
ThPM0403.022	11:26~11:29	IMPACT OF ANISOTROPIC PERMEABILITY ON PULSATILE FLOW IN DEFORMABLE POROUS SCAFFOLD: APPLICATION TO TISSUE ENGINEERING **Prakash Kumar** (SRM University AP, India) Corresponding Author Prakash Kumar (SRM University AP, India)
FM10	Geophysical and environmental fluid dynamics	
Moderator	Namkeun Kim (Sogang University, Korea, Republic of)	
Room	Room 324A, 3F	
ThPF1001.156	11:20~11:23	OCEAN THERMAL ENERGY CONVERSION (OTEC) SYSTEMS: LOSSES DUE TO HEAT TRANSFER IN COLD WATER PIPES **Lazaros Aresti** (Cyprus University of Technology, Cyprus) Corresponding Author Lazaros Aresti (Cyprus University of Technology, Cyprus)
ThPF1002.157	11:23~11:26	FLOW FIELD ESTIMATION ANALYSIS FOR HICHIRIPPU-NUMA MODEL BASED ON THE KALMAN FILTER FEM (CONSIDERATION OF RELATIONSHIP BETWEEN MESH RESOLUTION AND ACCURACY OF ESTIMATION RESULTS) **Yudai Sugiyama** (Nagaoka University of Technology, Japan) Corresponding Author Takahiko Kurahashi (Nagaoka University of Technology, Japan)

MS02	Soft matter, theory meets experiment	
Moderator	Lihua Jin (University of California, USA) / John Biggins (Cambridge University, United Kingdom)	
Room	Room 324B, 3F	
ThPM0201.008	11:20~11:23	MAGNETICALLY ACTUATED NON-CONTACT TRANSFER PRINTING VIA LIQUID METAL FERROFLUID STAMP **jing jiang** (Zhejiang University, China) Corresponding Author Jizhou Song (Zhejiang University, China)
ThPM0202.009	11:23~11:26	THERMOMECHANICAL BEHAVIORS OF SELF-HEALING POLYAMIDE IONENE **Jihong Aafia Ma** (University of Vermont, USA) Corresponding Author Jihong Aafia Ma (University of Vermont, USA)
ThPM0203.010	11:26~11:29	POROUS HYDROGEL WITH INTEGRATED CUSHIONING, PH-INDICATING AND ANTIBACTERIAL FUNCTIONS **Yilin Yu** (Xi 'an Jiaotong University, China) Corresponding Author Zhengjin Wang (Xi'an Jiaotong University, China)
ThPM0204.011	11:29~11:32	TENSION-COMPRESSION ASYMMETRY OF A NON-RECIPROCAL GEL REFLECTING MICROBUCKLING OF NANOSHEETS **Takuma Fuse** (Nagoya Univ, Japan) Corresponding Author Takuma Fuse (Nagoya Univ, Japan)
ThPM0205.012	11:32~11:35	CREEP-FATIGUE INTERACTION BEHAVIOUR OF SOFT ADHESIVE UNDER SHEAR **Han Jiang** (Southwest Jiaotong University, China) Corresponding Author Han Jiang (Southwest Jiaotong University, China)
FM01	Biological fluid mechanics	
Moderator	David Saintillan (University of California San Diego, USA) / Franck Plouraboué (CNRS IMFT, France)	
Room	Room 325A, 3F	
ThPF0118.061	11:20~11:23	ROLE OF ASYMMETRIC ACINAR WALL MOTION ON THE PARTICLE TRANSPORT IN THE LUNG ACINUS **Prabhash Kumar** (Indian Institute of Technology Madras, India) Corresponding Author Prabhash Kumar (Indian Institute of Technology Madras, India)
ThPF0119.062	11:23~11:26	ENHANCING 4D FLOW MRI ACCURACY USING PINN WITH NORMALIZATION AND LOSS WEIGHT OPTIMIZATION **jihun Kang** (Kangwon National University, Korea, Republic of) Corresponding Author hojin ha (Professor, Kangwon National University, Korea, Republic of)

FM07	Multiphase and particle-laden flows	
Moderator	Jacek Pozorski (Polish Academy of Sciences, Poland) / Gaetano Sardina (Chalmers University of Technology, Sweden)	
Room	Room 325B, 3F	
ThPF0721.131	11:20~11:23	EFFECT OF GRAVITY ON COLLISION-COAGULATION OF BIDISPERSE PARTICLES IN TURBULENT FLOW **Fanxi Gong** (Sun Yat-Sen University, China) Corresponding Author ewe-wei wei saw (Sun Yat-Sen University, China)
ThPF0722.132	11:23~11:26	THREE-DIMENSIONAL SIMULATIONS OF FLOW TYPE LANDSLIDES BASED ON CONTINUUM MODEL WITH μ(I) RHEOLOGY **yang kedi** (Beijing Institute of Technology, China) Corresponding Author Wang Xiaoliang (Beijing Institute of Technology, China)
ThPF0723.133	11:26~11:29	RESEARCH ON CAVITATION BETWEEN UNDERWATER EXPLOSION AND OCEAN WAVES BASED ON DIFFUSION INTERFACE METHOD WITH PHASE-TRANSITION MODELS **Rui Liu** (Beijing Institute of Technology, China) Corresponding Author Li Ji Rong (Beijing Institute of Technology, China)
ThPF0724.134	11:29~11:32	STUDY OF INTERFACIAL INSTABILITIES IN A THREE-LAYER FLUID SYSTEM **Marie-Charlotte RENOULT** (INSA Rouen Normandy, France) Corresponding Author Marie-Charlotte RENOULT (INSA Rouen Normandy, France)
ThPF0725.135	11:32~11:35	EXPERIMENTAL AND NUMERICAL STUDIES ON CAVITATION INHIBITION THROUGH BUTTERFLY VALVES WITH DIFFERENT PLATES **Xuan Wu** (Zhejiang Sci-Tech University, China) Corresponding Author Guang Zhang (Zhejiang Sci-Tech University, China)
ThPF0726.136	11:35~11:38	THE EFFECTS OF CAVITATION ON THE CONTROL PERFORMANCE OF A CRYOGENIC VALVE **Guang Zhang** (Zhejiang Sci-Tech University, China) Corresponding Author Guang Zhang (Zhejiang Sci-Tech University, China)
ThPF0727.137	11:38~11:41	INFLUENCE OF CAVITY SHAPE ON LUBRICANT VOLUME FRACTION IN SHEAR DRIVEN LIQUID INFUSED SURFACES **Ratan Ahuja** (Indian Institute of Technology Bombay, India) Corresponding Author Ratan Ahuja (Indian Institute of Technology Bombay, India)
ThPF0728.138	11:41~11:44	EXPERIMENTAL STUDY OF PARTICLE-LADEN FLOWS IN HORIZONTAL PIPES **Guanzhe Cui** (the University of Melbourne, Australia) Corresponding Author Guanzhe Cui (the University of Melbourne, Australia)

MS08	Fluid mechanical challenges for sustainability & climate change	
Moderator	Inwon Lee (Pusan National University, Korea, Republic of) / Graham Hughes (Imperial College London, United Kingdom)	
Room	Room 325C, 3F	
ThPM0801.038	11:20~11:23	UNIFORM COOLING OF SECOND LIFE LITHIUM-ION BATTERIES: EXPLORING THE IMPACT OF VORTEX GENERATOR DIMENSIONS IN DIRECT CONTACT IMMERSION COOLING SYSTEMS **JIBIN M JOY** (IIT Delhi, India) Corresponding Author JIBIN M JOY (IIT Delhi, India)
ThPM0802.039	11:23~11:26	URBAN HEAT ISLAND DYNAMICS: BRIDGING THEORY AND REALITY WITH THE SURFACE ENERGY FLUX BALANCE MODEL **Mijeong Jeon** (Pukyong National University, Korea, Republic of) Corresponding Author Mijeong Jeon (Pukyong National University, Korea, Republic of)
ThPM0803.040	11:26~11:29	NETWORK MODELLING OF VENTILATION IN BUILDINGS **Graham Hughes** (Imperial College London, United Kingdom) Corresponding Author Graham Hughes (Imperial College London, United Kingdom)
ThPM0804.041	11:29~11:32	INVESTIGATION ON DYNAMIC BOUNDARY PROGRESSIVE WEAR LAW OF BEND BASED ON CFD-DPM **Aoqiang Duan** (Zhejiang Sci-Tech University, China) Corresponding Author Zhe Lin (Zhejiang Sci-Tech University, China)
ThPM0805.042	11:32~11:35	SIMULATION OF INDUCED VELOCITY EFFECTS IN PLASMA ACTUATOR IN A MILD COMBUSTION BURNER **Kyung Chun Kim** (Pusan National University, Korea, Republic of) Corresponding Author Amir Mardani (Sharif university of Technology, Iran)
ThPM0806.043	11:35~11:38	OPTIMIZATION OF WIND-ASSISTED SHIP PROPULSION SYSTEM USING WING-SAIL **Inwon Lee** (Pusan National University, Korea, Republic of) Corresponding Author Inwon Lee (Pusan National University, Korea, Republic of)

FM12	Micro- and nano-fluidics	
Moderator	Yun Jung Heo (Kyung Hee University, Korea, Republic of)	
Room	Room 325D, 3F	
ThPF1201.161	11:20~11:23	UTILIZING SUPERABSORBENT POLYMERS AS A SIMPLE APPROACH TO SIGNAL IMPROVEMENT IN LATERAL FLOW ASSAYS **Dilara Kilicarslan You** (Inha University, Korea, Republic of) Corresponding Author Sun Min Kim (Inha University, Korea, Republic of)
ThPF1202.162	11:23~11:26	IMPACT OF ELECTROSTATIC CORRELATION ON THE STREAMING POTENTIAL IN A HYDROPHOBIC SOFT NANOCHANNEL WITH PHYSISORBED SURFACE CHARGE **Bapan Mondal** (Indian Institute of Technology Kharagpur, India) Corresponding Author Bapan Mondal (Indian Institute of Technology Kharagpur, India)
ThPF1203.163	11:26~11:29	LAGRANGE MULTIPLIER-BASED MAXWELL BOUNDARY CONDITION IMPLEMENTATION FOR DISCRETE VELOCITY METHOD **Xiqun Lu** (University of Science and Technology of China, China) Corresponding Author Hang Ding (University of Science and Technology of China, China)
ThPF1204.164	11:29~11:32	ACOUSTOFLUIDC SEPARATION OF BACTERIA FROM PLATELETS BASED ON COMPRESSIBILITY DIFFERENCE USING ACOUSTIC RADIATION FORCE **Song Ha LEE** (Chonnam National University, Korea, Republic of) Corresponding Author Jinsoo Park (Chonnam National University, Korea, Republic of)
ThPF1205.165	11:32~11:35	DEVELOPMENT OF HYBRID MULTI-EMITTER GALLIUM FEEP THRUSTER **Kyung Heon Kim** (Sungkyunkwan University, Korea, Republic of) Corresponding Author Han Seo Ko (Sungkyunkwan University, Korea, Republic of)
ThPF1206.166	11:35~11:38	THE POWERLESS MICROPUMP WITH LONG TERM AND HIGH FLOW INSPRIED BY POROUS STRUCTURE OF LUFFA CYLINDRICA **Jungjae Woo** (Korea University, Korea, Republic of) Corresponding Author Hyejeong Kim (Korea University, Korea, Republic of)
ThPF1207.167	11:38~11:41	THREE-DIMENSIONAL UNSTEADY FLOW OF HYBRID NANOFLUID OVER A SHRINKING INCLINED ROTATING DISK **Shahirah Abu Bakar** (Malaysia-Japan International Institute of Technology, Universiti Teknologi MalaysiaUniversiti Teknologi Malaysia, Malaysia) Corresponding Author Shahirah Abu Bakar (Malaysia-Japan International Institute of Technology, Universiti Teknologi MalaysiaUniversiti Teknologi Malaysia, Malaysia)
ThPF1208.168	11:41~11:44	METHOD FOR PREDICTING DYNAMIC INTERFACIAL TENSION DURING IONIC CROSSLINKING OF A BIOPOLYMER IN A COAXIAL MICROCHANNEL **Maxim Piskunov** (Surgut State University, Russia) Corresponding Author Maxim Piskunov (School of Energy & Power Engineering, Tomsk Polytechnic University; Surgut State University, Russia)
ThPF1209.169	11:44~11:47	SURFACE ACOUSTIC WAVE-DRIVEN FLUORESCENCE ENHANCEMENT ARRAY MICROCHIP IMMUNOSENSOR FOR DIABETIC RETINOPATHY DIAGNOSIS **Min-Yi Wang** (National Cheng Kung University, China-Taipei) Corresponding Author Han-Sheng Chuang (National Cheng Kung University, China-Taipei)

MS03	Nonlinear mechanical models for biological and bioinspired materials	
Moderator	Nicola Maria Pugno (Trento University, Italy) / Peter Fratzl (Max Planck Institute of Colloids and Interfaces, Germany)	
Room	Room 503, 5F	
ThPM0301.013	11:20~11:23	NONLINEAR MECHANICAL SIMULATION OF SPIDER SILK COMPOSITES FOR ENHANCED ENERGY ABSORPTION **Seyedkamal Jalali** (University of Trento, Italy) Corresponding Author Nicola Maria Pugno (Trento University, Italy)
ThPM0302.014	11:23~11:26	FROM SILK TO COMPOSITE: A NONLINEAR MICROMECHANICS APPROACH WITH SPIDER SILK REINFORCEMENT AND MATRIX VARIATION **Seyedkamal Jalali** (University of Trento, Italy) Corresponding Author Nicola Maria Pugno (Trento University, Italy)
ThPM0303.015	11:26~11:29	PREDICTING RELATIONSHIP OF BONE MICROSTRUCTURE TO MECHANICAL PROPERTIES BY MACHINE LEARNING METHODS **Su Zheng-Shun** (National Taiwan University, China-Taipei) Corresponding Author Shu-Wei Chang (National Taiwan University, China-Taipei)
ThPM0304.016	11:29~11:32	BIOINSPIRED ENERGY ABSORPTION: THE ROLE OF VISCOUS SOFT MATRIX **Junjie Liu** (Beijing University of Technology, China) Corresponding Author Junjie Liu (Beijing University of Technology, China)
ThPM0305.017	11:32~11:35	MARINE MUSSEL PLAQUE-INSPIRED ANCHORING SYSTEMS FOR OFFSHORE FLOATING PLATFORMS **Yong Pang** (Queen Mary University of London, United Kingdom) Corresponding Author Yong Pang (Queen Mary University of London, United Kingdom)
ThPM0306.018	11:35~11:38	DYNAMIC ANALYSIS AND OPTIMIZATION OF BIO-INSPIRED COMPOSITES WITH SUTURAL INTERFACE **Zhongliang Yu** (Yangzhou University, China) Corresponding Author Zhongliang Yu (Yangzhou University, China)
ThPM0307.019	11:38~11:41	EMERGENT NETWORK BIOMIMICRY: FROM BIONETWORK SIMULATIONS TO ROBOTIC SWARM APPLICATIONS **Christian Peco** (Penn State, USA) Corresponding Author Christian Peco (Penn State, USA)

MS06	Fluid dynamics of disease transmission	
Moderator	L. Bourouiba (MIT, USA) / Roberto Verzicco (Univ. Rome Tor Vergata, Italy)	
Room	Room 504, 5F	
ThPM0601.035	11:20~11:23	DEVELOPING A STANDARD TEST TO QUANTIFY THE LEAKAGE OF FACE-WORN SOURCE CONTROL PRODUCTS **Lee Portnoff** (CDC/NIOSH, USA) Corresponding Author Lee Portnoff (CDC/NIOSH, USA)
ThPM0602.036	11:23~11:26	HOST AND VIRAL DETERMINANTS OF AIRBORNE TRANSMISSION OF SARS-COV-2 **Julia Rebecca Port** (Laboratory of Transmission Immunology, Helmholtz Center for Infection Research, Germany) Corresponding Author Julia Rebecca Port (Laboratory of Transmission Immunology, Helmholtz Center for Infection Research, Germany)
ThPM0603.037	11:26~11:29	QUANTITATIVE ANALYSIS OF AIRFLOW DYNAMICS WITH MASKS DURING BREATHING USING PARTICLE IMAGE VELOCIMETRY **Vijaya Esther Veeravalli** (Helmholtz Zentrum hereon, Germany) Corresponding Author Vijaya Esther Veeravalli (Helmholtz Zentrum hereon, Germany)
MS05	Data-driven mechanics and artificial intelligence	
Moderator	Jun Hwan Kim (Hanyang University, Korea, Republic of)	
Room	Room 505, 5F	
ThPM0501.023	11:20~11:23	EFFICIENT FLOW FIELDS DENOISING BASED ON SELF-SUPERVISED LEARNING **Linqi Yu** (Pusan National University, Korea, Republic of) Corresponding Author HeeChang LIM (Pusan National University, Korea, Republic of)
ThPM0502.024	11:23~11:26	DESIGN OPTIMIZATION OF OLED DISPLAY PANELS FOR DROP IMPACT RESISTANCE USING A GRAPH NEURAL NETWORK **JIYONG KIM** (KAIST, Korea, Republic of) Corresponding Author NAMWOO KANG (KAIST, Korea, Republic of)
ThPM0503.025	11:26~11:29	A COMPARATIVE STUDY OF MACHINE LEARNING ALGORITHMS FOR DISBOND DETECTION IN A STIFFENED ALUMINIUM PANEL **KAMAL KISHOR PRAJAPATI** (Indian Institute of Technology Kharagpur, India) Corresponding Author KAMAL KISHOR PRAJAPATI (Indian Institute of Technology Kharagpur, India)
ThPM0504.026	11:29~11:32	MULTISCALE MODELING WITH SPECTRAL PINNS: FROM LARGE SCALE DYNAMICS TO SMALL SCALE PREDICTIONS IN COMPLEX SYSTEMS **Jing Wang** (Shanghai Jiaotong University, China) Corresponding Author Hui Xu (Shanghai Jiaotong University, China)
ThPM0505.027	11:32~11:35	DEEP GENERATIVE PRIOR BASED APPROXIMATE BAYESIAN COMPUTATION FOR NONLINEAR MECHANICAL MATERIAL INVERSE PROBLEMS **Xinchao Jiang** (Hunan University, China) Corresponding Author Hu Wang (Hunan University, China)
ThPM0506.028	11:35~11:38	MEASURING SURFACE ROUGHNESS USING INTEGRAL FRéCHET DISTANCE **Jisoo Song** (Seoul National University, Korea, Republic of) Corresponding Author Jaewook Nam (Seoul National University, Korea, Republic of)
ThPM0507.029	11:38~11:41	RUL PREDICTION FOR SCR BUTTERFLY VALVES BASED ON CFD SIMULATION WITH RNN TRAINING **Lee Suhwan** (Pusan National University, Korea, Republic of) Corresponding Author Eunseop Yeom (Pusan National University, Korea, Republic of)
ThPM0508.030	11:41~11:44	CAPTURING SMALL-SCALE SPATIOTEMPORAL NONLINEAR DYNAMICS THROUGH LOW-DIMENSIONAL MANIFOLDS **Pengyu Lai** (Shanghai Jiao Tong University, China) Corresponding Author Hui Xu (Shanghai Jiaotong University, China)
ThPM0509.031	11:44~11:47	IMPACT OF ARTIFICIAL INTELLIGENCE OPTIMIZATION ALGORITHM ON HEAT TRANSFER IN NANOFLUID STRUCTURES **Ken Ming Tu** (Air Force Institute if Technology, China-Taipei) Corresponding Author Ken Ming Tu (Air Force Institute if Technology, China-Taipei)
ThPM0510.032	11:47~11:50	APPLY ARTIFICIAL INTELLIGENCE OPTIMIZATION ALGORITHM TO DESIGN MISSILE PARALLEL NAVIGATION GUIDANCE LAW **Yi Wei Chen** (Air Force Institute of Technology, China-Taipei) Corresponding Author Yi Wei Chen (Air Force Institute of Technology, China-Taipei)
ThPM0511.033	11:50~11:53	DATA-DRIVEN ANALYSIS OF DESIGN CHANGES IN VEHICLES USING WAKE FLOW PATTERNS **Jun Kim** (Hanyang University, Korea, Republic of) Corresponding Author Simon Song (Hanyang University, Korea, Republic of)
ThPM0512.034	11:53~11:56	OPTIMIZATION AND PREDICTION OF CALIBRATION COEFFICIENTS IN SIMULATION MODEL FOR HVAC SYSTEM'S DIGITAL TWIN **Yoojeong Noh** (Pusan National University, Korea, Republic of) Corresponding Author Yoojeong Noh (Pusan National University, Korea, Republic of)
FM09	Thin film flows	
Moderator	Georg F. DIETZE (CNRS - Université Paris-Saclay, France) / Stéphane Popinet (CNRS & Sorbonne Université, France)	
Room	Room 506, 5F	
ThPF0901.154	11:20~11:23	PHYSICS-INFORMED MACHINE LEARNING APPROACH IN THIN FILM FLOWS **Suguru Shiratori** (Tokyo City University, Japan) Corresponding Author Suguru Shiratori (Tokyo City University, Japan)
ThPF0902.155	11:23~11:26	MEASUREMENT OF PHOTOELASTICITY IN RADIAL HELE-SHAW FLOW **Misa Kawaguchi** (Tokyo University of Agriculture and Technology, Japan) Corresponding Author Yoshiyuki Tagawa (Tokyo University of Agriculture and Technology, Japan)

Oral Presentation 8		
FM15	Turbulence	
Moderator	**françois chedevergne** (ONERA, France) / **Isabel Scherl** (Caltech, USA)	
Room	Auditorium, 5F	
ThFM1540	14:10~14:30	MULTISCALE REYNOLDS STRESS MODEL APPLIED TO CHANNEL FLOWS AT LARGE FRICTION REYNOLDS NUMBERS **françois chedevergne** (ONERA, France) Corresponding Author françois chedevergne (ONERA, France)
ThFM1541	14:30~14:50	A CONDITIONAL DIFFUSION MODEL FOR PREDICTION OF 2D TURBULENCE **Jiyeon Kim** (Yonsei University, Korea, Republic of) Corresponding Author Changhoon Lee (Yonsei University, Korea, Republic of)
ThFM1542	14:50~15:10	TURBULENCE MODEL CORRECTION USING FIELD INVERSION FOR A CIRCULAR CYLINDER ALIGNED WITH A FREESTREAM **Youngwoo Kim** (Gwangju Institute of Science and Technology, Korea, Republic of) Corresponding Author Solkeun Jee (Gwangju Institute of Science and Technology, Korea, Republic of)
ThFM1543	15:10~15:30	ACCELERATING SIMULATION CONVERGENCE OF THE NAVIER-STOKES EQUATIONS USING THE ENSEMBLE FOKKER-PLANCK FILTER **Isabel Scherl** (Caltech, USA) Corresponding Author Isabel Scherl (Caltech, USA)
ThFM1544	15:30~15:50	TWO-DIMENSIONAL ISOTROPIC INERTIAL-WAVE TURBULENCE **Peiyang Li** (Peking University, China) Corresponding Author Jin-Han Xie (Peking University, China)
ThFM1545	15:50~16:10	LAMINAR SEPARATION BUBBLE IN A SPINNING BALL AERODYNAMICS **Navaneeth Krishnan** (Indian Institute of Technology, India) Corresponding Author Navaneeth Krishnan (Indian Institute of Technology, India)

FS05	Fluid structure interactions	
Moderator	**Wei-Xi Huang** (Tsinghua University, China) / **Vasily Vedeneev** (Lomonosov Moscow State University, Russia)	
Room	Room 211, 2F	
ThFS0540	14:10~14:30	FLOW-INDUCED SNAP-THROUGH DYNAMICS OF A BUCKLED FLEXIBLE FILAMENT **Hyung Jin Sung** (KAIST, Korea, Republic of) Corresponding Author Hyung Jin Sung (KAIST, Korea, Republic of)
ThFS0541	14:30~14:50	SUPERSONIC PANEL FLUTTER SUPPRESSION BY LOCALLY RESONANT METASTRUCTURE **Pengtao Shi** (Northwestern Polytechnical University, China) Corresponding Author Zhichun Yang (Northwestern Polytechnical University, China)
ThFS0542	14:50~15:10	DIRECT NUMERICAL SIMULATION OF TRANSONIC FLOWS OVER FLUTTERING NACA AIRFOIL **CHANDAN KUMAR BHARDWAJ** (IIT (ISM) Dhanbad, India) Corresponding Author SWAGATA BHAUMIK (IIT (ISM) DHANBAD, India)
ThFS0543	15:10~15:30	NONLINEAR FLOW-INDUCED VIBRATION CONTROL OF A PIEZOELECTRIC LOCALLY RESONANT MATERIAL BEAM IMMERSED IN VISCOUS FLOW **Shuai Liu** (Shanghai Jiao Tong University, China) Corresponding Author Yegao Qu (Shanghai Jiao Tong University, China)
FS01	Acoustics	
Moderator	**Keunhwan Park** (Gachon University, Korea, Republic of) / **Jinsoo Park** (Chonnam National University, Korea, Republic of)	
Room	Room 214, 2F	
ThFS0115	14:10~14:30	RADIATION-DRIVEN ACOUSTIC ENERGY CONVERSION IN LIGHT ABSORBING FLUIDS **Nathan Blanc** (Technion,Israel Institute of Technology, Israel) Corresponding Author Guy Z. Ramon (Technion-Israel Institute of Technology, Israel)
ThFS0116	14:30~14:50	AN EXPERIMENTAL ANALYSIS OF THE PIPE ROBOT'S LEAK DETECTION AND ITS STABILITY AT HIGH WATER PRESSURE **Wondal Jung** (Gachon University, Korea, Republic of) Corresponding Author Keunhwan Park (Gachon University, Korea, Republic of)
ThFS0117	14:50~15:10	INVESTIGATION OF MHZ-ORDER ACOUSTIC WAVE ATTENUATION IN POLYDIMETHYLSILOXANE FOR ACOUSTOFLUIDIC APPLICATIONS **Jeongeun Park** (Chonnam National University, Korea, Republic of) Corresponding Author Jinsoo Park (Chonnam National University, Korea, Republic of)

FS03	Nonlinear dynamics and pattern formation	
Moderator	Alexander Jakov Fidlin (Karlsruhe Institute of Technology, Germany) / Tobias M Schneider (EPFL, Switzerland)	
Room	Room 217, 2F	
ThFS0311 (INVITED)	14:10~14:40	SPATIOTEMPORAL PATTERNS IN A HYSTERETIC RELAY OSCILLATOR CHAIN **Tamas Kalmar-Nagy** (Budapest University of Technology and Economics, Hungary) Corresponding Author Tamas Kalmar-Nagy (Budapest University of Technology and Economics, Hungary)
ThFS0312 (INVITED)	14:40~15:10	BASIN STABILITY FOR UPDATING SYSTEM UNCERTAINTIES **Tomasz Kapitaniak** (Lodz University of Technology, Poland) Corresponding Author Tomasz Kapitaniak (Lodz University of Technology, Poland)
ThFS0313	15:10~15:30	INVESTIGATING COLLECTIVE DYNAMICS OF TURBATRIX ACETI NEMATODES USING LASER SPECKLES **Pratibha Gangwar** (IIT Ropar, India) Corresponding Author Vishwajeet Mehandia (Indian Institute of Technology Ropar, India)
ThFS0314	15:30~15:50	CONSTRAINED OPTIMIZATION-ORIENTED EPC METHOD FOR THE SOLUTION OF FPK EQUATION TO ANALYZE THE NONLINEAR STOCHASTIC SYSTEM WITH UNSMOOTH DAMPING AND TRIGONOMETRIC RESTORING FORCE **Guopeng Bai** (University of Macau, Macao SAR, China) Corresponding Author Huanping Li (Yanshan University, China)
FM17	Waves in fluids	
Moderator	Onno Bokhove (University of Leeds, United Kingdom) / Aidan Blaser (Scripps Institution of Oceanography / UCSD, USA)	
Room	Room 219, 2F	
ThFM1712 (INVITED)	14:10~14:40	MAXIMUM WATER-WAVE AMPLIFICATION OF THREE INTERACTING SOLITONS IN KADOMTSEV-PETVIASHVILI AND POTENTIAL FLOW EQUATIONS **Onno Bokhove** (University of Leeds, United Kingdom) Corresponding Author Onno Bokhove (University of Leeds, United Kingdom)
ThFM1713 (INVITED)	14:40~15:10	MEAN FLOW FORCING BY THE REFLECTION OF A THREE-DIMENSIONAL INTERNAL WAVE BEAM ON A SLOPE **Chantal Staquet** (University Grenoble Alpes, France) Corresponding Author Keshav Raja (Center for Ocean-Atmospheric Prediction Studies, Florida State University, Tallahassee, Florida, USA)
ThFM1714	15:10~15:30	VORTICITY, MOMENTUM, AND ENERGY FOR IRROTATIONAL AND ROTATIONAL WATER WAVES **Aidan Blaser** (Scripps Institution of Oceanography / UCSD, USA) Corresponding Author Aidan Blaser (Scripps Institution of Oceanography / UCSD, USA)
ThFM1715	15:30~15:50	GENERATION OF IMPULSE SURFACE WAVES BY A MOVING PISTON **Cyprien Morize** (CNRS - Université Paris Saclay, France) Corresponding Author Cyprien Morize (CNRS - Université Paris Saclay, France)
ThFM1716	15:50~16:10	SURFACE WIND STRESS MODEL FOR TURBULENT FLOW ABOVE OCEAN WAVES **Kianoosh Yousefi** (University of Texas at Dallas, USA) Corresponding Author Kianoosh Yousefi (University of Texas at Dallas, USA)

SM08	Phase transformations and thermomechanical phenomena	
Moderator	Yichun Zhou (Xidian University, China) / Biao Li (Northwestern Polytechnical University, China)	
Room	Room 306B, 3F	
ThSM0805 (INVITED)	14:10~14:40	INVESTIGATION OF DOMAIN TRANSFORMATION BEHAVIOR AND FERROELASTIC TOUGHENING MECHANISM OF THERMAL BARRIER COATING CRYSTALS **Yichun Zhou** (Xidian University, China) Corresponding Author Yichun Zhou (Xidian University, China)
ThSM0806 (INVITED)	14:40~15:10	MODELING OF MECHANICAL-THERMAL-CHEMICAL INTERACTIONS IN ELASTIC DEFORMATION PROCESS **Ke Liu** (Northwestern Polytechnical University, China) Corresponding Author Biao Li (Northwestern Polytechnical University, China)
SM05	Geomechanics and geophysics	
Moderator	Jinhyun Choo (KAIST, Korea, Republic of) / Giang Dinh Nguyen (University of Adelaide, Australia)	
Room	Room 314, 3F	
ThSM0514 (INVITED)	14:10~14:40	MICROMECHANICS-BASED ANALYSIS OF DAMAGE AND CRACKING IN SATURATED POROUS MATERIALS **JIANFU SHAO** (University of Lille, France) Corresponding Author JIANFU SHAO (University of Lille, France)
ThSM0515 (INVITED)	14:40~15:10	LAST GASP OF A RECEDING HYDRAULIC FRACTURE IN PERMEABLE ROCK **Emmanuel Detournay** (University of Minnesota, USA) Corresponding Author Emmanuel Detournay (University of Minnesota, USA)
ThSM0516	15:10~15:30	NEAR-TIP ASYMPTOTICS FOR STEADILY MOVING FRACTURES IN POROELASTICITY **Brice Lecampion** (EPFL, Switzerland) Corresponding Author Brice Lecampion (EPFL, Switzerland)
ThSM0517	15:30~15:50	REDISTRIBUTION OF SHEAR STRESS PRECEDING RUPTURE FRONT CAUSED BY DYNAMIC PORE PRESSURE CHANGE **Changqing Mu** (Harbin Institute of Technology, China) Corresponding Author Hengshan Hu (Harbin Institute of Technoglogy, China)
ThSM0518	15:50~16:10	SHEARING AND OPENING OF A PRE-EXISTING CIRCULAR FRACTURE IN RESPONSE TO FLUID INJECTION **Ankit Gupta** (EPFL, Switzerland) Corresponding Author Ankit Gupta (EPFL, Switzerland)

SM15	Vibrations and control of structures	
Moderator	Abhishek Sharma (Indian Institute of Technology, Kanpur, India) / Je Hoon Oh (Hanyang University ERICA, Korea, Republic of)	
Room	Room 315, 3F	
ThSM1517	14:10~14:30	THE DIFFERENCE IN SELF-LOOSENING BEHAVIOUR BETWEEN BOLTS FASTENED BY TORQUE TIGHTENING AND TENSIONING METHOD **Juhyun Nam** (Hanyang University, Korea, Republic of) Corresponding Author Je Hoon Oh (Hanyang University ERICA, Korea, Republic of)
ThSM1518	14:30~14:50	INFLUENCE OF TOP TABLE MASS ON THE STABILITY OF STEADY ROTARY DRILLING **KAPIL KUMAR** (Indian Institute of Technology Kanpur, Kanpur, India, India) Corresponding Author KAPIL KUMAR (Indian Institute of Technology Kanpur, Kanpur, India, India)
ThSM1519	14:50~15:10	PROGRAMMABLE ORIENTATION OF OBJECTS IN THREE-DIMENSIONAL SPACE USING ROTATING MAGNETIC LEVITATION **Qiuhua Gao** (Shanghai Jiao Tong University, China) Corresponding Author Wenming Zhang (Shanghai Jiao Tong University, China)
ThSM1520	15:10~15:30	TRIBOELECTRICALLY SELF-SENSING MECHANICAL METAMATERIALS FOR ELEVATOR EQUIPMENT **Rui Cao** (Shanghai Jiao Tong University, China) Corresponding Author Songtao Hu (Shanghai Jiao Tong University, China)

SM17	Metamaterials architectured materials and topology optimization	
Moderator	Jaehyung Ju (Shanghai Jiao Tong Universty, China) / Erik Lund (Aalborg University, Denmark)	
Room	Room 320A, 3F	
ThSM1730	14:10~14:30	A NEW CLASS OF MULTI-STEP AUXETIC METAMATERIAL **Xueyan Chen** (Harbin Institute of Technology, China) Corresponding Author Xueyan Chen (Harbin Institute of Technology, China)
ThSM1731	14:30~14:50	DESIGN AND OPTIMIZATION METHODS FOR AUXETIC METAMATERIALS INSPIRED FROM ATOMIC STRUCTURES **Zewei Hou** (Beijing Institute of Technology, China) Corresponding Author Zewei Hou (Beijing Institute of Technology, China)
ThSM1732	14:50~15:10	MECHANICAL METAMATERIALS WITH BISTABLE STRUCTURES FOR LOGIC-IN-MEMORY COMPUTING **Jaehyung Ju** (Shanghai Jiao Tong Universty, China) Corresponding Author Jaehyung Ju (Shanghai Jiao Tong Universty, China)
ThSM1733	15:10~15:30	MULTI-FEATURE BIONIC GRADIENT HIERARCHICAL LATTICE METAMATERIALS WITH MULTI-SYNERGISTIC CRUSHING MECHANISMS **Jiacheng Wu** (Tongji University, China) Corresponding Author Fan Yang (Tongji University, China)
ThSM1734	15:30~15:50	LARGE-SCALE SHAPE OPTIMIZATION ON UNSTRUCTURED GRIDS **Vilmer Olof Dahlberg** (Lund University, Sweden) Corresponding Author Vilmer Olof Dahlberg (Lund University, Sweden)
ThSM1735	15:50~16:10	LARGE-SCALE ELASTO-PLASTIC TOPOLOGY OPTIMIZATION **Gunnar Carl Granlund** (Lund University, Sweden) Corresponding Author Gunnar Carl Granlund (Lund University, Sweden)

SM12	Plasticity, viscoplasticity and creep	
Moderator	Lorenzo Bardella (University of Brescia, Italy) / Henrik Myhre Jensen (Aarhus University, Denmark)	
Room	Room 320B, 3F	
ThSM1212 (INVITED)	14:10~14:40	MECHANICS OF MICROPILLAR CONFINED THIN-FILM PLASTICITY AND KINK BANDING IN METALLIC NANOLAMINATES **Amit Acharya** (Carnegie Mellon University, USA) Corresponding Author Amit Acharya (Carnegie Mellon University, USA)
ThSM1213 (INVITED)	14:40~15:10	MODELLING OF LüDERS BANDING UNDER LOADING-REVERSE LOADING AND APPLICATIONS **Stelios Kyriakides** (University of Texas at Austin, USA) Corresponding Author Stelios Kyriakides (University of Texas at Austin, USA)
ThSM1214	15:10~15:30	LATTICE ROTATION FROM THERMAL CYCLING IN THE ELASTO-VISCOPLASTIC REGIME: A COMPUTATIONAL STUDY **Irene Beyerlein** (University of California Santa Barbara, USA) Corresponding Author Irene Beyerlein (University of California Santa Barbara, USA)
ThSM1215	15:30~15:50	COMPUTATIONAL MODELLING OF HETEROGENEOUS MICRO-PLASTICITY IN POLYCRYSTALLINE MATERIALS **Ron HJ Peerlings** (Eindhoven University of Technology, Netherlands) Corresponding Author Ron HJ Peerlings (Eindhoven University of Technology, Netherlands)
ThSM1216	15:50~16:10	COMPARISON OF THEORETICAL AND NUMERICAL ASPECTS BETWEEN LAGRANGIAN AND EULERIAN FORMULATIONS IN SHEET METAL FORMING **Eun-Ho Lee** (Sungkyunkwan University, Korea, Republic of) Corresponding Author Eun-Ho Lee (Sungkyunkwan University, Korea, Republic of)

SM01	Biomechanics and biomaterials	
Moderator	Gang Bao (Rice University, USA) / Sulin Zhang (Penn State University, USA)	
Room	Room 321A, 3F	
ThSM0117 (INVITED)	14:10~14:40	BIOMECHANICS OF MENTAL HEALTH **M Taher Saif** (University of Illinois, USA) Corresponding Author M Taher Saif (University of Illinois, USA)
ThSM0118 (INVITED)	14:40~15:10	FORCE DRIVEN ORIENTATIONAL ORDERING IN GROWING 3D BACTERIAL BIOFILMS **Sulin Zhang** (Penn State University, USA) Corresponding Author Sulin Zhang (Penn State University, USA)
ThSM0119	15:10~15:30	OPTIMIZATION OF INCISIONS AND SUTURES ON FIXED STRUCTURED GRIDS **Niels Aage** (Technical University of Denmark, Denmark) Corresponding Author Niels Aage (Technical University of Denmark, Department of Civil and Mechanical Engingeering, Denmark)
ThSM0120	15:30~15:50	FULL-FIELD STRAINS IN HIGH-GRADE PARTIAL-THICKNESS ROTATOR CUFF TENDON TEARS REVEAL SHEAR-BASED TEAR PROGRESSION MECHANISM **Carla Nathaly Villacis Nunez** (University of Michigan, USA) Corresponding Author Carla Nathaly Villacis Nunez (University of Michigan, USA)
SM03	Elasticity	
Moderator	CHUN IL KIM (University of Alberta, Canada) / Y. Eugene Pak (SUNY Korea, Korea, Republic of)	
Room	Room 321B, 3F	
ThSM0319	14:10~14:30	A MODEL FOR THE MECHANICS OF HYPERELASTIC MATERIALS REINFORCED WITH NONLINEAR ELASTIC FIBERS **CHUN IL KIM** (University of Alberta, Canada) Corresponding Author CHUN IL KIM (University of Alberta, Canada)
ThSM0320	14:30~14:50	MODELING RIBBONS/ STRIPS AS A COSSERAT ROD **Roushan Kumar** (Indian Institute of Technology Delhi, India) Corresponding Author Roushan Kumar (Indian Institute of Technology Delhi, India)
ThSM0321	14:50~15:10	A STUDY ON BENEFICIAL EFFECT OF THERMAL AUTOFRETTAGE IN FUNCTIONALLY GRADED HOLLOW DISK **Mohit Rajput** (IIT Jammu, India) Corresponding Author Mohit Rajput (IIT Jammu, India)

SM04	Damage & fracture mechanics	
Moderator	Roberta Massabo (University of Genova, Italy) / Xinyue Wei (EPFL, Switzerland)	
Room	Room 322A, 3F	
ThSM0430	14:10~14:30	AN INCREMENTAL VARIATIONAL APPROACH AND COMPUTATIONAL HOMOGENIZATION FOR COMPOSITES WITH EVOLVING DAMAGE **Ghita Ben-El-Barguia** (Sorbonne Université, France) Corresponding Author Ghita Ben-El-Barguia (Sorbonne Université, France)
ThSM0431	14:30~14:50	A COMPARATIVE STUDY OF FAILURE MODE DEPENDENT CONTINUUM DAMAGE MODEL FOR FIBER REINFORCED COMPOSITES **shubham rai** (Ph.D. Research Scholar, India) Corresponding Author shubham rai (Ph.D. Research Scholar, India)
ThSM0432	14:50~15:10	GRADIENT DAMAGE MODEL COMBINED WITH COUPLED THERMOELASTICITY UNDER DYNAMICS CONDITIONS **Djimedo KONDO** (Sorbonne University, France) Corresponding Author Djimedo KONDO (Sorbonne University, France)
FM12	Micro- and nano-fluidics	
Moderator	Carine Douarche (CNRS, Université Paris Saclay, France) / Maria Vittoria Salvetti (University of Pisa, Italy)	
Room	Room 322B, 3F	
ThFM1207 (INVITED)	14:10~14:40	MODELING OF FLOW AND TRANSPORT IN POROUS MEDIA: INTEGRATING CFD AND DEEP LEARNING FOR APPLICATIONS IN DIGITALLY GENERATED GEOMETRIES **Gianluca Boccardo** (Politecnico di Torino, Italy) Corresponding Author Gianluca Boccardo (Politecnico di Torino, Italy)
ThFM1208 (INVITED)	14:40~15:10	DROPLET AND PARTICLE FORMATION IN AN X-MICRODEVICE **Alessandro Mariotti** (University of Pisa, Italy) Corresponding Author Alessandro Mariotti (University of Pisa, Italy)
ThFM1209	15:10~15:30	NUMERICAL STUDY OF INERTIAL PARTICLE MICROFLUIDICS IN STRAIGHT CHANNEL: EFFECT OF CROSS-SECTION'S ASPECT RATIO **Fatemehsadat Mirghaderi** (University of Edinburgh, United Kingdom) Corresponding Author Fatemehsadat Mirghaderi (University of Edinburgh, United Kingdom)
ThFM1210	15:30~15:50	EXPERIMENTAL AND NUMERICAL INVESTIGATION OF A 3D MICROEMULSIFIER FOR THE PREPARATION OF WATER-IN-OIL DROPLETS **Sara Tomasi Masoni** (Università of Pisa, Italy) Corresponding Author Chiara Galletti (University pf Pisa, Italy)
ThFM1211	15:50~16:10	MULTIFUNCTIONAL PICKERING EMULSION WITH PHOTOCATALYTIC JANUS MICROPARTICLES FOR OILY WASTEWATER TREATMENT **Yujin Han** (Korea university, Korea, Republic of) Corresponding Author Hyejeong Kim (Korea University, Korea, Republic of)

FM06	Drops, bubbles and interfaces	
Moderator	Nicolò Giuseppe Di Novo (University of Trento, Italy) / Simona Migliozzi (University College London, United Kingdom)	
Room	Room 323A, 3F	
ThFM0647	14:10~14:30	COALESCENCE DYNAMICS ON A COLLOID-LADEN INTERFACE – EFFECT OF PARTICLE WETTABILITY **Simona Migliozzi** (University College London, United Kingdom) Corresponding Author Simona Migliozzi (University College London, United Kingdom)
ThFM0648	14:30~14:50	ALCOHOL VAPOR-ENHANCED BOUNCING OF WATER DROPLETS ON HIGHLY WETTABLE SURFACES **Jongsu Jeong** (Pusan National University, Korea, Republic of) Corresponding Author Seungho Kim (Pusan National University, Korea, Republic of)
ThFM0649	14:50~15:10	SELF-EJECTION OF SINGLE MICRODROPLETS: DEPENDENCE ON THE CONTACT ANGLE HYSTERESIS AND ANTI-FROSTING EFFECT **Nicolò Giuseppe Di Novo** (University of Trento, Italy) Corresponding Author Nicolò Giuseppe Di Novo (University of Trento, Italy)
FM05	Convection	
Moderator	zijing ding (Harbin Institute of Technology, China) / Arnaud PRIGENT (Le Havre University Normandie, France)	
Room	Room 323B, 3F	
ThFM0531	14:10~14:30	CORRESPONDENCE BETWEEN HEAT TRANSPORT AND FLOW DYNAMICS IN ROTATING RAYLEIGH-BéNARD CONVECTION **Ke-Qing Xia** (Southern University of Science and Technology, China) Corresponding Author Ke-Qing Xia (Southern University of Science and Technology, China)
ThFM0532	14:30~14:50	CONVECTION PATTERNS IN A CYLINDRICAL CAVITY SUBMITTED TO A RADIAL TEMPERATURE GRADIENT **Arnaud PRIGENT** (Le Havre University Normandie, France) Corresponding Author Arnaud PRIGENT (Le Havre University Normandie, France)
ThFM0533	14:50~15:10	ROTATING NON-OBERBECK-BOUSSINESQ CONVECTION AS A MODEL FOR THE DYNAMICS IN THE OUTER MOLECULAR REGIONS OF JOVIAN PLANETS **Susanne Horn** (Coventry University, United Kingdom) Corresponding Author Susanne Horn (Coventry University, United Kingdom)
ThFM0534	15:10~15:30	USE OF THERMAL WAVES FOR REDUCTION OF FLOW LOSSES **Jerzy M Floryan** (Western Ontario, Canada) Corresponding Author Mohammad Zakir Hossain (Western University, Canada)
ThFM0535	15:30~15:50	INSTABILITY AND BIFURCATION IN RADIATIVELY FORCED COLD WATER **Ruiqi Huang** (Harbin Institute of Technology, China) Corresponding Author zijing ding (Harbin Institute of Technology, China)

FM04	Compressible flow	
Moderator	**Jinah Jeun** (KTH Royal Institute of Technology, Sweden) / **Jaiyoung Ryu** (Korea University, Korea, Republic of)	
Room	Room 324A, 3F	
ThFM0424 (INVITED)	14:10~14:40	RECENT PROGRESS IN HIGH-ORDER SHOCK-CAPTURING STRATEGIES **Chongam Kim** (Seoul National University, Korea, Republic of) Corresponding Author Chongam Kim (Seoul National University, Korea, Republic of)
ThFM0425 (INVITED)	14:40~15:10	THREE-LAYER SINGLE MODE RICHTMYER-MESHKOV MIXING **Ye Zhou** (Lawrence Livermore National Lab, USA) Corresponding Author Ye Zhou (Lawrence Livermore National Lab, USA)
ThFM0426	15:10~15:30	HIGH-ORDER FINITE-VOLUME CENTRAL TARGETED ENO FAMILY SCHEME FOR COMPRESSIBLE FLOWS IN UNSTRUCTURED MESHES **ma qh** (Shanghai University, China) Corresponding Author Bofu Wang (Shanghai University, China)
ThFM0427	15:30~15:50	SECONDARY INSTABILITY OF COMPRESSIBLE GORTLER VORTICES INDUCED BY FREE-STREAM VORTICAL DISTURBANCES **Dongdong Xu** (The University of Sheffield, United Kingdom) Corresponding Author Dongdong Xu (The University of Sheffield, United Kingdom)
FM02	Boundary layers	
Moderator	**Lin Fu** (The Hong Kong University of Science and Technology, Hong Kong SAR, China) / **Song Fu** (Tsinghua University, China)	
Room	Room 324B, 3F	
ThFM0232	14:10~14:30	HYPERSONIC BOUNDARY LAYER WITH RAREFACTION EFFECTS AND LINEAR STABILITY ANALYSIS **Jihui Ou** (Tianjin University, China) Corresponding Author Jie Chen (Tianjin University, China)
ThFM0233	14:30~14:50	AN IMPROVED BALDWIN-LOMAX WALL MODEL FOR SUPERSONIC AND HYPERSONIC CANONICAL TURBULENT BOUNDARY LAYERS USING ESTABLISHED SCALINGS **Lin Fu** (The Hong Kong University of Science and Technology, Hong Kong SAR, China) Corresponding Author Lin Fu (The Hong Kong University of Science and Technology, Hong Kong SAR, China)
ThFM0234	14:50~15:10	TOMOGRAPHIC PIV IN THE COMPRESSION RAMP SHOCK WAVE/BOUNDARY LAYER INTERACTION WITH UPSTREAM MVG AT MACH 6 **Qingfu Zhang** (Beihang University, China) Corresponding Author Chong Pan (Beihang University, China)
ThFM0235	15:10~15:30	FLOW ANALYSIS OF HYPERSONIC ABLATIVE BOUNDARY LAYER **Qiming Zhang** (Beihang University, China) Corresponding Author Jinghui Guo (Beihang University, China)

FM01	Biological fluid mechanics	
Moderator	**David Saintillan** (University of California San Diego, USA) / **Franck Plouraboué** (CNRS IMFT, France)	
Room	Room 325A, 3F	
ThFM0121	14:10~14:30	FLUID-STRUCTURE-INTERACTION BLOOD HAMMER PULSED WAVE IN VASCULAR NETWORKS **Franck Plouraboué** (CNRS IMFT, France) Corresponding Author Franck Plouraboué (Institut de Mécanique des Fluides de Toulouse, IMFT, Université de Toulouse, CNRS, France)
ThFM0122	14:30~14:50	REDUCED ORDER MODEL FOR PULSATING BLOOD FLOW SIMULATIONS WITH MINIMUM THREE-DIMENSIONAL DATA **Wonjin Choi** (KAIST, Korea, Republic of) Corresponding Author HYUN JIN KIM (Korea Advanced Institute of Science and Technology, Korea, Republic of)
ThFM0123	14:50~15:10	ANALYTIC MODELLING OF FLUID-STRUCTURE INTERACTION IN VISCOELASTIC VESSELS **Peishuo Wu** (Peking University, China) Corresponding Author Chi Zhu (Peking University, China)
ThFM0124	15:10~15:30	FLUID-STRUCTURE INTERACTION MODELLING OF PRESSURE WAVE PROPAGATION IN THE ARTERIAL NETWORK OF THE UPPER LIMB **Chi Zhu** (Peking University, China) Corresponding Author Chi Zhu (Peking University, China)
ThFM0125	15:30~15:50	SUPPLY AND DEMAND BASED CEREBROVASCULAR BOUNDARY CONDITION **Chang Min Lee** (KAIST, Korea, Republic of) Corresponding Author HYUN JIN KIM (Korea Advanced Institute of Science and Technology, Korea, Republic of)
ThFM0126	15:50~16:10	REDUCED-ORDER MODEL FOR PREDICTING WALL SHEAR STRESS-RELATED PARAMETERS IN STENOTIC CAROTID ARTERIES **Yanlu Chen** (Zhejiang University, China) Corresponding Author Kun Luo (Zhejiang University, China)

FM03	Zero-emission combustion	
Moderator	Christine Mounaïm Rousselle (Univ. Orléans, France) / Chiara Galletti (University pf Pisa, Italy)	
Room	Room 325B, 3F	
ThFM0314 (INVITED)	14:10~14:40	DECARBONISING HARD-TO-ABATE SECTORS WITH HYDROGEN-BASED FUELS: OPPORTUNITIES, CHALLENGES AND THE ROLE OF DIGITALIZATION **Arianna Remiddi** (Université Libre de Bruxelles, Belgium) Corresponding Author Alessandro Parente (Université libre de Bruxelles, Belgium)
ThFM0315 (INVITED)	14:40~15:10	METALS AS FUTURE CARBON-FREE ENERGY CARRIERS **Fabien HALTER** (University of Orléans, France) Corresponding Author Fabien HALTER (University of Orléans, France)
ThFM0316	15:10~15:30	SYNERGY OF TURBULENCE AND THERMO-DIFFUSIVE EFFECTS ON THE INTERMITTENT BOUNDARY-LAYER FLASHBACK OF SWIRLING FLAMES **Zhen Lu** (Peking University, China) Corresponding Author Zhen Lu (Peking University, China)
ThFM0317	15:30~15:50	NOX FORMATION ASSESSMENT FOR HYDROGEN REPLACING BY AMMONIA UNDER MILD COMBUSTION **Amir Mardani** (Sharif university of Technology, Iran) Corresponding Author Amir Mardani (Sharif university of Technology, Iran)
FM06	Drops, bubbles and interfaces	
Moderator	chieko kondou (Nagasaki University, Japan) / Zhenzhen Li (Beijing Institute of Technology, China)	
Room	Room 325C, 3F	
ThFM0650	14:10~14:30	LAYER STRUCTURE AT VAPOR-LIQUID INTERFACE OF FLUID MIXTURES **chieko kondou** (Nagasaki University, Japan) Corresponding Author chieko kondou (Nagasaki University, Japan)
ThFM0651	14:30~14:50	MOTION OF GAS BUBBLE IN FORCED VIBRATING SESSILE DROP **Jiaqi Cheng** (University of Science and Technology of China, China) Corresponding Author Chun-Yu Zhang (University of Science and Technology of China, China)
ThFM0652	14:50~15:10	MARANGONI SPREADING OF ALCOHOL DROPLET ON FREE SURFACE OF SALINE SOLUTION **Zhenzhen Li** (Beijing Institute of Technology, China) Corresponding Author Zhenzhen Li (Beijing Institute of Technology, China)
ThFM0653	15:10~15:30	EFFECT OF ELECTROLYTE ON DRAINAGE DYNAMICS OF THIN FILM DURING BUBBLE COALESCENCE **Afsal Chakkam Palliyalil** (Indian Institute of Science, India) Corresponding Author Susmita Dash (Indian Institute of Science, India)
ThFM0654	15:30~15:50	EFFECT OF MECHANICAL PERTURBATION OF THE STABILITY OF A RADIALLY EXPANDING LIQUID SHEET **Soumya Kedia** (Indian Institute of Technology Bombay, India) Corresponding Author Soumya Kedia (Indian Institute of Technology Bombay, India)

FM14	Computational fluid dynamics	
Moderator	Yisheng Gao (Nanjing University of Aeronautics and Astronautics, China) / Seungwon Shin (Hongik University, Korea, Republic of)	
Room	Room 325D, 3F	
ThFM1430	14:10~14:30	LAMINAR MIXING EFFICIENCY QUANTIFICATION WITH 'STRANGE EIGENMODES' FOR THE ADVECTION-DIFFUSION PROBLEM **Jakub Fabisiak** (Warsaw University of Technology, Poland) Corresponding Author Jakub Fabisiak (Warsaw University of Technology, Poland)
ThFM1431	14:30~14:50	SPATIAL-TEMPORAL PREDICTION OF FLOW FIELD WITH SWIN-TRANSFORMER MODEL **Longyin Jiao** (Henan University of Science and Technology, China) Corresponding Author Longyin Jiao (Henan University of Science and Technology, China)
ThFM1432	14:50~15:10	DISCRETE ADJOINT-BASED AERODYNAMIC OPTIMIZATION ON DYNAMIC MESHES WITH LOCAL GRID TOPOLOGY MODIFICATION AND STRONG SOLVER **Yisheng Gao** (Nanjing University of Aeronautics and Astronautics, China) Corresponding Author Yisheng Gao (Nanjing University of Aeronautics and Astronautics, China)
MS05	Data-driven mechanics and artificial intelligence	
Moderator	Sacha Zenon Wattel (EPFL, Switzerland) / Bernd R. Noack (Harbin Institute of Technology, China)	
Room	Room 503, 5F	
ThMS0532	14:10~14:30	RECURRENT NEURAL NETWORK PLASTICITY MODELS: IDENTIFICATION OF VON MISES CORE THROUGH MULTI-TASK LEARNING **Julian Heidenreich** (ETH Zurich, Switzerland) Corresponding Author Dirk Mohr (ETH Zurich, Switzerland)
ThMS0533	14:30~14:50	COHERENT STRUCTURES IN ELASTIC TURBULENT PLANAR JETS **Christian Amor** (Okinawa Institute of Science and Technology Graduate University, Japan) Corresponding Author Christian Amor (Okinawa Institute of Science and Technology Graduate University, Japan)
ThMS0534	14:50~15:10	MODEL-FREE DATA-DRIVEN FINITE-THICKNESS COHESIVE ELEMENTS FOR FRICTIONAL INTERFACES **Sacha Zenon Wattel** (EPFL, Switzerland) Corresponding Author Sacha Zenon Wattel (EPFL, Switzerland)
ThMS0466	15:10~15:30	RATIONALLY DESIGNED MECHANICALLY ASSISTED THERAPIES FOR PERSONALIZED WOUND REPAIR **Hao Liu** (Xi'an Jiaotong University, China) Corresponding Author Hao Liu (Xi'an Jiaotong University, China)

MS05	Data-driven mechanics and artificial intelligence	
Moderator	**Chuangxin He** (Shanghai Jiao Tong University, China) / **L. Catherine Brinson** (Duke University, USA)	
Room	Room 504, 5F	
ThMS0535	14:10~14:30	WEAK-CONSTRAINT 4DVAR DATA ASSIMILATION FOR LAGRANGIAN PARTICLE TRACKING **Chuangxin He** (Shanghai Jiao Tong University, China) Corresponding Author Chuangxin He (Shanghai Jiao Tong University, China)
ThMS0536	14:30~14:50	AI-BOOSTED GENERATIVE MODEL FOR DESIGN OPTIMIZATION **Sangryun Lee** (Ewha Womans University, Korea, Republic of) Corresponding Author Sangryun Lee (Ewha Womans University, Korea, Republic of)
ThMS0537	14:50~15:10	A DATA-DRIVEN VORTICITY-CONFINEMENT SOLVER FOR AERODYNAMIC PREDICTION ON VERY COARSE MESHES **Tianhong Tu** (Shanghai Jiao Tong University, China) Corresponding Author Chuangxin He (Shanghai Jiao Tong University, China)
ThMS0538	15:10~15:30	VISCONET – A MACHINE LEARNING FRAMEWORK FOR POLYMER NANOCOMPOSITE VISCOELASTIC PROPERTY PREDICTION AND MATERIAL DESIGN **L. Catherine Brinson** (Duke University, USA) Corresponding Author L. Catherine Brinson (Duke University, USA)

MS02	Soft matter, theory meets experiment	
Moderator	**Xinyue Liu** (Shanghai University, China) / **Sascha Hilgenfeldt** (University of Illinois at Urbana-Champaign, USA)	
Room	Room 505, 5F	
ThMS0225	14:10~14:30	TRANSITION IN PHOTOTAXIS BEHAVIORS OF CHLAMYDOMONAS REINHARDTII **Alan Cheng Hou Tsang** (The University of Hong Kong, Hong Kong SAR, China) Corresponding Author Alan Cheng Hou Tsang (The University of Hong Kong, Hong Kong SAR, China)
ThMS0226	14:30~14:50	EPITHELIAL CELL SHAPES IN 3D: AN ELASTIC SHELL MODEL CONNECTING BIOLOGY AND CONTINUUM MECHANICS **Sascha Hilgenfeldt** (University of Illinois at Urbana-Champaign, USA) Corresponding Author Sascha Hilgenfeldt (University of Illinois at Urbana-Champaign, USA)
ThMS0227	14:50~15:10	STOMATOCYTE-DISCOCYTE-ECHINOCYTE TRANSFORMATIONS OF ERYTHROCYTE MODULATED BY MEMBRANE-CYTOSKELETON MECHANICAL PROPERTIES **Xinyue Liu** (Shanghai University, China) Corresponding Author Xinyue Liu (Shanghai University, China)
ThMS0228	15:10~15:30	COMPUTATIONAL TOOL FOR MEASURING RED BLOOD CELL MECHANICS USING OPTICAL TWEEZERS **Emir Erdem** (Bilkent University, Türkiye) Corresponding Author Emir Erdem (Bilkent University, Türkiye)
SM07	Multi-component, composites and hierarchical materials	
Moderator	**Weidong Yang** (Tongji University, China) / **Katarzyna Kowalczyk-Gajewska** (Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland)	
Room	Room 506, 5F	
ThSM0711	14:10~14:30	PROCESS-DEPENDENT MULTISCALE MODELING FOR 3D PRINTING OF CONTINUOUS FIBER-REINFORCED COMPOSITES WITH ENHANCED INTERFACE ADHESION **Weidong Yang** (Tongji University, China) Corresponding Author Weidong Yang (Tongji University, China)
ThSM0712	14:30~14:50	A NOVEL REMESHING FRAMEWORK TO SIMULATE LOCALIZED PLASTIC DEFORMATION AND FAILURE IN TWO-LEVEL HIERARCHICAL SOLIDS **Naresh Chockalingam S** (Indian Institute of Science, India) Corresponding Author Narayan K. Sundaram (Indian Institute of Science, India)
ThSM0713	14:50~15:10	INTERACTION CLUSTER MODEL WITH THE MODIFIED TANGENT LINEARIZATION FOR ELASTIC-PLASTIC TWO-PHASE MATERIALS **Katarzyna Kowalczyk-Gajewska** (Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland) Corresponding Author Katarzyna Kowalczyk-Gajewska (Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland)

Oral Presentation 9		
FM15	Turbulence	
Moderator	Jin-Han Xie (Peking University, China) / Eiichi Sasaki (Akita University, Japan)	
Room	Auditorium, 5F	
ThFM1546	16:30~16:50	A DETUNED INSTABILITY ORIGINATES LARGE-SCALE MOTIONS IN THE TURBULENT CHANNEL FLOW **Nicola Ciola** (Politecnico di Bari, Italy) Corresponding Author Nicola Ciola (Politecnico di Bari, Italy)
ThFM1547	16:50~17:10	DEPARTURE FROM THE STATISTICAL EQUILIBRIUM OF LARGE SCALES IN THREE-DIMENSIONAL HYDRODYNAMIC TURBULENCE **Jin-Han Xie** (Peking University, China) Corresponding Author Jin-Han Xie (Peking University, China)
ThFM1548	17:10~17:30	ORBITAL INSTABILITY FOR MODERATELY DEVELOPED COUETTE TURBULENCE **Eiichi Sasaki** (Akita University, Japan) Corresponding Author Eiichi Sasaki (Akita University, Japan)
ThFM1549	17:30~17:50	GENERALIZED LOOP THEORY IN TWO-DIMENSIONAL INSTABILITY-DRIVEN TURBULENCE **Bo-Jie Xie** (Peking University, China) Corresponding Author Jin-Han Xie (Peking University, China)
ThFM1550	17:50~18:10	MEAN IMPULSE RESPONSE IN A TURBULENT CHANNEL FLOW **Federica Gattere** (Politecnico di Milano, Italy) Corresponding Author Federica Gattere (Politecnico di Milano, Italy)
ThFM1551	18:10~18:30	ONSET OF VERY WIDE BACKFLOW REGION IN TURBULENT CHANNEL FLOW **Ikchan Park** (Pusan National University, Korea, Republic of) Corresponding Author Jinyul Hwang (Pusan National University, Korea, Republic of)

FS05	Fluid structure interactions	
Moderator	Jin-Tae Kim (POSTECH, Korea, Republic of) / Daegyoum Kim (KAIST, Korea, Republic of)	
Room	Room 211, 2F	
ThFS0544	16:30~16:50	EIGENFREQUENCY SPECTRUM OF EXTENDED ONE-DIMENSIONAL SYSTEMS **Vasily Vedeneev** (Lomonosov Moscow State University, Russia) Corresponding Author Vasily Vedeneev (Lomonosov Moscow State University, Russia)
ThFS0545	16:50~17:10	HOW A SELF-PROPELLED FIN GAINS HYDRODYNAMIC ADVANTAGES BEHIND A VORTEX-INDUCED VIBRATING CIRCULAR CYLINDER **Peng Han** (Tsinghua University, China) Corresponding Author Wei-Xi Huang (Tsinghua University, China)
ThFS0546	17:10~17:30	NONLINEAR TWO-DIMENSIONAL WING SECTION CONTROL BASED ON THE INVERSE METHOD **Chenxi Zhang** (Beihang University, China) Corresponding Author Jiaying Zhang (Beihang, China)
ThFS0547	17:30~17:50	DESIGN AND AEROELASTIC ANALYSIS OF A SPAN MORPHING WING FOR MARS EXPLORATION **Guanzhen Wu** (Beihang University, China) Corresponding Author Jiaying Zhang (Beihang, China)
FS06	Granular materials and flows	
Moderator	Devang Khakhar (IIT Bombay, India) / Jerzy Rojek (Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland)	
Room	Room 214, 2F	
ThFS0614 (INVITED)	16:30~17:00	SAND BEHAVIOR UPON ALTERNATING TRIAXIAL COMPRESSION AND TRIAXIAL EXTENSION: A MULTISCALE ANALYSIS USING LS-DEM **Jose Andrade** (California Institute of Technology, USA) Corresponding Author Jose Andrade (California Institute of Technology, USA)
ThFS0615 (INVITED)	17:00~17:30	NUMERICAL EVALUATION OF EFFECTIVE THERMAL AND ELECTRICAL PROPERTIES OF GRANULAR MATERIALS **Jerzy Rojek** (Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland) Corresponding Author Jerzy Rojek (Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland)
ThFS0616	17:30~17:50	SMALL ASTEROID SHAPES: EFFECT OF REGOLITH DYNAMICS **Kumar Gaurav** (Indian Institute of Technology Kanpur, India) Corresponding Author Kumar Gaurav (Indian Institute of Technology Kanpur, India)

SM10	Multibody and vehicle dynamics	
Moderator	**Georg Rill** (OTH Regensburg, Germany, Germany) / **Kun Wang** (Beijing Institute of Technology, China)	
Room	Room 217, 2F	
ThSM1001	16:30~16:50	VEHICLE DYNAMICS WITH RECURDYN BASED ON THE TMEASY TIRE MODEL **Uwe Eiselt** (FunctionBay GmbH, Germany) Corresponding Author Georg Rill (OTH Regensburg, Germany, Germany)
ThSM1002	16:50~17:10	AN EFFICIENT ALE-DEM COUPLING ALGORITHM FOR TIRE-SAND INTERACTION DYNAMICS **Renhui Yi** (Beijing Institute of Technology, China) Corresponding Author Qiang Tian (Beijing Institute of Technology, China)
ThSM1003	17:10~17:30	A NONSMOOTH REDUCED ORDER MODEL OF TRANSIENT TIRE-ROAD CONTACT DYNAMICS WITH FRICTION IN ALE FORMULATIONS **Kun Wang** (Beijing Institute of Technology, China) Corresponding Author Kun Wang (Beijing Institute of Technology, China)
ThSM1004	17:30~17:50	CONFIDENT ROBOT LOCALIZATION BY POSSIBILISTIC FILTERING **Michael Hanss** (University of Stuttgart, Germany) Corresponding Author Michael Hanss (University of Stuttgart, Germany)
ThSM1005	17:50~18:10	COLLECTIVE BEHAVIORS OF ROBOT SWARMS WITH ADJUSTABLE ATTRACTIVE FORCE **Munkyeong Choi** (Seoul National University, Korea, Republic of) Corresponding Author Ho-Young Kim (Seoul National University, Korea, Republic of)
ThSM1006	18:10~18:30	DYNAMIC MODELLING AND COMPUTATION OF FLEXIBLE MULTIBODY SYSTEMS WITH COMPLEX GEOMETRY **Yue Feng** (Beijing Institute of Techenology, China) Corresponding Author Qiang Tian (Beijing Institute of Technology, China)
FM17	Waves in fluids	
Moderator	**Deepali Goyal** (IIT Ropar, India) / **Hua Liu** (Shanghai Jiao Tong University, China)	
Room	Room 219, 2F	
ThFM1717	16:30~16:50	CHARACTERIZATION OF WAVENUMBER AND WAVE FREQUENCY WITH KELVIN-HELMHOLTZ (KH) AND RAYLEIGH-TAYLOR (RT) INSTABILITIES IN THREE-LAYER SYSTEM WITH FLOATING RIGID LID **Deepali Goyal** (IIT Ropar, India, India) Corresponding Author Deepali Goyal (IIT Ropar, India, India)
ThFM1718	16:50~17:10	AN EXPERIMENTAL STUDY ON RUNUP OF LEADING ELEVATION N-WAVES ON A SLOPE **Hua Liu** (Shanghai Jiao Tong University, China) Corresponding Author Hua Liu (Shanghai Jiao Tong University, China)
ThFM1719	17:10~17:30	COMBINING X-BAND RADAR AND VIDEOCAMERAS DATA TO STUDY WAVE PROPAGATION **Muhammed Said Parlak** (Università Politecnica delle Marche, Italy) Corresponding Author Maurizio Brocchini (University Politecnica delle Marche, Italy)

SM02	Tribology-contact and friction	
Moderator	**Lars Pastewka** (University of Freiburg, Germany) / **Gabor Csernak** (Budapest University of Technology and Economics, Hungary)	
Room	Room 306A, 3F	
ThSM0218	16:30~16:50	CRACKS OR PULSES? INVESTIGATING SLIP NUCLEATION AT ADHESIVE FRICTIONAL INTERFACES **Vineet Kumar Dawara** (Indian Institute of Science, India) Corresponding Author Koushik Viswanathan (Indian Institute of science bangalore, India)
ThSM0219	16:50~17:10	PARTIAL SLIP PROBLEMS FOR A ROUNDED CONFORMING CONTACT **Beth Louise Backett Eames** (University of Oxford, United Kingdom) Corresponding Author Beth Louise Backett Eames (University of Oxford, United Kingdom)
ThSM0220	17:10~17:30	ROLES OF WAVINESS AND GROOVE IN CONTROL OF STICTION AND SLIP NUCLEATION **Wataru Iwashita** (Osaka University, Japan) Corresponding Author Wataru Iwashita (Osaka University, Japan)
ThSM0221	17:30~17:50	SINGULARITIES AND BIFURCATIONS IN THE PHASE SPACE OF FRICTIONAL SYSTEMS **Gabor Csernak** (Budapest University of Technology and Economics, Hungary) Corresponding Author Gabor Csernak (Budapest University of Technology and Economics, Hungary)
ThSM0222	17:50~18:10	AN EXPERIMENTAL STUDY ON FRICTIONAL SLIDING STABILITY: ROUGHNESS AND INITIAL NORMAL LOAD EFFECTS **Demirkan Coker** (Middle East Technical University, Türkiye) Corresponding Author Demirkan Coker (Middle East Technical University, Türkiye)

SM14	Computational solid mechanics	
Moderator	Yinghao Nie (Dalian University of Technology, China) / MADDEGEDARA Lalith Lakshman Wijerathne (The University of Tokyo, Japan)	
Room	Room 306B, 3F	
ThSM1433	16:30~16:50	DATA-DRIVEN FEM CLUSTER-BASED BASIS REDUCTION METHOD FOR ULTIMATE LOAD-BEARING CAPACITY PREDICTION OF STRUCTURES UNDER CYCLIC VARIABLE LOADS **Yinghao Nie** (Dalian University of Technology, China) Corresponding Author Gengdong Cheng (Dalian University of Technology, China)
ThSM1434	16:50~17:10	A FIRST-ORDER SHELL FORMULATION IN CURVILINEAR COORDINATES AND ITS IMPLEMENTATION IN ISOGEOMETRIC ANALYSIS **Migel Arachchillage Kasun Madusanka Dharmasiri** (The University of Tokyo, Japan) Corresponding Author MADDEGEDARA Lalith Lakshman Wijerathne (The University of Tokyo, Japan)
ThSM1435	17:10~17:30	A SEQUENTIAL LINEAR PROGRAMMING (SLP) APPROACH FOR UNCERTAINTY ANALYSIS-BASED DATA-DRIVEN COMPUTATIONAL MECHANICS **Huang MengCheng** (Dalian University of Technology, China) Corresponding Author Xu Guo (Dalian University of Technology, China)
ThSM1436	17:30~17:50	A LOW-COST LOCAL INTERFACE REDUCTION METHOD FOR SUBSTRUCTURES **Tuan Anh Bui** (Kumoh National Institute of Technology, Korea, Republic of) Corresponding Author Jun-Sik Kim (Kumoh National Institute of Technology, Korea, Republic of)
ThSM1437	17:50~18:10	DEVELOPMENT OF A CONTACT TECHNIQUE FOR IMPLICIT CELL-BASED MATERIAL POINT METHOD **Jae-Uk Song** (Seoul National University of Science and Technology, Korea, Republic of) Corresponding Author Hyun-Gyu Kim (Seoul National University of Science and Technology, Korea, Republic of)

SM05	Geomechanics and geophysics	
Moderator	Ha BUI (Monash University, Australia) / Emmanuel Detournay (University of Minnesota, USA)	
Room	Room 314, 3F	
ThSM0519	16:30~16:50	PREDICTION OF ROCK BEHAVIOUR FROM QUASI-STATIC TO EXTREME DYNAMIC (BURSTING) **Giang Dinh Nguyen** (University of Adelaide, Australia) Corresponding Author Giang Dinh Nguyen (University of Adelaide, Australia)
ThSM0520	16:50~17:10	UNSATURATED SEEPAGE FLOW ANALYSIS USING PHASE FIELD METHOD **shunsuke ishiguro** (Tohoku University, Japan) Corresponding Author Shotaro Yamada (Tohoku University, Japan)
ThSM0521	17:10~17:30	EXPERIMENTAL INVESTIGATION OF DEFORMATION ANISOTROPY IN ELONGATED GRANULAR MEDIA **Mamoru Kikumoto** (Yokohama National University, Japan) Corresponding Author Mamoru Kikumoto (Yokohama National University, Japan)
ThSM0522	17:30~17:50	SEISMIC MODELLING IN COMPLEX NEAR-SURFACE ENVIRONMENTS: LEVERAGING SPECTRAL ELEMENTS FOR METER-SCALE HETEROGENEITIES **Denis Sabitov** (Aramco Innovations, Russia) Corresponding Author Denis Sabitov (Aramco Innovations, Russia)
ThSM0523	17:50~18:10	DISPERSION AND ATTENUATION IN FLUID-SATURATED ROCKS WITH ELLIPTIC FRACTURES **Yongjia Song** (Harbin Institute of Technology, China) Corresponding Author Yongjia Song (Harbin Institute of Technology, China)
ThSM0524	18:10~18:30	SEISMIC MOMENT TENSOR FOR A SHEAR FAULT IN A PRESTRESSED REGION **Hengshan Hu** (Harbin Institute of Technoglogy, China) Corresponding Author Hengshan Hu (Harbin Institute of Technoglogy, China)

SM15	Vibrations and control of structures	
Moderator	Zheng Li (Peking Univ., China) / Guang Meng (Shanghai Jiao Tong University, China)	
Room	Room 315, 3F	
ThSM1521	16:30~16:50	OPTIMAL CONTROL OF SOFT ROBOTIC FINGERS **Daniel Lichtenecker** (Technical University of Munich, Germany) Corresponding Author Daniel Lichtenecker (Technical University of Munich, Germany)
ThSM1522	16:50~17:10	DYNAMIC MODELING, SIMULATION, CONTROL, AND DESIGN OF AN ULTRA-PRECISION FLY-CUTTING MACHINE TOOL **Hanjing Lu** (Peking University, China) Corresponding Author Ziyao Ma (Peking University, China)
ThSM1523	17:10~17:30	TUNABLE PIEZOELECTRIC METASURFACE FOR MANIPULATING MULTI-MODE LAMB WAVES IN PLATE **Shixuan Shao** (Peking University, China) Corresponding Author Zheng Li (Peking University, China)
ThSM1524	17:30~17:50	MANIPULATION OF LAMB WAVES IN PIEZOELECTRIC PLATES WITH PERIODIC SHUNTING CIRCUITS **Youqi Zhang** (Peking University, China) Corresponding Author Zheng Li (Peking University, China)
SM17	Metamaterials architectured materials and topology optimization	
Moderator	Mathias Wallin (Lund University, Sweden) / Zhan Kang (Dalian University of Technology, China)	
Room	Room 320A, 3F	
ThSM1736	16:30~16:50	STRUCTURAL OPTIMIZATION OF ELASTO-PLASTIC STRUCTURES **Mathias Wallin** (Lund University, Sweden) Corresponding Author Mathias Wallin (Lund University, Sweden)
ThSM1737	16:50~17:10	LINEAR AND NONLINEAR TOPOLOGY OPTIMIZATION USING MORPHING BEAM NETWORKS **Andrew S Montalbano** (Clemson University, USA) Corresponding Author Andrew S Montalbano (Clemson University, USA)
ThSM1738	17:10~17:30	PROGRAMMING RATE-DEPENDENT STRESS-STRAIN CURVES BY BULK VISCOELASTIC MECHANICAL METAMATERIALS **Xin Lin** (Beihang University; China Academy of Aerospace Science and Innovation, China) Corresponding Author Yuli Chen (Beihang University, China)
ThSM1739	17:30~17:50	MICRO-INSPIRED HETEROGENEOUS LATTICE MATERIALS WITH INTERFACE OR PARTICLE STRENGTHENING FOR INTEGRATED LOAD-BEARING AND ENERGY-ABSORPTION APPLICATIONS **Fan Yang** (Tongji University, China) Corresponding Author Fan Yang (Tongji University, China)
ThSM1740	17:50~18:10	EXPLICIT TOPOGRAPHY DESIGN FOR COMPLEX SHELL STRUCTURES BASED ON THE MOVING MORPHABLE COMPONENTS METHOD **Wendong Huo** (Dalian University of Technology, China) Corresponding Author Xu Guo (Dalian University of Technology, China)

SM18	Nonlinear dynamics for design	
Moderator	Jerzy Warminski (Lublin University of Technology, Poland) / Gabor Stepan (Budapest University of Technology and Economics, Hungary)	
Room	Room 320B, 3F	
ThSM1828	16:30~16:50	RELIABILITY DESIGN OF A HYPERSONIC AIRFOIL WITH FREEPLAY IN RANDOM FLUCTUATING FLOW VIA NONLINEAR ENERGY SINK **Weili Guo** (Northwestern Polytechnical University, China) Corresponding Author Yong Xu (Northwestern Polytechnical University, China)
ThSM1829	16:50~17:10	EXPLORING NON-EQUILIBRIUM STABILITY AND HIGH-ORDER BIFURCATION IN DISCRETE FLUID-STRUCTURE INTERACTION MODEL **I. Ario** (Hiroshima University, Japan) Corresponding Author I. Ario (Hiroshima University, Japan)
ThSM1830	17:10~17:30	LIMIT CYCLE OSCILLATIONS OF VARIABLE STIFFNESS LAMINATED COMPOSITE CYLINDRICAL SHELLS **Pedro Ribeiro** (Fac. Eng. Un. Porto, Portugal) Corresponding Author Pedro Ribeiro (Fac. Eng. Un. Porto, Portugal)
ThSM1831	17:30~17:50	NONLINEAR PIEZOELECTRIC CONSTITUTIVE RELATIONS IN DYNAMICS OF A HUB-BIMORPH BEAM **Jaroslaw Latalski** (Lublin University of Technology Poland, Poland) Corresponding Author Jaroslaw Latalski (Lublin University of Technology Poland, Poland)
SM16	Soft materials and extremely deformable structures	
Moderator	Krishnaswamy Ravi-Chandar (University of Texas at Austin, USA) / Alberto Di Matteo (University of Palermo, Italy)	
Room	Room 321A, 3F	
ThSM1626	16:30~16:50	CHALLENGES OF USING DIELECTRIC ELASTOMER ACTUATOR TO DRIVE A ROBOTIC DRUMMER **Sudhir Wakle** (National Yang Ming Chiao Tung University-IITK, China-Taipei) Corresponding Author Gih-Keong Lau (National Yang Ming Chiao Tung University, China-Taipei)
ThSM1627	16:50~17:10	NUCLEATION AND GROWTH OF CRACKS IN ELASTOMERS **Krishnaswamy Ravi-Chandar** (University of Texas at Austin, USA) Corresponding Author Krishnaswamy Ravi-Chandar (University of Texas at Austin, USA)
ThSM1628	17:10~17:30	LOCAL IMPENETRABILITY IN SLENDER BODIES WITH FINITE THICKNESS **Harmeet Singh** (Indian Institute of Technology Gandhinagar, India) Corresponding Author Harmeet Singh (Indian Institute of Technology Gandhinagar, India)
ThSM1629	17:30~17:50	A NOVEL WAVE ENERGY CONVERTER BASED ON TUNED LIQUID COLUMN DAMPER WITH DIELECTRIC ELASTOMER GENERATOR **Alberto Di Matteo** (University of Palermo, Italy) Corresponding Author Alberto Di Matteo (University of Palermo, Italy)
ThSM1630	17:50~18:10	WAVE CHARACTERISTICS AND ANISOTROPIC HOMOGENIZATION THEORY ON LAMINATED STRUCTURE OF SOFT MATERIALS **Rui Guo** (Beijing Institute of Technology, China) Corresponding Author zhang Kai (Beijing Institute of Technology, China)

SM03	Elasticity	
Moderator	Feng Zhu (Nanjing University of Aeronautics and Astronautics, China) / Zhiqing Zhang (Wenzhou University of Technology, China)	
Room	Room 321B, 3F	
ThSM0322	16:30~16:50	WAVES SCATTERING INDUCED BY AN INTERFACE CRACK IN ONE-DIMENSIONAL HEXAGONAL QUASICRYSTAL COATING-SUBSTRATE STRUCTURE **Shenghu Ding** (Ningxia University, China) Corresponding Author Shenghu Ding (Ningxia University, China)
ThSM0323	16:50~17:10	EFFECTIVE PROPERTIES OF COMPOSITES WITH OFF-AXIALLY ORIENTED SPHEROIDAL INCLUSION IN A TRANSVERSALLY ISOTROPIC MATRIX USING GREEN OPERATEUR **salma Barboura** (University Sorbonne Paris North, France) Corresponding Author salma Barboura (University Sorbonne Paris North, France)
ThSM0324	17:10~17:30	THE DETERMINATION OF MECHANICAL PROPERTIES OF LAYERED AND BRAIDED ANNULAR CYLINDERS OF SIC FIBRES WITH VIBRATION ANALYSIS AND MEASUREMENT **Ji Wang** (Ningbo University, China) Corresponding Author Ji Wang (Ningbo University, China)
SM04	Damage & fracture mechanics	
Moderator	Mathias Lebihain (Ecole des Ponts, France) / Livia Cupertino Malheiros (Imperial College London, United Kingdom)	
Room	Room 322A, 3F	
ThSM0433	16:30~16:50	CHALLENGES IN COMPLEX ANALYSIS FOR ELECTROMECHANICAL CRACK PROBLEMS **Daniel Wallenta** (University of Kassel, Germany) Corresponding Author Daniel Wallenta (University of Kassel, Germany)
ThSM0434	16:50~17:10	UNCLOAKING THE CONCEALED ROLE OF MAXWELL STRESS IN DIELECTRIC FRACTURE **Lennart Behlen** (University of Kassel, Germany) Corresponding Author Lennart Behlen (University of Kassel, Germany)
ThSM0435	17:10~17:30	INVESTIGATION ON THE THERMAL SHOCK RESISTANCE IN FUNCTIONALLY GRADED MATERIALS WITH PARALLEL CRACKS BASED ON NON-FOURIER HEAT CONDUCTION THEORY **Yanyan Zhang** (Civil Aviation Flight University of China, China) Corresponding Author Yanyan Zhang (Civil Aviation Flight University of China, China)
ThSM0436	17:30~17:50	MULTISCALE-MULTIPHYSICS MODELLING OF IRRADIATED MATERIALS **Aneta Ustrzycka** (Institute of Fundamental Technological Research, Poland) Corresponding Author Aneta Ustrzycka (Institute of Fundamental Technological Research, Poland)
ThSM0437	17:50~18:10	EXPLORING SURFACE EFFECTS ON THE FRACTURE BEHAVIOR OF MULTIFUNCTIONAL NANOMATERIALS **Ying Yang** (Nangchang University, China) Corresponding Author Peter Schiavone (The University of Alberta, Canada)

FM08	Flow instability and transition	
Moderator	Junho Park (Coventry University, United Kingdom) / Alec Linot (University of California, USA)	
Room	Room 322B, 3F	
ThFM0836	16:30~16:50	FLOWS IN VIBRATING CONDUITS: CHANGES IN FLOW RESISTANCE AND FORMATION OF STREAMWISE VORTICES **Jerzy M Floryan** (Western Ontario, Canada) Corresponding Author Nafisha Nubayaatt Haq (University of Western Ontario, Canada)
ThFM0837	16:50~17:10	LAMINAR-TURBULENT TRANSITION IN STRATIFIED TAYLOR-COUETTE FLOW **Junho Park** (Coventry University, United Kingdom) Corresponding Author Junho Park (Coventry University, United Kingdom)
ThFM0838	17:10~17:30	SEMI-LINEAR VERSUS WEAKLY NONLINEAR MODELS OF THE CENTRIFUGAL INSTABILITY **Eunok Yim** (HEAD, EPFL, Switzerland) Corresponding Author Paul Billant (adHyX, CNRS, Ecole Polytechnique, F-91128 Palaiseau CEDEX, France, France)
ThFM0839	17:30~17:50	ROSSBY WAVE INSTABILITY IN SHEARING SHEETS: COMPRESSIBILITY EFFECTS **Eonho Chang** (University of Arizona, USA) Corresponding Author Eonho Chang (University of Arizona, USA)
ThFM0840	17:50~18:10	NONMODAL STABILITY ANALYSIS OF EXPLOSIVE GROWTH IN DECELERATING FLOWS **Alec Linot** (University of California, USA) Corresponding Author Alec Linot (University of California, USA)
ThFM0841	18:10~18:30	THE RECIRCULATION REGION OF A BLUFF BODY IN A FLOWING SOAP FILM AT THE ONSET OF VORTEX SHEDDING **Izhar Hussain Khan** (Indian Institute of Technology Kanpur, India) Corresponding Author Sanjay Kumar (Indian Institute of Technology Kanpur, India)

FM06	Drops, bubbles and interfaces	
Moderator	Yiwei Wang (Institute of Mechanics, Chinese Academy of Sciences, China) Spencer H Bryngelson (Georgia Institute of Technology, USA)	
Room	Room 323A, 3F	
ThFM0655	16:30~16:50	STOCHASTIC COMPUTATIONAL METHODS FOR CAVITATION INCEPTION **Spencer H Bryngelson** (Georgia Institute of Technology, USA) Corresponding Author Spencer H Bryngelson (Georgia Institute of Technology, USA)
ThFM0656	16:50~17:10	NUMERICAL STUDY ON INTERACTION CHARACTERISTICS BETWEEN GASEOUS DETONATION AND DROPLET **Sheng Xu** (Tsinghua University, China) Corresponding Author Bing Wang (Tsinghua University, China)
ThFM0657	17:10~17:30	EXPERIMENTAL STUDY OF CAVITATION DYNAMICS NEAR THE PRE-SET AIR BUBBLE ADHERED TO A RIGID BOUNDARY **Yunji Guo** (Beijing Institute of Technology, China) Corresponding Author Wangxia Wu (Beijing Institute of Technology, China)
ThFM0658	17:30~17:50	VORTEX FLOW OF A COLLAPSE BUBBLE BETWEEN A RIGID WALL AND A WATER SURFACE **Yiwei Wang** (Institute of Mechanics, Chinese Academy of Sciences, China) Corresponding Author Yiwei Wang (Institute of Mechanics, Chinese Academy of Sciences, China)
ThFM0659	17:50~18:10	NUMERICAL SIMULATION OF DROPLET EXPLOSIONS INDUCED BY X-RAY LASER PULSES **Jiaxi Song** (Northwestern Polytechnical University, China) Corresponding Author Shucheng Pan (Northwestern Polytechnical University, China)
ThFM0660	18:10~18:30	EXPERIMENTAL STUDIES OF THE LASER INDUCED CAVITATION BUBBLE DYNAMICS NEAR THE WEDGE REGION BETWEEN THE FREE SURFACE AND SOLID WALL **Haotian Luo** (Beijing Institute of Technology, China) Corresponding Author Wangxia Wu (Beijing Institute of Technology, China)

FM05	Convection	
Moderator	Michael Le Bars (CNRS, France) / Lyes Kahouadji (Imperial College London, United Kingdom)	
Room	Room 323B, 3F	
ThFM0536	16:30~16:50	INTERACTION BETWEEN FORCED AND NATURAL CONVECTION IN A THIN CYLINDRICAL FLUID LAYER AT LOW PRANDTL NUMBER **Michael Le Bars** (CNRS, France) Corresponding Author Michael Le Bars (CNRS, France)
ThFM0537	16:50~17:10	DYNAMICS OF CHOCOLATE FOUNTAINS **Lyes Kahouadji** (Imperial College London, United Kingdom) Corresponding Author Lyes Kahouadji (Imperial College London, United Kingdom)
ThFM0538	17:10~17:30	THREE DIMENSIONAL SHARP VOLUME-OF-FLUID METHOD AND ITS APPLICATION IN BINARY MELTING PROBLEM **Zhonghan XUE** (Xi'an Jiaotong University, China) Corresponding Author Jie Zhang (Xi'an Jiaotong University, China)
ThFM0539	17:30~17:50	LINEAR STABILITY ANALYSIS OF THE THERMAL CONVECTION IN A LIQUID METAL BATTERY **HARUNORI YOSHIKAWA** (Doshisha University, Japan) Corresponding Author HARUNORI YOSHIKAWA (Doshisha University, Japan)
FM04	Compressible flow	
Moderator	SHISHIR SRIVASTAVA (Indian Institute of Technology Delhi, India) / Taesoon Kim (Hanwha Aerospace, Korea, Republic of)	
Room	Room 324A, 3F	
ThFM0428	16:30~16:50	NUMERICAL STUDY ON PULSED-JET ACTUATION FOR AERODYNAMIC CONTROL OF LIFTING SURFACE VIA DELAYED DETACHED-EDDY SIMULATION **Taesoon Kim** (Hanwha Aerospace, Korea, Republic of) Corresponding Author Taesoon Kim (Hanwha Aerospace, Korea, Republic of)
ThFM0429	16:50~17:10	A STUDY ON UNSTEADY THROTTLING DYNAMICS OF SCRAMJET INTAKE BY VARYING SUCTION MASS FLOW RATE **Trushika Rajnikant Parmar** (Indian Institute of Technology Gandhinagar, India) Corresponding Author Trushika Rajnikant Parmar (Indian Institute of Technology Gandhinagar, India)
ThFM0430	17:10~17:30	NUMERICAL STUDY OF PASSIVE ENHANCEMENT OF MIXING USING STRUT DOWNSTREAM **Vinod Narayanan** (Indian Institute of Technology Gandhinagar, India) Corresponding Author Vinod Narayanan (Indian Institute of Technology Gandhinagar, India)
ThFM0431	17:30~17:50	THE INFLUENCE OF CRYOGENIC TEMPERATURE ON THE BOUNDARY LAYER SEPARATION DOWNSTREAM OF STAGNATION REGION FORMED BY IMPINGING UNDER-EXPANDED CRYOGENIC JET **Alireza Aslani** (Pusan National University, Korea, Republic of) Corresponding Author Kyung Chun Kim (Pusan National University, Korea, Republic of)

FM02	Boundary layers	
Moderator	Angela Busse (University of Glasgow, United Kingdom) / Paul Travis Griffiths (Aston University, United Kingdom)	
Room	Room 324B, 3F	
ThFM0236	16:30~16:50	ACTIVE BOUNDARY-LAYER CONTROL VIA NON-NEWTONIAN FLUID INJECTION **Paul Travis Griffiths** (Aston University, United Kingdom) Corresponding Author Paul Travis Griffiths (Aston University, United Kingdom)
ThFM0237	16:50~17:10	LARGE-SCALE CONTROL IN TURBULENT CHANNELS OVER RIBLETS **Peng-Yu Duan** (Beihang University, China) Corresponding Author Xi Chen (Beihang University, China)
ThFM0238	17:10~17:30	IMBALANCED SECONDARY CURRENTS AND NET SPANWISE FLOW INDUCED BY SCALENE RIDGES IN TURBULENT CHANNEL FLOW **Oleksandr Zhdanov** (University of Glasgow, United Kingdom) Corresponding Author Oleksandr Zhdanov (University of Glasgow, United Kingdom)
FM01	Biological fluid mechanics	
Moderator	Sarah Waters (University of Oxford, United Kingdom) / Kate Jamila Bassil (University of Cambridge, United Kingdom)	
Room	Room 325A, 3F	
ThFM0127	16:30~16:50	SURGERY PLANNING FOR THE HUMAN NOSE: TACKLING ANATOMIC VARIABILITY WITH MACHINE LEARNING AND CFD **Maurizio Quadrio** (Politecnico di Milano, Italy) Corresponding Author Maurizio Quadrio (Politecnico di Milano, Italy)
ThFM0128	16:50~17:10	A STUDY OF NASAL FLOW BEFORE AND AFTER SURGERY USING 4D MAGNETIC RESONANCE VELOCIMETRY AND COMPUTATIONAL FLUID DYNAMICS **Sung-Gwang Lee** (Seoul National University, Korea, Republic of) Corresponding Author Wontae Hwang (Seoul National University, Korea, Republic of)
ThFM0129	17:10~17:30	GENERATING SYNTHETIC CT IMAGES FROM CBCT SCANS FOR ANALYSING AIRWAY AERODYNAMICS **Susie Ryu** (Yonsei University, Korea, Republic of) Corresponding Author Joon Sang Lee (Yonsei University, Korea, Republic of)
ThFM0130	17:30~17:50	TOWARDS VERY HIGH FREQUENCY VENTILATION **Justin Scott Leontini** (Swinburne University of Technology, Australia) Corresponding Author Justin Scott Leontini (Swinburne University of Technology, Australia)
ThFM0131	17:50~18:10	GAS TRANSPORT IN DOUBLE BIFURCATION SUBJECTED TO ASYMMETRIC RECIPROCATING FLOW **Chandrika Deshabimana Wanigasekara** (Swinburne university of technology, Australia) Corresponding Author Chandrika Deshabimana Wanigasekara (Swinburne university of technology, Australia)
ThFM0132	18:10~18:30	HYBRID RANS-LES FOR TURBULENT FLOWS IN A HUMAN RESPIRATORY SYSTEM UP TO TRANSITIONAL BRONCHIOLES **Quoc Hung Nguyen** (Kyungpook National University, Korea, Republic of) Corresponding Author Sanghun Choi (Kyungpook National University, Korea, Republic of)

FM07	Multiphase and particle-laden flows	
Moderator	Masako Sugihara-Seki (Kansai University, Japan) / Moran Wang (Tsinghua University, China)	
Room	Room 325B, 3F	
ThFM0732	16:30~16:50	FIBRES IN WALL TURBULENCE - EFFECTS OF FLEXIBILITY AND FLUID INERTIA **Darish Jeswin Dhas Sam** (University of Udine, Italy) Corresponding Author Darish Jeswin Dhas Sam (University of Udine, Italy)
ThFM0733	16:50~17:10	INERTIAL ACCUMULATION EFFECT ON MICROGEL PARTICLE TRANSPORT AND PREFERENTIAL FLOW CONTROL IN POROUS MEDIA **Xukang Lu** (Tsinghua University, China) Corresponding Author Moran Wang (Tsinghua University, China)
ThFM0734	17:10~17:30	INERTIAL MIGRATION OF SPHERICAL PARTICLES IN VISCOELASTIC FLUIDS FLOWING THROUGH SQUARE TUBES **Masako Sugihara-Seki** (Kansai University, Japan) Corresponding Author Masako Sugihara-Seki (Kansai University, Japan)
ThFM0735	17:30~17:50	FLOCCULATION OF FINITE-SIZED COHESIVE PARTICLES IN A TURBULENT CHANNEL FLOW **Alexandre Leonelli** (UC Santa Barbara, USA) Corresponding Author Eckart Heinz Meiburg (UC Santa Barbara, USA)
ThFM0736	17:50~18:10	GENERATING PARTICLE-LADEN FLOWS IN MICROGRAVITY **Raúl Bayoán Cal** (Portland State University, USA) Corresponding Author Raúl Bayoán Cal (Portland State University, USA)
ThFM0737	18:10~18:30	THE EFFECTS OF DROPLET VOLUME FRACTION ON TURBULENCE MODULATION AND DROPLET DEFORMATION IN A DROPLET-LADEN TURBULENT CHANNEL FLOW **Xiusong Chen** (Southern University of Science and Technology, China) Corresponding Author Lian-Ping Wang (Southern University of Science and Technology, China)

FM16	Vortex dynamics	
Moderator	Bartosz Protas (McMaster University, Canada) / Vikas Krishnamurthy (IIT Hyderabad, India)	
Room	Room 325C, 3F	
ThFM1620	16:30~16:50	ON THE LINEAR STABILITY OF THE LAMB-CHAPLYGIN DIPOLE **Bartosz Protas** (McMaster University, Canada) Corresponding Author Bartosz Protas (McMaster University, Canada)
ThFM1621	16:50~17:10	THE N -VORTEX PROBLEM IN DOUBLY CONNECTED DOMAINS WITH BACKGROUND VORTICITY **Vikas Krishnamurthy** (IIT Hyderabad, India) Corresponding Author Vikas Krishnamurthy (IIT Hyderabad, India)
ThFM1622	17:10~17:30	NAMBU BRACKET, WAVE ENERGY AND COMPRESSIBLE KELVIN-HELMHOLTZ INSTABILITY REVISITED **Yasuhide Fukumoto** (Kyushu University, Japan) Corresponding Author Yasuhide Fukumoto (Kyushu University, Japan)
ThFM1623	17:30~17:50	LAGRANGIAN DYNAMICS AND REGULARITY OF THE SPIN EULER EQUATION **Zhaoyuan Meng** (Peking University, China) Corresponding Author Yue Yang (Peking University, China)
ThFM1624	17:50~18:10	UNSTEADY VORTEX DYNAMICS OF FALLING FLAT PLATES AND V-FLYERS **Sung-Ik Sohn** (Gangneung-Wonju National University, Korea, Republic of) Corresponding Author Sung-Ik Sohn (Gangneung-Wonju National University, Korea, Republic of)

FM14	Computational fluid dynamics	
Moderator	Arnesh Maji (Indian Institute of Technology Kanpur, India) / Yang Ding (Beijing Computational Science Research Center, China)	
Room	Room 325D, 3F	
ThFM1433	16:30~16:50	AERODYNAMIC STUDY OF DISCRETE AND CONTINUOUS TRAILING EDGE MORPHING OF A LOW-DRAG AIRFOIL **DIMPLE J PRAJAPATI** (Indian Institute of Technology, Madras, India) Corresponding Author Santanu Ghosh (Indian Institute of Technology, Madras, India)
ThFM1434	16:50~17:10	PROPELLER THRUST CHARACTERIZATION AT INTERMEDIATE REYNOLDS NUMBERS **Si-Yu Li** (Beijing Normal University, China) Corresponding Author Yang Ding (Beijing Computational Science Research Center, China)
ThFM1435	17:10~17:30	FLOW PAST AN END-TO-END WING AT LOW REYNOLDS NUMBER: THREE-DIMENSIONALITY, RECIRCULATION BUBBLE AND AERODYNAMIC COEFFICIENTS **Arnesh Maji** (Indian Institute of Technology Kanpur, India) Corresponding Author Arnesh Maji (Indian Institute of Technology Kanpur, India)
ThFM1436	17:30~17:50	FLOW STRUCTURE AND AERODYNAMIC PERFORMANCE OF A VERTICAL-AXIS WIND TURBINE **Sangwoo Ahnn** (Seoul National University, Korea, Republic of) Corresponding Author Haecheon Choi (Seoul National University, Korea, Republic of)

MS05	Data-driven mechanics and artificial intelligence	
Moderator	Yubiao Sun (Beijing Institute of Technology, China) /Jae Hyuk Lim (Jeonbuk National University, Korea, Republic of)	
Room	Room 503, 5F	
ThMS0539	16:30~16:50	PHYSICS-INFORMED DEEP LEARNING FOR SURROGATE MODELLING AND DESIGN OPTIMIZATION **Yubiao Sun** (Beijing Institute of Technology, China) Corresponding Author Yubiao Sun (Beijing Institute of Technology, China)
ThMS0540	16:50~17:10	REAL-TIME FULL-FIELD ESTIMATION OF DISPLACEMENT AND STRESS WITH SPARSE MEASUREMENTS USING PHYSICS-INFORMED NEURAL NETWORKS **Jae Hyuk Lim** (Jeonbuk National University, Korea, Republic of) Corresponding Author Jae Hyuk Lim (Jeonbuk National University, Korea, Republic of)
ThMS0541	17:10~17:30	DATA-DRIVEN EXTRACTION OF MORPHOLOGICAL FEATURES OF SPLASHING DROP OF DIFFERENT VISCOSITIES USING AUTOMATED EXPERIMENTATION AND EXPLAINABLE ARTIFICIAL INTELLIGENCE **Jingzu Yee** (Tokyo University of Agriculture and Technology, Japan) Corresponding Author Yoshiyuki Tagawa (Tokyo University of Agriculture and Technology, Japan)
ThMS0542	17:30~17:50	TURBULENCE MODEL IMPROVEMENT WITH FIELD INVERSION FOR SUPERSONIC FLOW AROUND A SLENDER BODY **Junho Eom** (Gwangju Institute of Science and Technology, Korea, Republic of) Corresponding Author Solkeun Jee (Gwangju Institute of Science and Technology, Korea, Republic of)
ThMS0543	17:50~18:10	MESH-AGNOSTIC SPATIO-TEMPORAL PREDICTION OF FLOWS USING IMPROVED GRAPH U-NETS **Sunwoong Yang** (KAIST, Korea, Republic of) Corresponding Author Namwoo Kang (Korea Advanced Institute of Science and Technology, Korea, Republic of)

MS05	Data-driven mechanics and artificial intelligence	
Moderator	Fengjiao Bin (Beijing Institute Technology, China) / Bernd R. Noack (Harbin Institute of Technology, China)	
Room	Room 504, 5F	
ThMS0544	16:30~16:50	EXPLORING THE MICROSTRUCTURE AND SHEAR BAND FORMATION OF LATTICE MATERIALS USING SHAP AND CGAN METHODS **Fengjiao Bin** (Beijing Institute Technology, China) Corresponding Author Dengbao Xiao (Beijing Institute Technology, China)
ThMS0545	16:50~17:10	INVERSE DESIGN OF DEFECT-INTRODUCED PHONONIC CRYSTALS VIA A DEEP LEARNING APPROCH **Donghyu Lee** (Seoul National University, Korea, Republic of) Corresponding Author Byeng D. Youn (Seoul National University, Korea, Republic of)
ThMS0546	17:10~17:30	EXTRACTING TOPOLOGICAL FEATURES WITH PERSISTENT DATA TOPOLOGY (PDT) TO ASSIST OPTIMIZATION ALGORITHMS **Tianyu Wang** (Harbin Institute of Technology, Shenzhen, China) Corresponding Author Bernd R. Noack (Harbin Institute of Technology, China)
ThMS0547	17:30~17:50	NET DRAG REDUCTION OF FLUID PINBALL BASED ON CLUSTER-BASED CONTROL **XIN WANG** (Harbin Institute of Technology, Shenzhen, China) Corresponding Author Bernd R. Noack (Harbin Institute of Technology, China)
ThMS0548	17:50~18:10	EFFICIENT GLOBAL OPTIMIZATION WITH HIGH-DIMENSION AND MULTIPLE CONSTRAINTS USING VARIABLE SCREENING **Minjik Kim** (Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of) Corresponding Author Minjik Kim (Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic of)
ThMS0549	18:10~18:30	DYNAMICS-AUGMENTED CLUSTER-BASED NETWORK MODEL OF THE SPHERE WAKE **Chang HOU** (Harbin Institute of Technology, Shenzhen, China) Corresponding Author Bernd R. Noack (Harbin Institute of Technology, China)

MS05	Data-driven mechanics and artificial intelligence	
Moderator	**Balu Nadiga** (Los Alamos National Laboratory, USA) / **Jeong Sam Han** (Andong National University, Korea, Republic of)	
Room	Room 505, 5F	
ThMS0550	16:30~16:50	CLUSTERWISE DYNAMICS - FROM SNAPSHOTS TO A HUMAN-INTERPRETABLE MODEL **Nan DENG** (Harbin Institute of Technology, Shenzhen, China) Corresponding Author Bernd R. Noack (Harbin Institute of Technology, China)
ThMS0551	16:50~17:10	JET FLOW CONTROL WITH BAYESIAN OPTIMIZATION ENHANCED BY DEEP LEARNING **Li Yiqing** (Harbin Institute of Technology, China) Corresponding Author Bernd R. Noack (Harbin Institute of Technology, China)
ThMS0552	17:10~17:30	BOLT LOOSENING DETECTION IN JOINTED PLATES VIA SIMULATION-BASED CONVOLUTIONAL NEURAL NETWORKS WITH PIEZOELECTRIC SENSING **Jeong Sam Han** (Andong National University, Korea, Republic of) Corresponding Author Jeong Sam Han (Andong National University, Korea, Republic of)
ThMS0553	17:30~17:50	GRADIENT-ENRICHED MACHINE LEARNING CONTROL FOR FAST SELF-LEARNING OF TURBULENCE FEEDBACK LAWS **Guy Y. Cornejo Maceda** (Harbin Institute of Technology Shenzhen, China) Corresponding Author Bernd R. Noack (Harbin Institute of Technology, China)
ThMS0554	17:50~18:10	PROBABILISTIC AND GENERATIVE MACHINE LEARNING FOR INVERSE MODELING: PROBING THE MEMORY OF INITIAL CONDITIONS IN FLOWS WITH RAYLEIGH-TAYLOR AND RICHTMYER-MESHKOV INSTABILITIES **Balu Nadiga** (Los Alamos National Laboratory, USA) Corresponding Author Balu Nadiga (Los Alamos National Laboratory, USA)

FM09	Thin film flows	
Moderator	**Georg F. DIETZE** (CNRS - Université Paris-Saclay, France) / **Dipin Sasidharan Pillai** (IIT Kanpur, India)	
Room	Room 506, 5F	
ThFM0921	16:30~16:50	ON THE FREEZING OF RECEDING CONTACT LINES **Christophe Josserand** (CNRS SCTD3194, France) Corresponding Author Christophe Josserand (CNRS SCTD3194, France)
ThFM0922	16:50~17:10	CONTACTLINE DRIVEN FINGERING INSTABILITY OF THIN FLUID FILMS OVER CYLINDRICAL SURFACES **Ananthan Mohan** (Indian Institute of Science, India) Corresponding Author Gaurav Tomar (Indian Institute of Science, India)
ThFM0923	17:10~17:30	OPTIMAL BODY FORCE TO ACHIEVE A UNIFORM COATING ON A SUBSTRATE OF ARBITRARY SHAPE **Selin Duruk** (University of Canterbury, New Zealand) Corresponding Author Selin Duruk (University of Canterbury, New Zealand)
ThFM0924	17:30~17:50	HARNESSING POLAR INTERACTIONS TUNES THE STABILITY OF ULTRATHIN POLYMER SOLUTION FILMS **Dipin Sasidharan Pillai** (IIT Kanpur, India) Corresponding Author Dipin Sasidharan Pillai (IIT Kanpur, India)
ThFM0925	17:50~18:10	ON THE HUH-SCRIVEN PARADOX AND NATURE OF SURFACE TENSION **Rouslan Krechetnikov** (University of Alberta, Canada) Corresponding Author Rouslan Krechetnikov (University of Alberta, Canada)

Time	Room	Code	Program	
Friday, August 30, 2024				
07:30 ~	Registration			
08:00 ~ 10:40	Oral Presentation 10			326p
	Convention Hall, 5F	FM15	Turbulence	326p
	Room 211, 2F	FS05	Fluid structure interactions	327p
	Room 214, 2F	FS04	Porous media and liquid foam	328p
	Room 217, 2F	SM10	Multibody and vehicle dynamics	329p
	Room 219, 2F	FS02	Emerging experimental techniques across the length and time scales	330p
	Room 306A, 3F	SM02	Tribology-contact and friction	331p
	Room 306B, 3F	SM14	Computational solid mechanics	332p
	Room 314, 3F	SM13	Stability and instability of materials and structures	333p
	Room 315, 3F	SM15	Vibrations and control of structures	334p
	Room 320A, 3F	SM17	Metamaterials architectured materials and topology optimization	335p
	Room 320B, 3F	SM12	Plasticity, viscoplasticity and creep	336p
	Room 321A, 3F	FM11	Low Reynolds number flows and suspension	337p
	Room 321B, 3F	FM10	Geophysical and environmental fluid dynamics	338p
	Room 322A, 3F	SM04	Damage & fracture mechanics	338p
	Room 322B, 3F	FM08	Flow instability and transition	339p
	Room 323A, 3F	FM06	Drops, bubbles and interfaces	340p
	Room 323B, 3F	FM12	Micro- and nano-fluidics	341p
	Room 324A, 3F	FM04	Compressible flow	342p
	Room 324B, 3F	FM02	Boundary layers	343p
	Room 325A, 3F	FM01	Biological fluid mechanics	344p
	Room 325B, 3F	FM07	Multiphase and particle-laden flows	345p
	Room 325C, 3F	FM16	Vortex dynamics	346p
	Room 325D, 3F	FM14	Computational fluid dynamics	347p
	Room 503, 5F	MS03	Nonlinear mechanical models for biological and bioinspired materials	348p
	Room 504, 5F	MS01	Chemo-mechanics and materials for energy conversion and storage	349p
	Room 505, 5F	MS02	Soft matter, theory meets experiment	350p
	Room 506, 5F	FM09	Thin film flows	351p
10:40 ~ 11:00	Coffee Break			
11:00 ~ 13:00	Oral Presentation 11			352p
	Room 211, 2F	FS05	Fluid structure interactions	352p
	Room 214, 2F	FS06	Granular materials and flows	353p
	Room 217, 2F	SM10	Multibody and vehicle dynamics	354p
	Room 219, 2F	FS07	Optimization for solids and fluids	355p
	Room 306B, 3F	SM14	Computational solid mechanics	355p
	Room 314, 3F	SM05	Geomechanics and geophysics	356p
	Room 315, 3F	SM15	Vibrations and control of structures	356p
	Room 320A, 3F	SM17	Metamaterials architectured materials and topology optimization	357p
	Room 320B, 3F	SM13	Stability and instability of materials and structures	357p

Time	Room	Code	Program	
11:00 ~ 13:00	Room 321A, 3F	SM01	Biomechanics and biomaterials	358p
	Room 321B, 3F	SM03	Elasticity	359p
	Room 322A, 3F	SM04	Damage & fracture mechanics	360p
	Room 322B, 3F	FM14	Computational fluid dynamics	360p
	Room 323A, 3F	FM06	Drops, bubbles and interfaces	361p
	Room 323B, 3F	FM05	Convection	361p
	Room 324A, 3F	FM04	Compressible flow	362p
	Room 324B, 3F	FM02	Boundary layers	363p
	Room 325A, 3F	FM10	Geophysical and environmental fluid dynamics	363p
	Room 325B, 3F	FM07	Multiphase and particle-laden flows	364p
	Room 325C, 3F	FM16	Vortex dynamics	365p
	Room 325D, 3F	FM14	Computational fluid dynamics	366p
	Room 503, 5F	MS05	Data-driven mechanics and artificial intelligence	367p
	Room 504, 5F	MS07	Non-reacting and reacting fluid dynamics for sustainable propulsion systems	368p
	Room 505, 5F	MS05	Data-driven mechanics and artificial intelligence	368p
	Room 506, 5F	SM09	Additive manufacturing	369p
13:00 ~ 14:00	Lunch & Special Sessions			
14:00 ~ 15:00	Convention Hall, 5F	PL04	Closing lecture - Gareth H. McKinley	369p
15:00 ~ 15:45	Closing Ceremony			

Fri. (Aug. 30)

Oral Presentation 10

FM15	Turbulence	
Moderator	**Hiroya Mamori** (The University of Electro-Communications, Japan) / **Sedat Tardu** (Grenoble Alpes University, France)	
Room	Convention Hall, 5F	
FrFM1552	08:00~08:20	DRAG REDUCTION BY PLASTRON FORMED ON POROUS SUPERHYDROPHOBIC SURFACE IN TURBULENT FLOW **Woobin Song** (Hanyang University, Korea, Republic of) Corresponding Author Simon Song (Hanyang University, Korea, Republic of)
FrFM1553	08:20~08:40	RELAMINARIZATION OF TURBULENT ANNULAR PIPE FLOW CONTROLLED BY TRAVELING WAVE-LIKE BLOWING AND SUCTION **Hiroya Mamori** (The University of Electro-Communications, Japan) Corresponding Author Hiroya Mamori (The University of Electro-Communications, Japan)
FrFM1554	08:40~09:00	EXPERIMENTAL INVESTIGATION FOR WAKE STRUCTURE OF POROUS SQUARE CYLINDERS WITH ISOTROPIC PERMEABILITY **Chansoo Seol** (Seoul National University of Science and Technology, Korea, Republic of) Corresponding Author Taehoon Kim (Seoul National University of Science and Technology, Korea, Republic of)
FrFM1555	09:00~09:20	WHISTLING EVALUATION OF CONFINED TURBULENT FLOW ALONG CORRUGATED WALL **Peng Wang** (Shanghai Jiao Tong University, China) Corresponding Author Peng Wang (Shanghai Jiao Tong University, China)
FrFM1556	09:20~09:40	STAGGERED ROUGHNESS EFFECT ON THE BY PASS TRANSITION, MOMENTUM AND HEAT TRANSFER IN AN INITIALLY LAMINAR CHANNEL FLOW **Sedat Tardu** (Grenoble Alpes University, France) Corresponding Author Sedat Tardu (Grenoble Alpes University, France)
FrFM1557	09:40~10:00	TURBULENT HEAT TRANSFER OVER LARGE-SCALE BLADE RIBLETS AND CANOPIES **CHI IP CHAN** (Osaka University, Japan) Corresponding Author CHI IP CHAN (Osaka University, Japan)
FrFM1558	10:00~10:20	EFFECTS OF THE ROD-ROUGHNESS ON A TURBULENT PLANE COUETTE FLOW **Sung Min Lee** (UNIST, Korea, Republic of) Corresponding Author JAE HWA LEE (UNIST, Korea, Republic of)

FS05	Fluid structure interactions	
Moderator	**Francisco Huera-Huarte** (Universitat Rovira i Virgili, Spain) / **Jooha Kim** (UNIST, Korea, Republic of)	
Room	Room 211, 2F	
FrFS0548	08:00~08:20	FLOW PAST FIVE SIDE-BY-SIDE CYLINDERS WITH ATTACHED PLATES: MULTIPLE SOLUTIONS **Subhajit Bhattacharyya** (Indian Institute of Technology Kanpur, India) Corresponding Author Sanjay Mittal (IIT Kanpur, India)
FrFS0549	08:20~08:40	FALLING MODE TRANSITION OF A SPHERE BY ATTACHMENT OF A FILAMENT **Seungho Choi** (KAIST, Korea, Republic of) Corresponding Author Daegyoum Kim (KAIST, Korea, Republic of)
FrFS0550	08:40~09:00	STRAIN DYNAMICS IN STRUCTURES EXPOSED TO FREESTREAM TURBULENCE CONDITIONS **Francisco J. G. de Oliveira** (Imperial College London, United Kingdom) Corresponding Author Francisco J. G. de Oliveira (Imperial College London, United Kingdom)
FrFS0551	09:00~09:20	FLUID STRUCTURE INTERACTIONS OF MICROFLIERS INSPIRED BY WIND-DISPERSED SEEDS **Jin-Tae Kim** (POSTECH, Korea, Republic of) Corresponding Author Jin-Tae Kim (POSTECH, Korea, Republic of)
FrFS0552	09:20~09:40	TWO-DIMENSIONAL KINEMATICS OF A FREELY RISING CYLINDER **Dongwoo Kang** (UNIST, Korea, Republic of) Corresponding Author Jooha Kim (UNIST, Korea, Republic of)
FrFS0553	09:40~10:00	REARRANGEMENT OF A POROELASTIC CLUSTER IN FLUID FLOW **Minhyeong Lee** (KAIST, Korea, Republic of) Corresponding Author Daegyoum Kim (KAIST, Korea, Republic of)
FrFS0554	10:00~10:20	FLOW INDUCED TRANSITION VIA HIDDEN DEGREE OF FREEDOM **Rishabh Nain** (LadHyX, Ecole Polytechnique, France) Corresponding Author Rishabh Nain (LadHyX, Ecole Polytechnique, France)

FS04	Porous media and liquid foam	
Moderator	Ikuya Kinefuchi (The University of Tokyo, Japan) / Hang Deng (Peking University, China)	
Room	Room 214, 2F	
FrFS0407 (INVITED)	08:00~08:30	PORE-SCALE REACTIVE TRANSPORT MODELING OF MINERAL PRECIPITATION **Hang Deng** (Peking University, China) Corresponding Author Hang Deng (Peking University, China)
FrFS0408 (INVITED)	08:30~09:00	PARTICLE TRANSPORT DURING MULTIPHASE FLOW IN POROUS MEDIA **Zhibing Yang** (Wuhan University, China) Corresponding Author Zhibing Yang (Wuhan University, China)
FrFS0409	09:00~09:20	CRITERIA FOR 3-D PERIODIC FLUID-FLUID INTERFACE FORMATION DURING MULTIPHASE DISPLACEMENT IN MICROPILLAR SCAFFOLDS **Wenhai Lei** (KTH Royal Institute of Technology, Sweden) Corresponding Author Shervin Bagheri (KTH Royal Institute of Technology, Sweden)
FrFS0410	09:20~09:40	DOMINANT MECHANISMS OF THE POWER-LAW REGIME OF DISPERSION IN POROUS MEDIA **Yang Liu** (Tsinghua university, China) Corresponding Author Moran Wang (Tsinghua University, China)
FrFS0411	09:40~10:00	WATER CONDENSATION SIMULATIONS IN THE NANOSCALE PORES OF CATHODE CATALYST LAYER PARTICLES IN PEM FUEL CELLS **Clint John Cortes Otic** (The University of Tokyo, Japan) Corresponding Author Clint John Cortes Otic (The University of Tokyo, Japan)
FrFS0412	10:00~10:20	ROBUST DATA TREATMENT METHOD FOR PULSE DECAY MEASUREMENTS WITH SLIGHT GAS LEAKAGE **Mingbao Zhang** (Tsinghua University, China) Corresponding Author Moran Wang (Tsinghua University, China)

SM10	Multibody and vehicle dynamics	
Moderator	Aki M Mikkola (LUT University, Finland) / Taichi Shiiba (Meiji University, Japan)	
Room	Room 217, 2F	
FrSM1007 (INVITED)	08:00~08:30	MULTIBODY SYSTEM SIMULATION IN VARIOUS PRODUCT PROCESSES **Aki M Mikkola** (LUT University, Finland) Corresponding Author Aki M Mikkola (LUT University, Finland)
FrSM1008 (INVITED)	08:30~09:00	TIRE-SUSPENSION HILS SYSTEM WITH 'INVERSE DYNAMICS COMPENSATION VIA SIMULATION OF FEEDBACK CONTROL SYSTEMS' AND MACHINE LEARNING **Taichi Shiiba** (Meiji University, Japan) Corresponding Author Taichi Shiiba (Meiji University, Japan)
FrSM1009 (INVITED)	09:00~09:30	DATA-DRIVEN EXPLICIT MODEL PREDICTIVE CONTROL FOR MAGNETIC LEVITATION VEHICLES **Peter Eberhard** (University of Stuttgart, Germany) Corresponding Author Peter Eberhard (University of Stuttgart, Germany)
FrSM1010 (INVITED)	09:30~10:00	A VALIDATED MODEL FOR PREDICTING WOBBLE INSTABILITY IN BICYCLES **Jacob Philippus Meijaard** (Delft University of Technology, Netherlands) Corresponding Author Jacob Philippus Meijaard (Delft University of Technology, Netherlands)
FrSM1011	10:00~10:20	A COROTATIONAL MODAL REDUCTION PROCEDURE FOR FLEXIBLE MULTIBODY DYNAMICS **Chao Peng** (University of Parma, Italy) Corresponding Author Chao Peng (University of Parma, Italy)

FS02	Emerging experimental techniques across the length and time scales	
Moderator	Kyung Chun Kim (Pusan National University, Korea, Republic of) / Francois HILD (ENS PARIS-SACLAY, France)	
Room	Room 219, 2F	
FrFS0207 (INVITED)	08:00~08:30	UNVEILING THE DYNAMICS OF TURBULENT SWIRLING FLAMES: HIGH-SPEED LASER DIAGNOSTIC ADVANCES **Guoqing Wang** (Shanghai Jiao Tong University, China) Corresponding Author Fei Qi (Shanghai Jiao Tong University, China)
FrFS0208 (INVITED)	08:30~09:00	3D LAGRANGIAN PARTICLE TRACKING AND DATA ASSIMILATION IN FLUID MECHANICS - RESOLVING A WIDE RANGE OF FLOW SCALES BY STB AND FLOWFIT **Andreas Schröder** (German Aerospace Center, Germany) Corresponding Author Andreas Schröder (German Aerospace Center, Germany)
FrFS0209	09:00~09:20	DUCTILE FRACTURE MECHANISMS FROM SHEAR TO BIAXIAL TENSION: IN-SITU LAMINOGRAPHY EXPERIMENTS OF AA2198-T8R AND VOID TRACKING **Dirk Mohr** (ETH Zurich, Switzerland) Corresponding Author Dirk Mohr (ETH Zurich, Switzerland)
FrFS0210	09:20~09:40	A NOVEL DEFORMATION MEASUREMENT METHOD UTILIZING CCD MOIRé **zhihao Shangguan** (Shanghai Jiao Tong University, China) Corresponding Author Shichao Zhou (Shanghai Jiao Tong University, China)
FrFS0211	09:40~10:00	DUAL-VIEW 3D PROFILE AND DEFORMATION MEASUREMENT BASED ON PSEUDO-OVERLAPPED IMAGING **Xiaowen Lee** (Nanjing University of Aeronautics & Astronautics, China) Corresponding Author Zhenning Chen (Nanjing university of aeronautics and astronautics, China)
FrFS0212	10:00~10:20	DEEP LEARNING BASED DIGITAL IMAGE CORRELATION UNDER PHYSICAL CONSTRAINT FOR NON-UNIFORM DEFORMATION FIELD MEASUREMENT **QINWEI MA** (Beijing Institute of Technology, China) Corresponding Author QINWEI MA (Beijing Institute of Technology, China)

SM02	Tribology-contact and friction	
Moderator	David Hills (University of Oxford, United Kingdom) / Carmine Putignano (Politecnico di Bari, Italy)	
Room	Room 306A, 3F	
FrSM0223	08:00~08:20	FRICTION AND WEAR SIMULATION OF OIL-LUBRICATED ROLLING CONTACTS AT ASPERITY LEVEL **Armand Tamouafo Fome** (Leibniz university of Hanover, Germany) Corresponding Author Armand Tamouafo Fome (Leibniz university of Hanover, Germany)
FrSM0224	08:20~08:40	THE EFFECT OF FLUID VISCOELASTICITY IN SOFT LUBRICATION **Mehmet Hakan Sarı** (Bilkent University, Türkiye) Corresponding Author Mehmet Hakan Sarı (Bilkent University, Türkiye)
FrSM0225	08:40~09:00	MULTISCALE ANALYSIS AND TEXTURE DESIGN FOR HYDRODYNAMICALLY LUBRICATED INTERFACES BY VARIABLE VISCOSITY AND DENSITY LIQUIDS **Sarp Ilgaz Koç** (Bilkent University, Türkiye) Corresponding Author Sarp Ilgaz Koç (Bilkent University, Türkiye)
FrSM0226	09:00~09:20	ENHANCING TRIBOLOGICAL EFFICIENCY: INVESTIGATING THE INFLUENCE OF SURFACE TEXTURE AND LUBRICANT COMPOSITION FOR OPTIMIZATION. **Mohd Syafiq Abd Aziz** (Imperial College London, United Kingdom) Corresponding Author Mohd Syafiq Abd Aziz (Imperial College London, United Kingdom)
FrSM0227	09:20~09:40	CONTACT BEHAVIOR OF A SUPERSONIC SLIDING INDENTER **Yong Hoon Jang** (Yonsei University, Korea, Republic of) Corresponding Author Yong Hoon Jang (Yonsei University, Korea, Republic of)
FrSM0228	09:40~10:00	MICROSCALE CONTACT SIMULATION OF LOCAL CONDITIONS IN THE SECONDARY SHEAR ZONE FOR DRY OR WET METAL MACHINING **Minjae Kim** (Leibniz University Hannover, Germany) Corresponding Author Minjae Kim (Leibniz University Hannover, Germany)
FrSM0229	10:00~10:20	A COMPOSITE NEGATIVE POSSION'S RATIO STRUCTURE EMBEDDED WITH RESONATORS **Xu-chang Liu** (Harbin Engineering University, China) Corresponding Author Jin-shui Yang (Harbin Engineering University, China)
FrSM0230	10:20~10:40	CORRELATION BETWEEN RESIDUAL TORQUE AND BOLT PRELOAD **Yixuan Jiao** (Hanyang university, Korea, Republic of) Corresponding Author Je Hoon Oh (Hanyang University ERICA, Korea, Republic of)

SM14	Computational solid mechanics	
Moderator	Qinglei Zeng (Beijing Institute of Technology, China)	
Room	Room 306B, 3F	
FrSM1438	08:00~08:20	TOPOLOGY OPTIMIZATION OF COMPLEX GEOMETRY STRUCTURES BASED ON PROBLEM INDEPENDENT MACHINE LEARNING WITH ISOPARAMETRIC ELEMENT **Linfeng Zhang** (Dalian University of Technology, China) Corresponding Author Chang Liu (Dalian University of Technology, China)
FrSM1439	08:20~08:40	FREQUENCY BASED CONDENSATION METHOD FOR DYNAMIC REANALYSIS **Geomji Choi** (Chungnam national university, Korea, Republic of) Corresponding Author Seongmin Chang (Chungnam national university, Korea, Republic of)
FrSM1440	08:40~09:00	FAST SIMULATION FOR NONLINEAR DYNAMICS PROBLEMS USING POD-RBF HYPER-REDUCTION METHOD **Lam Vu-Tuong Nguyen** (Seoul National University of Science and Technology, Korea, Republic of) Corresponding Author Hyun-Gyu Kim (Seoul National University of Science and Technology, Korea, Republic of)
FrSM1441	09:00~09:20	DEVELOPMENT OF HYBRID FINITE ELEMENT ALGORITHM FOR CONTACT PROBLEMS WITH FRICTION **Shailendra Rahi** (Indian Institute Of Technology Ropar, India) Corresponding Author Shailendra Rahi (Indian Institute Of Technology Ropar, India)
FrSM1442	09:20~09:40	VARYING-ORDER NURBS DISCRETIZATION OF 3D FRICTIONAL CONTACT PROBLEMS **Sumit Kumar Das** (Indian Institute of Technology Guwahati, India) Corresponding Author Sachin Singh Gautam (Indian Institute of Technology Guwahati, India)
FrSM1443	09:40~10:00	IMPROVEMENT OF LOCAL SOLUTIONS OF PODI-RBF METHOD FOR REAL-TIME FINITE ELEMENT SIMULATIONS OF INDENTER CONTACT PROBLEMS **HYEONGYEONG LEE** (Seoul National University of Science and Technology, Korea, Republic of) Corresponding Author Hyun-Gyu Kim (Seoul National University of Science and Technology, Korea, Republic of)
FrSM1444	10:00~10:20	FRACTURE RESISTANCE EVALUATION OF SPENT NUCLEAR FUEL CLADDING WITH HYDRIDES UNDER PINCH LOAD **Seyeon Kim** (Keimyung University, Korea, Republic of) Corresponding Author Sanghoon Lee (Keimyung University, Korea, Republic of)
FrSM1445	10:20~10:40	PHASE-FIELD MODELING OF STRENGTH-LIKE AND TOUGHNESS-LIKE DYNAMIC SHEAR BANDING **Qinglei Zeng** (Beijing Institute of Technology, China) Corresponding Author Qinglei Zeng (Beijing Institute of Technology, China)

SM13	Stability and instability of materials and structures	
Moderator	Davide Riccobelli (Politecnico di Milano, Italy) / Ariel Surya Boiardi (SISSA - International School for Advanced Studies, Italy)	
Room	Room 314, 3F	
FrSM1326	08:00~08:20	OBSERVATION OF THERMAL RUNAWAY IN PRISMATIC LI-ION BATTERIES WITH INDENTATION TESTS UNDER VARIOUS STATE OF CHARGE (SOC) CONDITIONS **Seong Bin Han** (KOREA UNIVERSITY, Korea, Republic of) Corresponding Author Byoung-Ho Choi (KOREA UNIVERSITY, Korea, Republic of)
FrSM1327	08:20~08:40	DYNAMIC STABILITY CHARACTERISTICS OF AXIALLY FUNCTIONAL GRADED (AFG) POROUS DAMPED COMPOSITES PLATE: A SEMI-ANALYTICAL SOLUTION **Tanish Dey** (Indian Institute of Technology (ISM), Dhanbad, India) Corresponding Author Tanish Dey (Indian Institute of Technology (ISM), Dhanbad, India)
FrSM1328	08:40~09:00	PREDICTION OF FORMING LIMIT CURVES USING A POROUS PLASTICITY MODEL **Shyam M. Keralavarma** (Indian Institute of Technology Madras, India) Corresponding Author Shyam M. Keralavarma (Indian Institute of Technology Madras, India)
FrSM1329	09:00~09:20	INTEGRATION OF KINKS AND CREASES ENABLES TUNABLE FOLDING IN META-RIBBONS **MINGCHAO LIU** (University of Birmingham, United Kingdom) Corresponding Author MINGCHAO LIU (University of Birmingham, United Kingdom)

SM15	Vibrations and control of structures	
Moderator	**Qiuhua Gao** (Shanghai Jiao Tong University, China) / **Yimin Fan** (Harbin Institute of Technology (Shenzhen), China)	
Room	Room 315, 3F	
FrSM1525	08:00~08:20	PERFORMANCE ENHANCEMENTS OF PARAMETRICALLY EXCITED ENERGY HARVESTERS **Yimin Fan** (Harbin Institute of Technology (Shenzhen), China) Corresponding Author Yimin Fan (Harbin Institute of Technology (Shenzhen), China)
FrSM1526	08:20~08:40	PLATE THEORY BASED ANALYSIS OF A VIBRATORY ENERGY HARVESTER WITH EXPERIMENTAL VALIDATIONS **Li-Qun Chen** (Shanghai University, China) Corresponding Author Li-Qun Chen (Shanghai University, China)
FrSM1527	08:40~09:00	MECHANICAL INTELLIGENT HUMAN MOTION ENERGY HARVESTING FOR SELF-POWERING APPLICATIONS **Linchuan Zhao** (Shanghai Jiao Tong University, China) Corresponding Author Wenming Zhang (Shanghai Jiao Tong University, China)
FrSM1528	09:00~09:20	WAVE SEPARATION IN A UNIFORM BEAM WITH AN INTERNAL HINGE **Dong Wang** (Northwestern Polytechnical University, China) Corresponding Author Dong Wang (Northwestern Polytechnical University, China)
FrSM1529	09:20~09:40	A PATTERNED VIBROTACTILE METHOD USING ENVELOPE MODULATION WITH HIGH RESOLUTION AND LOW PERCEPTUAL FREQUENCY **hangyu li** (Peking university, China) Corresponding Author Yongmao Pei (Peking university, China)

SM17	Metamaterials architectured materials and topology optimization	
Moderator	**Xu Guo** (Dalian University of Technology, China) / **Tsuyoshi Nomura** (Toyota Central R&D Labs., Inc., Japan)	
Room	Room 320A, 3F	
FrSM1741	08:00~08:20	CONTACT SHAPE OPTIMIZATION **Filip Sjövall** (Lund University, Sweden) Corresponding Author Filip Sjövall (Lund University, Sweden)
FrSM1742	08:20~08:40	MULTI-SCALE VARIABLE STIFFNESS DESIGN OPTIMIZATION OF COMPOSITE LAMINATES BASED ON MODIFIED ADAPTIVE NORMAL DISTRIBUTION FIBER OPTIMIZATION INTERPOLATION SCHEME FOR MINIMUM STRUCTURAL COMPLIANCE **Zunyi Duan** (Northwestern Polytechnical University, China) Corresponding Author Jihong Zhu (School of Mechatronics, Northwestern Polytechnical University, China)
FrSM1743	08:40~09:00	PROBLEM-INDEPENDENT MACHINE LEARNING ENHANCED LARGE-SCALE TOPOLOGY OPTIMIZATION **Xu Guo** (Dalian University of Technology, China) Corresponding Author Xu Guo (Dalian University of Technology, China)
FrSM1744	09:00~09:20	MULTI-MATERIAL ANISOTROPIC TOPOLOGY OPTIMIZATION: INTEGRATED STRUCTURE OF VARIABLE AXIAL CFRP AND ALUMINIUM INSERTS **Tsuyoshi Nomura** (Toyota Central R&D Labs., Inc., Japan) Corresponding Author Tsuyoshi Nomura (Toyota Central R&D Labs., Inc., Japan)
FrSM1745	09:20~09:40	A NOVEL MULTI-MATERIAL TOPOLOGY OPTIMIZATION METHOD BASED ON IMPLICIT TOPOLOGICAL DESCRIPTION FUNCTIONS **Yilin Guo** (Dalian University of Technology, China) Corresponding Author Xu Guo (Dalian University of Technology, China)
FrSM1746	09:40~10:00	A MIRROR DESCENT METHOD ON TOPOLOGY OPTIMIZATION **Dohyun Kim** (Brown University, USA) Corresponding Author Brendan Keith (Brown University, USA)

SM12	Plasticity, viscoplasticity and creep	
Moderator	Lorenzo Bardella (University of Brescia, Italy) / Henrik Myhre Jensen (Aarhus University, Denmark)	
Room	Room 320B, 3F	
FrSM1217	08:00~08:20	ON THE ROLE OF HIGHER-ORDER CONDITION OF STRAIN GRADIENT PLASTICITY IN THE CYCLIC TORSION OF THIN METALLIC WIRES **Dabiao Liu** (Huazhong University of Science and Technology, China) Corresponding Author Dabiao Liu (Huazhong University of Science and Technology, China)
FrSM1218	08:20~08:40	ON THE ROLE OF HIGHER-ORDER CONDITION OF STRAIN GRADIENT PLASTICITY IN THE CYCLIC TORSION OF THIN METALLIC WIRES **Harini Subramanian** (Indian Institute of Technology Gandhinagar, India) Corresponding Author Harini Subramanian (Indian Institute of Technology Gandhinagar, India)
FrSM1219	08:40~09:00	TENSILE AND CREEP BEHAVIOR OF 316L AUSTENITE STAINLESS STEEL AT ELEVATED TEMPERATURES: EXPERIMENT AND CRYSTAL PLASTICITY MODELING **Xu Zhang** (Southwest Jiaotong University, China) Corresponding Author Xu Zhang (Southwest Jiaotong University, China)
FrSM1220	09:00~09:20	DEVELOPMENT OF A METHOD TO EVALUATE CREEP DAMAGE USING SMALL SPECIMENS **Sangyeop Kim** (Sungkyunkwan University, Korea, Republic of) Corresponding Author Moon Ki Kim (Sungkyunkwan University, Korea, Republic of)
FrSM1221	09:20~09:40	PERIDYNAMIC MODELING OF THE CREEP-FATIGUE DEFORMATION AND DAMAGE BEHAVIORS **Han Dong** (Shanghai Jiao Tong university, China) Corresponding Author Weizhe Wang (Shanghai Jiao Tong University, China)

FM11	Low Reynolds number flows and suspension	
Moderator	G P Raja Sekhar (Indian Institute of Technology Kharagpur, India) / Jae-Sung Kwon (Incheon National University, Korea, Republic of)	
Room	Room 321A, 3F	
FrFM1118	08:00~08:20	PRESSURE DROP AND VELOCITY MEASUREMENTS WITHIN TRIPLY PERIODIC MINIMAL SURFACE (TPMS) GYROID STRUCTURE **Daejung Kim** (The University of Melbourne, Australia) Corresponding Author Daejung Kim (The University of Melbourne, Australia)
FrFM1119	08:20~08:40	MAGNETIC JANUS PARTICLE-MEDIATED EXOSOME DETECTION FOR CANCER DIAGNOSIS **Yu-Hsuan Chou** (National Cheng Kung University, China-Taipei) Corresponding Author Yu-Hsuan Chou (National Cheng Kung University, China-Taipei)
FrFM1120	08:40~09:00	CRYSTALLIZATION, SYNCHRONIZATION AND TOPOLOGICAL DEFECTS IN CONFINED SPINNER SUSPENSIONS **Zaiyi Shen** (Peking University, China) Corresponding Author Zaiyi Shen (Peking University, China)
FrFM1121	09:00~09:20	THE DYNAMICS OF AN ELASTIC PARTICLE TRANSLATING NEXT TO A RIGID WALL **Shashikant Verma** (Indian Institute of Technology, Ropar, India) Corresponding Author Navaneeth Kizhakke Marath (Asst Professor, India)
FrFM1122	09:20~09:40	ROTATIONAL TAYLOR DISPERSION OF ACTIVE BROWNIAN PARTICLES **Zhiwei Peng** (University of Alberta, Canada) Corresponding Author Zhiwei Peng (University of Alberta, Canada)

FM10	Geophysical and environmental fluid dynamics	
Moderator	Michael Le Bars (CNRS, France)	
Room	Room 321B, 3F	
FrFM1022	08:00~08:30	THERMAL EQUILIBRIUM AT CONVECTIVE-STABLY STRATIFIED BOUNDARIES **Daniel Lecoanet** (Northwestern University, USA) Corresponding Author Daniel Lecoanet (Northwestern University, USA)
FrFM1023	08:30~09:00	BRIDGING THE OBSERVATIONAL-EXPERIMENTAL GAP IN RAPIDLY ROTATING CONVECTION **Adrian van Kan** (University of California at Berkeley, USA) Corresponding Author Keith Anthony Julien (University of Colorado Boulder, USA)
FrFM1024	09:00~09:20	LABORATORY EXPERIMENTS OF OCEAN RELEVANT WESTERN BOUNDARY CURRENTS AND SELF-SUSTAINED OSCILLATIONS **Joel Sommeria** (CNRS, France) Corresponding Author Joel Sommeria (CNRS, France)
FrFM1025	09:20~09:40	RIFT FORMATION AND HEALING IN RADIALLY SPREADING EXTENSIONAL FLOWS **Roiy Sayag** (Ben-Gurion university, Israel) Corresponding Author Roiy Sayag (Ben-Gurion university, Israel)
SM04	Damage & fracture mechanics	
Moderator	Guadalupe Vadillo Martin (University Carlos III of Madrid, Spain) / Seung Tae CHOI (Chung-Ang University, Korea, Republic of)	
Room	Room 322A, 3F	
FrSM0438	08:00~08:20	NANOSCALE FIELD PROJECTION METHOD FOR ATOMIC MIXED-MODE COHESIVE-ZONE DUAL CONSTITUTIVE LAWS OF GRAIN BOUNDARIES IN POLYCRYSTALLINE SOLIDS **Seung Tae CHOI** (Chung-Ang University, Korea, Republic of) Corresponding Author Seung Tae CHOI (Chung-Ang University, Korea, Republic of)
FrSM0439	08:20~08:40	AN EXTRA CONSTRAINT OF COHESIVE ZONE MODEL BASED ON CRACK TIP OPENING ANGLE **Kun Long Lu** (Northwestern Polytechnical University, China) Corresponding Author Kun Long Lu (Northwestern Polytechnical University, China)
FrSM0440	08:40~09:00	MICROSTRUCTURAL INDUCED FRACTURE MODES IN CRYSTALLINE MATERIALS **Mohammed A Zikry** (North Carolina State University, USA) Corresponding Author Mohammed A Zikry (North Carolina State University, USA)
FrSM0446	09:00~09:20	INNER CORE DEBONDING MECHANICS MODEL OF COMPOSITE SANDWICH BEAM WITH CFRP HEXAGONAL HONEYCOMB **Pengcheng Xue** (Harbin Institute of Technology, China) Corresponding Author Jian Xiong (Harbin Institute of Technology, China)

FM08	Flow instability and transition	
Moderator	PAPPU KUMAR MOURYA (Indian Institute of Technology Hyderabad, India) / Manoranjan Mishra (Indian Institute of Technology Ropar, India)	
Room	Room 322B, 3F	
FrFM0842	08:00~08:20	STABILITY ANALYSIS OF A PERTURBED LIQUID LAYER OVER A VIBRATING PLANE **Md. Mouzakkir Hossain** (SRM Institute of Science and Technology, India) Corresponding Author Sukhendu Ghosh (Indian Institute of Technology Jodhpur, India)
FrFM0843	08:20~08:40	QUADRATIC THERMOCAPILLARY INSTABILITY IN THIN SELF-REWETTING LIQUID FILMS ON AN INCLINED HEATED SUBSTRATE. **Mohammed Zubair** (Indian Institute of Technology Ropar, India) Corresponding Author Dr. Rajagopal Vellingiri (Assistant Professor, IIT Ropar, India)
FrFM0844	08:40~09:00	INTERACTION OF VISCOUS FINGERING WITH CHEMICAL REACTION IN POROUS MEDIUM **Manoranjan Mishra** (Indian Institute of Technology Ropar, India) Corresponding Author Manoranjan Mishra (Indian Institute of Technology Ropar, India)
FrFM0845	09:00~09:20	DARCY-BRINKMAN CONVECTION WITH THERMAL ANISOTROPIC IN AN INCLINED POROUS LAYER **PAPPU KUMAR MOURYA** (INDIAN INSTITUTE OF TECHNOLOGY HYDERABAD, India) Corresponding Author PAPPU KUMAR MOURYA (INDIAN INSTITUTE OF TECHNOLOGY HYDERABAD, India)
FrFM0847	09:20~09:40	3D LINEAR STABILITY ANALYSIS OF THE VISCOELASTIC FLOW AROUND A CONFINED CYLINDER **John Tsamopoulos** (University of Patras, Greece) Corresponding Author John Tsamopoulos (University of Patras, Greece)

FM06	Drops, bubbles and interfaces	
Moderator	Shu Takagi (The University of Tokyo, Japan) / Pedro Javier Saenz (University of North Carolina, USA)	
Room	Room 323A, 3F	
FrFM0661	08:00~08:20	KINETIC ANALYSIS OF DROPLET MIGRATION DUE TO THERMAL MARANGONI EFFECT ON CHEMICALLY STRIPED PATTERNED SUBSTRATES **Jing-Wei Chen** (University of Science and Technology of China, China) Corresponding Author Hang Ding (University of Science and Technology of China, China)
FrFM0662	08:20~08:40	VISCOUS FINGERING AT THE CONTACT BETWEEN A SPREADING GRAVITY CURRENT AND A LUBRICATING BASAL LAYER **Christian Vaquero-Stainer** (OIST, Japan) Corresponding Author Christian Vaquero-Stainer (OIST, Japan)
FrFM0663	08:40~09:00	LATERAL MIGRATION OF A DEFORMABLE BUBBLE RISING NEAR A VERTICAL WALL IN THE MODERATELY INERTIAL REGIME **Jie Zhang** (Xi'an Jiaotong University, China) Corresponding Author Jacques Magnaudet (Institut de Mecanique des Fluides de Toulouse, France)
FrFM0664	09:00~09:20	ANDERSON LOCALIZATION OF WALKING DROPLETS **Pedro Javier Saenz** (University of North Carolina, USA) Corresponding Author Pedro Javier Saenz (University of North Carolina, USA0
FrFM0665	09:20~09:40	REVISITING DROPLET WALKING ON A VIBRATING BATH THROUGH A SLIT **Kuo-Long Pan** (National Taiwan University, China-Taipei) Corresponding Author Kuo-Long Pan (National Taiwan University, China-Taipei)
FrFM0666	09:40~10:00	NUMERICAL SIMULATIONS OF CLUSTER FORMATION BY BUBBLES RISING NEAR A WALL **Shu Takagi** (The University of Tokyo, Japan0 Corresponding Author Shu Takagi (The University of Tokyo, Japan)
FrFM0667	10:00~10:20	ULTRASONIC EFFECT ON THE DYNAMICS OF A BUBBLE NEAR A SOLID SURFACE **Tatyana Lyubimova** (Institute of Continuous Media Mechanics UB RAS, Russia) Corresponding Author Tatyana Lyubimova (Institute of Continuous Media Mechanics UB RAS, Russia)

FM12	Micro- and nano-fluidics	
Moderator	Alexander M Leshansky (Technion-IIT, Israel) / Alessandro Mariotti (University of Pisa, Italy)	
Room	Room 323B, 3F	
FrFM1212	08:00~08:20	FLOW REGIMES, MIXING AND REACTION EFFICIENCY IN MICROREACTORS **Maria Vittoria Salvetti** (University of Pisa, Italy) Corresponding Author Maria Vittoria Salvetti (University of Pisa, Italy)
FrFM1213	08:20~08:40	μ-fluidic CHIP FOR IN VITRO ASSESMENT OF TBI-BIOMARKERS USING 3D CORTICAL SPHEROIDS **Mauricio David Araiza Canizales** (University of Wisconsin-Madison, USA) Corresponding Author Mauricio David Araiza Canizales (University of Wisconsin-Madison, USA)
FrFM1214	08:40~09:00	CFD-BASED DESIGN AND PERFORMANCE ANALYSIS OF A NOSE-ON-CHIP DEVICE **Elena Fasil** (University of Pisa, Italy) Corresponding Author Elena Fasil (University of Pisa, Italy)
FrFM1215	09:00~09:20	UNDERSTANDING DEWETTING INSTABILITY IN THE FORMATION OF LIPID VESICLES **Junil Ryu** (KAIST, Korea, Republic of) Corresponding Author Hyoungsoo Kim (KAIST, Korea, Republic of)
FrFM1216	09:20~09:40	ACOUSTOFLUIDIC SEPARATION OF SAMPLE-LADEN DROPLETS TO BREAK THROUGH THE POISSON DISTRIBUTION **Mushtaq Ali** (Chonnam National University, Korea, Republic of) Corresponding Author Jinsoo Park (Chonnam National University, Korea, Republic of)
FrFM1217	09:40~10:00	FORMATION MANIPULATION OF ROTATING MAGNETIC BEADS BY MODIFIED FIELD **Ching-Yao Chen** (National Yang Ming Chiao Tung University, China-Taipei) Corresponding Author Ching-Yao Chen (National Yang Ming Chiao Tung University, China-Taipei)
FrFM1218	10:00~10:20	SUPERCRITICAL CO2 MASS TRANSFER IN MICROFLUIDICS **Junyi Yang** (University of Alberta, Canada) Corresponding Author Peichun Amy Tsai (University of Alberta, Canada)

FM04	Compressible flow	
Moderator	**Ikhyun Kim** (Keimyung University, Korea, Republic of) / **Tsutomu Kambe** (Meiji University, Japan)	
Room	Room 324A, 3F	
FrFM0432	08:00~08:20	A BLACKBOX OPTIMIZATION OF POROUS MEDIUM ON TRANSPIRATION COOLING IN HYPERSONIC LAMINAR FLOW **Davoud Hosseinzadeh** (Keimyung University, Korea, Republic of) Corresponding Author Ikhyun Kim (Keimyung University, Korea, Republic of)
FrFM0433	08:20~08:40	UNSTEADY FLOW FIELD PREDICTION IN BLADE CASCADE GEOMETRY USING CONVOLUTIONAL NEURAL NETWORK **Jan Vimmr** (University of West Bohemia, Faculty of Applied Sciences, Czech Republic) Corresponding Author Jan Vimmr (University of West Bohemia, Faculty of Applied Sciences, Czech Republic)
FrFM0434	08:40~09:00	EFFECTS OF HERRINGBONE RIBLETS ON SHOCK WAVE/BOUNDARY LAYER INTERACTIONS OF A COMPRESSION RAMP AT MACH 3 **Gang Wang** (China Aerodynamics Research and Development Center, China) Corresponding Author Yan-guang guang Yang (China Aerodynamics Research and Development Center, China)
FrFM0435	09:00~09:20	FLUID GAUGE THEORY: KUNDT'S SYMMETRY TRANSITION AND GALAXY'S DISK-HALO CONSPIRACY **Tsutomu Kambe** (Meiji University, Japan) Corresponding Author Tsutomu Kambe (Meiji University, Japan)
FrFM0436	09:20~09:40	NUMERICAL INVESTIGATION OF CLOUD CAVITATION DYNAMICS IN THE PRESENCE OF PRE-SET BUBBLE IN A HIGH-INTENSITY FOCUSED ULTRASOUND FIELD **Tianyang Qiao** (Beijing Institute of Technology, China) Corresponding Author Wangxia Wu (Beijing Institute of Technology, China)
FrFM0437	09:40~10:00	SELF-SUSTAINED MECHANISM OF REATTACHMENT UNSTEADINESS IN SEPARATED SHOCK WAVE/BOUNDARY LAYER INTERACTION **Wen-Feng Zhou** (China aerodynamics research and development center, China) Corresponding Author Wen-Feng Zhou (China aerodynamics research and development center, China)
FrFM0438	10:00~10:20	SCALING OF INTERACTION LENGTHS FOR SHOCK WAVE/BOUNDARY LAYER INTERACTIONS AFFECTED BY EXPANSION WAVES **Mingzhi Tang** (China Aerodynamics Research and Development Center, China) Corresponding Author Mingzhi Tang (China Aerodynamics Research and Development Center, China)

FM02	Boundary layers	
Moderator	**Angela Busse** (University of Glasgow, United Kingdom) / **Elias Balaras** (George Washington University, USA)	
Room	Room 324B, 3F	
FrFM0239	08:00~08:20	SECONDARY INSTABILITY INDUCED BY SURFACE ROUGHNESS IN THREE-DIMENSIONAL BOUNDARY LAYERS **Bo Yuan** (Imperial College London, United Kingdom) Corresponding Author Xuesong Wu (Imperial College London, United Kingdom)
FrFM0240	08:20~08:40	EFFECTS OF STREAMWISE-GROOVED SPANWISE-PERIODIC ROUGHNESS ELEMENTS ON BOUNDARY-LAYER INSTABILITY **jianing zheng** (Tianjin University, China) Corresponding Author Xuesong Wu (Imperial College London, United Kingdom)
FrFM0241	08:40~09:00	THE EFFECTS OF PLANFORM SOLIDITY IN THE LIMIT OF LOW FRONTAL SOLIDITY ON WALL-BOUNDED TURBULENT FLOW OVER ROUGH SURFACES **Angela Busse** (University of Glasgow, United Kingdom) Corresponding Author Angela Busse (University of Glasgow, United Kingdom)
FrFM0242	09:00~09:20	ON THE ORIGIN OF DRAG IN TURBULENT BOUNDARY LAYERS OVER MULTICULTURE ORGANISM BIOFOULING TOPOGRAPHIES **Elias Balaras** (George Washington University, USA) Corresponding Author Elias Balaras (George Washington University, USA)
FrFM0243	09:20~09:40	ON THE SLOW DECAY OF SECONDARY FLOWOF THE SECOND KIND IN ROUGH-WALL BOUNDARY LAYER FLOWS **Wen Zhang** (Southern University of Science and Technology, China) Corresponding Author Wen Zhang (Southern University of Science and Technology, China)
FrFM0244	09:40~10:00	PIV EXPERIMENT OF THE TURBULENT BOUNDARY LAYER OVER A SUPERHYDROPHOBIC SURFACE **Yufei Wang** (Tianjin University, China) Corresponding Author nan jiang (Tianjin University, China)
FrFM0245	10:00~10:20	PIV MEASUREMENTS OF THE TURBULENT STRUCTURES IN BOUNDARY LAYER PERTURBED BY TRANSVERSE SQUARE CYLINDER **Ping Wang** (Lanzhou University, China) Corresponding Author Ping Wang (Lanzhou University, China)

FM01	Biological fluid mechanics	
Moderator	Sanghun Choi (Kyungpook National University, Korea, Republic of) / Jung Kyung Kim (Kookmin University, Korea, Republic of)	
Room	Room 325A, 3F	
FrFM0133	08:00~08:20	UNRAVELING THE INTRICACIES OF NEEDLE-FREE JET INJECTOR DESIGN THROUGH DRUG VISCOSITY AND MECHANICAL SYMBIOSIS FOR OPTIMAL SKIN INTERACTION **Jinu Sudhakaran** (Kookmin University, Korea, Republic of) Corresponding Author Jung Kyung Kim (Kookmin University, Korea, Republic of)
FrFM0134	08:20~08:40	AUTOMATED CIRCULATING CELL-FREE DNA ISOLATION USING A MOVABLE-LAYER SYSTEM WITH DEXTRAN-ENHANCED **Hung Phi Hoang** (Konkuk University, Korea, Republic of) Corresponding Author Sungjin Kim (Konkuk University, Korea, Republic of)
FrFM0135	08:40~09:00	ANALYSIS OF ENCRUSTATION FORMATION IN FOUR TYPES OF URETERAL STENT CONSIDERING THE FLOW PERFORMANCE OF ARTIFICIAL URINE USING AN IN VITRO EXPERIMENTAL MODEL **Md. Didarul Islam** (Gyeongsang National University, Korea, Republic of) Corresponding Author Hyoung-Ho Kim (Gyeongsang National University, Korea, Republic of)
FrFM0136	09:00~09:20	UNRAVELLING THE MECHANICS OF CUFF-BASED BLOOD PRESSURE MEASUREMENT AND THE RESULTING SOURCES OF ERROR **Kate Jamila Bassil** (University of Cambridge, United Kingdom) Corresponding Author Kate Jamila Bassil (University of Cambridge, United Kingdom)
FrFM0137	09:20~09:40	PERCUTANEOUS THROMBIN INJECTION OUTCOMES IN FEMORAL ARTERY PSEUDOANEURYSMS USING VARIOUS PSEUDOANEURYSM MODELS **Md. Didarul Islam** (Gyeongsang National University, Korea, Republic of) Corresponding Author Young Ho Choi (Seoul National University, Korea, Republic of)
FrFM0138	09:40~10:00	HEMODYNAMIC SIMULATION AFTER TEMPORARY STRANGULATION OF THE COMMON CAROTID ARTERY DURING SURGICAL CLIPPING OF MIDDLE CEREBRAL BIFURCATION ANEURYSMS **Sangwon Ryu** (Korea University, Korea, Republic of) Corresponding Author Jaiyoung Ryu (Korea University, Korea, Republic of)
FrFM0139	10:00~10:20	COMPUTATIONAL MODELING OF WOVEN ENDOBRIDGE DEPLOYMENT: SELECTION GUIDELINE FOR SUCCESS IN CEREBRAL ANEURYSM TREATMENT **Dongwon Kim** (Hanyang University, Korea, Republic of) Corresponding Author Je Hoon Oh (Hanyang University ERICA, Korea, Republic of)
FrFM0140	10:20~10:40	FAST ESTIMATION OF FRACTIONAL FLOW RESERVE BY A GRAPH NEURAL NETWORK WITH THE CFD DATASET MAPPED TO THE 1D CORONARY CENTERLINE TREE **Nghia Nguyen Ho** (University of Ulsan, Korea, Republic of) Corresponding Author Sang-Wook Lee (University of Ulsan, Korea, Republic of)

FM07	Multiphase and particle-laden flows	
Moderator	Huan Zhang (Lanzhou University, China) / Fria Hossein (University College London, United Kingdom)	
Room	Room 325B, 3F	
FrFM0738	08:00~08:20	SHOCK INDUCED INSTABILITY OF DUAL-LAYER DILUTE GAS-PARTICLE MIXTURE **Yifeng He** (Peking University, China) Corresponding Author Yue Yang (Peking University, China)
FrFM0739	08:20~08:40	MODELLING AND NUMERICAL SIMULATION FOR WEAKLY NONLINEAR FOCUSED ULTRASOUND PROPAGATION IN VISCOELASTIC BUBBLY LIQUID **Takeru Hasegawa** (University of Tsukuba, Japan) Corresponding Author Tetsuya Kanagawa (Institute of Systems and Information Engineering, University of Tsukuba, Japan, Japan)
FrFM0740	08:40~09:00	VIBRATION EFFECT ON INTERFACE INSTABILITY OF SEDIMENTING SUSPENSION **Senlin Zhu** (Peking University, China) Corresponding Author Jianjun Tao (Peking University, China)
FrFM0741	09:00~09:20	ADVANCED ACOUSTIC METHODS FOR MULTIPHASE FLOW CHARACTERIZATION **Fria Hossein** (University College London, United Kingdom) Corresponding Author Fria Hossein (University College London, United Kingdom)
FrFM0742	09:20~09:40	CO2 CONDENSATION IN A SUPERSONIC NOZZLE **SANG HEE YOON** (Chungnam national university, Korea, Republic of) Corresponding Author Byoung Jae Kim (Chungnam national university, Korea, Republic of)
FrFM0743	09:40~10:00	ON NEAR-FIELD FLOW AND THERMAL CHARACTERISTICS OF VAPOR DRIFT IN CROSSFLOW CONDITION **JinGyu Park** (Sogang university, Korea, Republic of) Corresponding Author Seongwon Kang (Sogang University, Korea, Republic of)
FrFM0744	10:00~10:20	DESTABILIZING TURBULENCE BY CHARGED PARTICLES IN CHANNEL FLOW **Huan Zhang** (Lanzhou University, China) Corresponding Author Huan Zhang (Lanzhou University, China)
FrFM0745	10:20~10:40	BESPOKE EMULSION GENERATION USING HORIZONTAL VIBRATIONS **Linfeng Piao** (University of Manchester, United Kingdom) Corresponding Author Anne Juel (University of Manchester, United Kingdom)

FM16	Vortex dynamics	
Moderator	Kai Zhang (Shanghai Jiao Tong University, China) / Wenchao Yang (Chinese Academy of Sciences, China)	
Room	Room 325C, 3F	
FrFM1625	08:00~08:20	WAKE DYNAMICS OF FINITE-ASPECT-RATIO ROTATING CIRCULAR CYLINDERS **Kai Zhang** (Shanghai Jiao Tong University, China) Corresponding Author Kai Zhang (Shanghai Jiao Tong University, China)
FrFM1626	08:20~08:40	WAKE STIFFNESS AND WAKE-INDUCED VIBRATION OF TWO TANDEM CYLINDERS IN CLOSE PROXIMITY **Wenchao Yang** (Chinese Academy of Sciences, China) Corresponding Author Wenchao Yang (Chinese Academy of Sciences, China)
FrFM1627	08:40~09:00	BUBBLE IMAGE VELOCIMETRY OF COHERENT STRUCTURES FROM BLUFF BODY AT LOW REYNOLDS NUMBER **Joseph Rozas** (Aeronautical Polytechnic Academy, Chilean Air Force, Chile) Corresponding Author Joseph Rozas (Aeronautical Polytechnic Academy, Chilean Air Force, Chile)
FrFM1628	09:00~09:20	VORTEX BEHAVIOUR IN ACCELERATING ROTATING FLOW **Lyke Eline van Dalen** (Delft University of Technology, Netherlands) Corresponding Author Lyke Eline van Dalen (Delft University of Technology, Netherlands)
FrFM1629	09:20~09:40	THE SCALING OF THE DRAG FORCE ON AN ACCELERATING PLATE **Jesse Reijtenbagh** (Delft University of Technology, Netherlands) Corresponding Author Jerry Westerweel (Delft University of Technology, Netherlands)
FrFM1630	09:40~10:00	EXPERIMENTAL AND NUMERICAL ANALYSIS OF FLOW PASSING THROUGH MULTIPLE INCLINED PLATES **Sajjad Hosseini** (Seoul National University, Korea, Republic of) Corresponding Author Wontae Hwang (Seoul National University, Korea, Republic of)

FM14	Computational fluid dynamics	
Moderator	Seungwon Shin (Hongik University, Korea, Republic of) / Johann Simon Kern (École nationale supérieure d'Arts et Métiers, Paris, France)	
Room	Room 325D, 3F	
FrFM1438	08:00~08:20	DETECTIVE GENERALIZED MULTISCALE HYBRIDIZABLE GALERKIN METHOD FOR HIGHLY HETEROGENEOUS POROUS MEDIA **Minam Moon** (Korea Military Academy, Korea, Republic of) Corresponding Author Minam Moon (Korea Military Academy, Korea, Republic of)
FrFM1439	08:20~08:40	LARGE-SCALE PARALLEL COMPUTING FOR SHAPED-CHARGE FORMATION BASED ON NUMA ARCHITECTURE AND MPI-2 STANDARD **Gao Yi** (Beijing Institute of Technology, China) Corresponding Author XiangZhao Xu (Beijing Institute of Technology, China)
FrFM1440	08:40~09:00	NUMERICAL INVESTIGATION OF LIQUID TRANSPORT IN PERFORATED COLUMNS OF GAS DIFFUSION LAYER (GDL) BY USING THE LATTICE BOLTZMANN METHOD (LBM) **Jae Yong Cho** (Yonsei University, Korea, Republic of) Corresponding Author Joon Sang Lee (Yonsei University, Korea, Republic of)
FrFM1441	09:00~09:20	TOPOLOGY OPTIMIZATION OF THREE-DIMENSIONAL WAVY WINGS USING ADJOINT SOLVER **Mahdi Nili-Ahmadabadi** (Pusan National University, Korea, Republic of) Corresponding Author Abbas Hajiheidari (Isfahan University of Technology (Iran), Iran)
FrFM1442	09:20~09:40	DYNAMIC LOW-RANK APPROXIMATIONS FOR OPTIMAL CONTROL OF LARGE-SCALE DYNAMICAL SYSTEMS **Johann Simon Kern** (École nationale supérieure d'Arts et Métiers, Paris, France) Corresponding Author Johann Simon Kern (École nationale supérieure d'Arts et Métiers, Paris, France)
FrFM1443	09:40~10:00	EFFECTIVE UNCERTAINTY QUANTIFICATION APPROACH FOR CFD APPLICATIONS USING INTERPOLATIVE DECOMPOSITION **Jiyoung Lee** (University of Melbourne, Australia) Corresponding Author Jiyoung Lee (University of Melbourne, Australia)

MS03	Nonlinear mechanical models for biological and bioinspired materials	
Moderator	Li-Wei Liu (National Taiwan University, China-Taipei) / Mauro Tortello (Politecnico di Torino, Italy)	
Room	Room 503, 5F	
FrMS0319	08:00~08:20	MODELLING POLYMORPHIC TRANSFORMATIONS AND DEBONDING OF BACTERIAL FLAGELLAR FILAMENTS **Jianshan Wang** (Tianjin University, China) Corresponding Author Jianshan Wang (Tianjin University, China)
FrMS0320	08:20~08:40	MODELLING PARTICLE-MEMBRANE INTERACTIONS FOR BIOMATERIAL DESIGNS **Qin Maggie Qi** (Massachusetts Institute of Technology, USA) Corresponding Author Qin Maggie Qi (Massachusetts Institute of Technology, USA)
FrMS0321	08:40~09:00	CYCLIC AND POST-YIELDING BEHAVIOR OF BONE-LIKE MATERIALS **Li-Wei Liu** (National Taiwan University, China-Taipei) Corresponding Author Li-Wei Liu (National Taiwan University, China-Taipei)
FrMS0322	09:00~09:20	SEASHELL-INSPIRED TONOTOPIC RESONATOR **Mauro Tortello** (Politecnico di Torino, Italy) Corresponding Author Mauro Tortello (Politecnico di Torino, Italy)
FrMS0323	09:20~09:40	ACCURATE DYNAMICAL TEST AND SIMULATION OF DRAGONFLY WING STRUCTURE: SPECKLE AFFECTION **Zhenning Chen** (nanjing university of aeronautics and astronautics, China) Corresponding Author Zhenning Chen (nanjing university of aeronautics and astronautics, China)
FrMS0324	09:40~10:00	PEELING OF NONLOCAL FILMS: A NEW PARADIGM FOR PAPER **Riccardo Cavuoto** (University of Naples, Italy) Corresponding Author Massimiliano Fraldi (University of Napoli Federico II, Italy)

MS01	Chemo-mechanics and materials for energy conversion and storage	
Moderator	Hanqing Jiang (Westlake University, China) / Robert M. McMeeking (University of California, USA)	
Room	Room 504, 5F	
FrMS0117	08:00~08:20	THERMO-MECHANICAL PREDICTIONS OF TRANSITION METAL DICHALCOGENIDES USING MACHINE LEARNING PARAMETERIZED FORCE FIELD **Horacio D Espinosa** (Northwestern University, USA) Corresponding Author Horacio D Espinosa (Northwestern University, USA)
FrMS0118	08:20~08:40	A NOVEL POROUS PMN-0.32PT WITH IMPROVED PERFORMANCE PARAMETERS **Ramanand Dadhich** (Indian Institute of Technology Indore, India) Corresponding Author Indrasen Singh (Indian Institute of Technology Indore, India)
FrMS0119	08:40~09:00	ELECTROLYTE SEPARATION IN MEMBRANELESS SINGLE-FLOW BATTERIES AND ITS IMPACT ON BATTERY RESISTANCE **Sofia Kuperman** (Technion, Israel) Corresponding Author Sofia Kuperman (Technion, Israel)
FrMS0120	09:00~09:20	EFFICIENT POWER DENSITY AMELIORATION STRATEGIES FOR SALINITY-GRADIENT CAPACITIVE CELLS SYSTEM **Zhiyi Man** (University Paris Science Lettre, France) Corresponding Author Zhiyi Man (University Paris Science Lettre, France)
FrMS0121	09:20~09:40	MODEL OF GRAVITY FORCED MOTION FOR THERMALLY AND CHEMICALLY CONVERTED POROUS MEDIA IMPLEMENTED IN OPENFOAM **Paweł Jan żuk** (Institute of Physical Chemistry, Polish Academy of Sciences,, Poland) Corresponding Author Paweł Jan żuk (Institute of Physical Chemistry, Polish Academy of Sciences, Poland)
FrMS0122	09:40~10:00	AN EFFICIENT THREE-DIMENSIONAL MODELING AND SIMULATION APPROACH FOR FIBROUS BATTERY ELECTRODES **Angelo Simone** (University of Padova, Italy) Corresponding Author Angelo Simone (University of Padova, Italy)
FrMS0123	10:00~10:20	MULTISCALE DESIGN OF HIGH-PERFORMANCE POTASSIUM ION BATTERIES **Subeen Kim** (Hanbat National University, Korea, Republic of) Corresponding Author Jihwan Song (Hanbat National University, Korea, Republic of)

MS02	Soft matter, theory meets experiment	
Moderator	Zhongmeng Zhu (Southwest Jiaotong University, China) / Yuzhen Chen (Fudan University, China)	
Room	Room 505, 5F	
FrMS0229	08:00~08:20	SUPERHYDROPHOBICITY AND COMPRESSIVE STABILITY OF SALVINIA SURFACE : MECHANICAL ANALYSIS AND STRUCTURAL DESIGN **ShuoYan Zhang** (Tianjin University, China) Corresponding Author Jian-Gang Guo (Tianjin University, China)
FrMS0230	08:20~08:40	EXPLOITING STRUCTURAL INSTABILITIES FOR FUNCTIONAL ARCHITECTED MATERIALS **Yuzhen Chen** (Fudan University, China) Corresponding Author Lihua Jin (University of California, Los Angeles, USA)
FrMS0231	08:40~09:00	EXPERIMENTAL INVESTIGATION ON DISPLACEMENT-CONTROLLED SHEAR FATIGUE OF SOFT ADHESIVE SYSTEM **Zhongmeng Zhu** (Southwest Jiaotong University, China) Corresponding Author Zhongmeng Zhu (Southwest Jiaotong University, China)
FrMS0232	09:00~09:20	SURFACE INSTABILITY IN LIQUID CRYSTAL ELASTOMERS **Fan Feng** (Peking University, China) Corresponding Author John Biggins (Cambridge University, United Kingdom)
FrMS0233	09:20~09:40	CAPILLARY-INDUCED INSTABILITY PATTERN FORMATION IN FILM–SUBSTRATE BILAYERS **So Nagashima** (Nagoya University, Japan) Corresponding Author So Nagashima (Nagoya University, Japan)
FrMS0234	09:40~10:00	A PERTURBATION FORCE BASED APPROACH TO CREASING INSTABILITY IN SOFT MATERIALS UNDER GENERAL LOADING CONDITIONS **Bin LIU** (Tsinghua University, China) Corresponding Author Bin LIU (Tsinghua University, China)

FM09	Thin film flows	
Moderator	Georg F. DIETZE (CNRS - Université Paris-Saclay, France) / Prashant Valluri (The University of Edinburgh, United Kingdom)	
Room	Room 506, 5F	
FrFM0926	08:00~08:20	STABILITY OF EVAPORATING FLAT SESSILE DROPS COMPRISING BINARY MIXTURES **Prashant Valluri** (The University of Edinburgh, United Kingdom) Corresponding Author Prashant Valluri (The University of Edinburgh, United Kingdom)
FrFM0927	08:20~08:40	MULTISCALE MODELING OF THIN-FILM EVAPORATION IN MICROCHANNELS: A COMPUTATIONAL FLUID DYNAMICS APPROACH **Ali Mostafazade** (Technical University of Denmark, Denmark) Corresponding Author Ali Mostafazade (Technical University of Denmark, Denmark)
FrFM0928	08:40~09:00	FLOW STABILITY IN SHALLOW DROPLETS SUBJECT TO LOCALIZED HEATING OF THE BOTTOM PLATE **Khang Ee Pang** (University College Dublin, Ireland) Corresponding Author Lennon O'Naraigh (University College Dublin, Ireland)
FrFM0929	09:00~09:20	ONSET OF MARANGONI CONVECTION IN A FILM OF SURFACTANT SOLUTION CONTAINING MICELLES **Alexander Nepomnyashchy** (Technion - Israel Institute of Technology, Israel) Corresponding Author Alexander Nepomnyashchy (Technion - Israel Institute of Technology, Israel)
FrFM0930	09:20~09:40	COHERENT STRUCTURES BY LOW-STOKES-NUMBER PARTICLES IN THERMOCAPILLARY-DRIVEN TRAVELING-WAVE CONVECTION **Ichiro Ueno** (Tokyo University of Science, Japan) Corresponding Author Ichiro Ueno (Tokyo University of Science, Japan)
FrFM0931	09:40~10:00	SUPPRESSION OF LETHAL HYDRODYNAMIC INSTABILITIES IN THE DISTAL AIRWAYS **Ramkarn Patne** (Indian Institute of Technology Hyderabad, India) Corresponding Author Ramkarn Patne (Indian Institute of Technology Hyderabad, India)
FrFM0932	10:00~10:20	DYNAMICS OF MUCUS FILMS AND AIRBORNE PARTICLES IN CILIATED AIRWAYS **Swarnaditya Hazra** (Indian Institute of Technology Bombay, India) Corresponding Author Jason Ryan Picardo (IIT Bombay, India)

Oral Presentation 11		
FS05	Fluid structure interactions	
Moderator	JAE HWA LEE (UNIST, Korea, Republic of) / **Narakorn Srinil** (Newcastle University, United Kingdom)	
Room	Room 211, 2F	
FrFS0555	11:00~11:20	EXPERIMENTAL INVESTIGATION ON FLOW-INDUCED VIBRATION OF SQUARE CYLINDER UNDER FREE-STREAM TURBULENT FLOW **Yan Naung Aye** (Newcastle University, United Kingdom) Corresponding Author Narakorn Srinil (Newcastle University, United Kingdom)
FrFS0556	11:20~11:40	DRAG REDUCTION OF A DOWNSTREAM CYLINDER IN THE WAKE OF AN UPSTREAM CYLINDER USING AN ATTACHED FLEXIBLE FIN **Min Jae Kang** (UNIST, Korea, Republic of) Corresponding Author JAE HWA LEE (UNIST, Korea, Republic of)
FrFS0557	11:40~12:00	LINEAR STABILITY ANALYSIS OF MULTIPLE STEADY STATES FOR THE FLOW PAST A FLEXIBLY MOUNTED ROTATING CYLINDER **Tulsi Ram Sahu** (Indian Institute of Technology, India) Corresponding Author Navrose Navrose (Indian Institute of Technology, India)

FS06	Granular materials and flows	
Moderator	**Jaekwang Kim** (Hongik University, Korea, Republic of) / **Ying Cui** (Yokohama National University, Japan)	
Room	Room 214, 2F	
FrFS0617	11:00~11:20	INSIGHTS INTO GRANULAR MATERIAL FLOW MODELING: DEM VS. SPH PERSPECTIVES **Jaekwang Kim** (Hongik University, Korea, Republic of) Corresponding Author Jaekwang Kim (Hongik University, Korea, Republic of)
FrFS0618	11:20~11:40	OBSERVATION OF PREFERENTIAL FLOW PATHS IN SEEPAGE TEST USING TRANSPARENT SOIL TECHNOLOGY **Ying Cui** (Yokohama National University, Japan) Corresponding Author Ying Cui (Yokohama National University, Japan)
FrFS0619	11:40~12:00	STUDY OF A STATIONARY BEDLOAD TRANSPORT BY A LAMINAR SHEARING FLOW ACROSS VISCOUS TO INERTIAL REGIME **Chong-Wei Hong** (Aix-Marseille Université, France) Corresponding Author Chong-Wei Hong (Aix-Marseille Université, France)
FrFS0620	12:00~12:20	COMPARISON OF EMPIRICAL AND PARTICLE FORCE-BASED DENSITY SEGREGATION MODELS **Soniya Kumawat** (Indian Institute of Technology, India) Corresponding Author Anurag Tripathi (Indian Institute of Technology, India)
FrFS0621	12:20~12:40	PROPAGATION AND ATTENUATION OF STRESS WAVES IN ASSEMBLIES OF FLEXIBLE FIBERS **Wang Peng** (Zhejiang university, China) Corresponding Author Guo Yu (Zhejiang university, China)
FrFS0622	12:40~13:00	TEMPERATURE-CONTROLLED CLAMP BASED ON THE JAMMING OF SHAPE MEMORY PARTICLES **Jiawei Han** (Zhejiang University, China) Corresponding Author Yu Guo (Zhejiang University, China)

SM10	Multibody and vehicle dynamics	
Moderator	**Robert Seifried** (Hamburg University of Technology, Germany) / **Jialiang Sun** (Nanjing University of Aeronautics and Astronautics, China)	
Room	Room 217, 2F	
FrSM1012	11:00~11:20	A QUASISTATIC IGA-BASED CONTACT MODELS FOR ADAPTIVE IMPACT SIMULATIONS IN FLEXIBLE MULTIBODY SYSTEMS **Robert Seifried** (Hamburg University of Technology, Germany) Corresponding Author Robert Seifried (Hamburg University of Technology, Germany)
FrSM1013	11:20~11:40	OPTIMIZATION DESIGN FOR EIGENFREQUENCIES OF A RIGID-FLEXIBLE INFLATABLE SPACE STRUCTURE **Jialiang Sun** (Nanjing University of Aeronautics and Astronautics, China) Corresponding Author Jialiang Sun (Nanjing University of Aeronautics and Astronautics, China)
FrSM1014	11:40~12:00	MANDIBULAR MUSCULOSKELETAL MULTIBODY MODELLING AND ITS APPLICATION IN THE DESIGN OF MANDIBULAR MOVEMENT FUNCTION TRAINER **Xinyue Wang** (Beijing Institute of Technology, China) Corresponding Author Jianqiao Guo (Beijing Institute of Technology, China)
FrSM1015	12:00~12:20	FORWARD DYNAMIC MODELING OF JAVELIN THROWING BASED ON ABSOLUTE NODAL COORDINATE FORMULATION **Yimin Tang** (Beijing Institute of Technology, China) Corresponding Author Jianqiao Guo (Beijing Institute of Technology, China)
FrSM1016	12:20~12:40	THE VON MISES STRESS DISTRIBUTED CORRECTLY BEAM ELEMENT USING WARPING FUNCTION INTERPOLATIONS **Yixuan Tang** (University of Parma (UNIPR), Italy) Corresponding Author Yixuan Tang (University of Parma (UNIPR), Italy)

FS07	Optimization for solids and fluids	
Moderator	**Eddie Wadbro** (Karlstad University, Sweden)	
Room	Room 219, 2F	
FrFS0720	11:00~11:20	ANALYSIS AND OPTIMIZATION DESIGN OF MEMBRANE-TYPE ACOUSTIC METAMATERIAL PROPERTIES **Kepeng Qiu** (Northwestern Polytechnical University, China) Corresponding Author Kepeng Qiu (Northwestern Polytechnical University, China)
FrFS0721	11:20~11:40	A NOVEL INTERPOLATION SCHEME FOR DENSITY BASED TOPOLOGY OPTIMIZATION OF ACOUSTIC-MECHANICAL SYSTEMS **Jonathan Mirpourian** (Technical University of Denmark - DTU, Denmark) Corresponding Author Jonathan Mirpourian (Technical University of Denmark - DTU, Denmark)
FrFS0722	11:40~12:00	MATERIAL DISTRIBUTION TOPOLOGY OPTIMIZATION TOPOLOGY OPTIMIZATION FOR BOUNDARY EFFECT DOMINATED PROBLEMS **Eddie Wadbro** (Karlstad University, Sweden) Corresponding Author Eddie Wadbro (Karlstad University, Sweden)
FrFS0723	12:00~12:20	SHAPE OPTIMIZATION OF AXIAL GROOVE HEAT PIPES **Asger Bjerregaard Petersen** (Techincal University of Denmark, Denmark) Corresponding Author Asger Bjerregaard Petersen (Techincal University of Denmark, Denmark)
SM14	Computational solid mechanics	
Moderator	**Pradyumna Sathyasimha** (Indian Institute of Technology Delhi, India) / **Takahiro Yamada** (Yokohama National University, Japan)	
Room	Room 306B, 3F	
FrSM1446	11:00~11:20	KRIGING SURROGATE MODEL FOR STRESS ANALYSIS OF DENTAL IMPLANT BY FINITE ELEMENT METHOD **Hyeonwoo Ryu** (KAIST, Korea, Republic of) Corresponding Author Ikjin Lee (KAIST, Korea, Republic of)
FrSM1447	11:20~11:40	STABILIZED FINITE ELEMENT SCHEME WITH MIXED TIME INTEGRATOR FOR NEARLY INCOMPRESSIBLE HYPERELASTICITY **Takahiro Yamada** (Yokohama National University, Japan) Corresponding Author Takahiro Yamada (Yokohama National University, Japan)
FrSM1448	11:40~12:00	MULTI-FIDELITY DEEP NEURAL NETWORK FOR 3D FIELD PREDICTION **Dongju Shin** (KAIST, Korea, Republic of) Corresponding Author Namwoo Kang (KAIST, Korea, Republic of)
FrSM1449	12:00~12:20	ENERGY HARVESTING FROM VARIABLE STIFFNESS PIEZOLAMINATED SANDWICH PLATES WITH AUXETIC HONEYCOMB CORE **Pradyumna Sathyasimha** (Indian Institute of Technology Delhi, India) Corresponding Author Pradyumna Sathyasimha (Indian Institute of Technology Delhi, India)

SM05	Geomechanics and geophysics	
Moderator	**John Rudnicki** (Northwestern University, USA) / **Itai Einav** (The University of Sydney, Australia)	
Room	Room 314, 3F	
FrSM0525	11:00~11:20	REACTION-DRIVEN FRACTURING IN CARBON SEQUESTRATION BY MINERALIZATION **John Rudnicki** (Northwestern University, USA) Corresponding Author John Rudnicki (Northwestern University, USA)
FrSM0526	11:20~11:40	ANALYSING LOCALISED BEHAVIOUR OF GRANULAR MATERIALS IN THE STANDARD TRIAXIAL TESTS THROUGH DISCRETE ELEMENT SIMULATIONS **Ha BUI** (Monash University, Australia) Corresponding Author Ha BUI (Monash University, Australia)
FrSM0527	11:40~12:00	DEPENDENCE OF THE SHEAR STRENGTH IN GRANULAR SYSTEMS ON THE COMBINED EFFECT OF PARTICLE SHAPE AND FRICTION **Dominik Krengel** (University of Tsukuba, Japan) Corresponding Author Dominik Krengel (University of Tsukuba, Japan)
SM15	Vibrations and control of structures	
Moderator	**Guang Meng** (Shanghai Jiao Tong University, China) / **Ti Chen** (Nanjing University of Aeronautics and Astronautics, China)	
Room	Room 315, 3F	
FrSM1530	11:00~11:20	LEADERLESS ATTITUDE SYNCHRONIZATION OF MULTIPLE RIGID BODIES ON SO(3) BASED ON A DISTRIBUTED OBSERVER **Ti Chen** (Nanjing University of Aeronautics and Astronautics, China) Corresponding Author Ti Chen (Nanjing University of Aeronautics and Astronautics, China)
FrSM1531	11:20~11:40	NONLINEAR DYNAMIC INSTABILITY OF WRINKLED FILMS BONDED ON VISCOELASTIC SUBSTRATES **Kai-Ming Hu** (Shanghai Jiao Tong University, China) Corresponding Author Kai-Ming Hu (Shanghai Jiao Tong University, China)
FrSM1532	11:40~12:00	ANALYTICAL-EXPERIMENTAL COMBINED DYNAMIC STIFFNESS METHOD FOR VIBRATION TRANSMISSION ANALYSIS OF A TRUSS ISLOATION SYSTEM **Zitian Wei** (China Ship Scientific Research Center, China) Corresponding Author Wenwei Wu (China Ship Scientific Research Center, China)
FrSM1533	12:00~12:20	UNIDIRECTIONAL TRANSMISSION OF ELASTIC CODES IN A PIEZOELECTRIC METASTRUCTURE WITH BISTABLE SHUNTINGS **Yisheng Zheng** (Xiamen University, China) Corresponding Author Yisheng Zheng (Xiamen University, China)

SM17	Metamaterials architectured materials and topology optimization	
Moderator	**Federico J Sabina** (Universidad Nacional Autónoma de México, Mexico) / **Sunghoon Lim** (Kyoto University, Japan)	
Room	Room 320A, 3F	
FrSM1747	11:00~11:20	DESIGN OF META-MATERIALS FOR TAILORED NON-LINEAR STRESS-STRAIN RELATION **Rushabh Rajesh Sadiwala** (Clemson University, USA) Corresponding Author Rushabh Rajesh Sadiwala (Clemson University, USA)
FrSM1748	11:20~11:40	SCATTERING AND ATTENUATION OF ELASTIC WAVES IN RANDOM METAMATERIALS **Federico J Sabina** (Universidad Nacional Autónoma de México, Mexico) Corresponding Author Federico J Sabina (Universidad Nacional Autónoma de México, Mexico)
FrSM1749	11:40~12:00	CIRCULARLY POLARIZED ELASTIC WAVES: THEORY AND REALIZATION WITH ANISOTROPIC METAMATERIALS **Minwoo Joshua Kweun** (Korea Institute of Machinery & Materials, Korea, Republic of) Corresponding Author Jeseung Lee (Seoul National University, Korea, Republic of)
FrSM1750	12:00~12:20	TOPOLOGY OPTIMIZATION OF MAGNETIC ACTUATOR USING STRIPE-LIKE STRUCTURE **Sunghoon Lim** (Kyoto University, Japan) Corresponding Author Sunghoon Lim (Kyoto University, Japan)
SM13	Stability and instability of materials and structures	
Moderator	**Miha Brojan** (University of Ljubljana, Slovenia)	
Room	Room 320B, 3F	
FrSM1330	11:00~11:20	BIFURCATIONS OF A PAIR OF SERIES-CONNECTED BISTABLE CELLS **Huang Ke** (Beihang University, China) Corresponding Author Jiaying Zhang (Beihang, China)
FrSM1331	11:20~11:40	ANALYTICAL MODEL TO PREDICT TENSILE BUCKLING LOADS OF KIRIGAMI SHEETS **Yuwen Du** (University of Bristol, United Kingdom) Corresponding Author Rainer Groh (University of Bristol, United Kingdom)
FrSM1332	11:40~12:00	INFLUENCE OF RESIDUAL STRESSES ON STABILITY OF CIRCULAR LAYERED COMPOSITE PLATES **Miha Brojan** (University of Ljubljana, Slovenia) Corresponding Author Miha Brojan (University of Ljubljana, Slovenia)

SM01	Biomechanics and biomaterials	
Moderator	G. K. Ananthasuresh (Indian Institute of Science, India) / Shamik Sen (IIT Bombay, India)	
Room	Room 321A, 3F	
FrSM0121	11:00~11:30	INCORPORATION OF HA IN 3D COLLAGEN GELS PROMOTES CANCER INVASIVENESS **Shamik Sen** (IIT Bombay, India) Corresponding Author Shamik Sen (IIT Bombay, India)
FrSM0122	11:30~12:00	SIMULATING AN ESSENTIAL FIRST STEP IN FERTILIZATION **Paulina Pacak** (ETH Zürich, Switzerland) Corresponding Author Viola Vogel (ETH Zurich, Switzerland)
FrSM0123	12:00~12:20	INTERFACE DYNAMICS IN DISSIMILAR CELL POPULATIONS **Chenglin Lyu** (Tsinghua University, China) Corresponding Author Bo Li (Tsinghua University, China)

SM03	Elasticity	
Moderator	Santosh Kapuria (Indian Institute of Technology Delhi, India) / Ernian Pan (National Yang Ming Chiao Tung University, China-Taipei)	
Room	Room 321B, 3F	
FrSM0325	11:00~11:20	FINITE ELEMENT ANALYSIS OF HYPERELASTIC FILAMENTS UNDER TWISTING **Shogo Hayashi** (Shimane University, Japan) Corresponding Author Takuya Morimoto (Shimane University, Japan)
FrSM0326	11:20~11:40	A UNIFYING ANALYSIS OF VISCOELASTIC THIN PLATES AND SLENDER BEAMS **Christian LICHT** (Université de Montpellier - CNRS, France) Corresponding Author Thibaut WELLER (Université de Montpellier, France)
FrSM0327	11:40~12:00	ANISOTROPIC SEMISOFT ELASTICITY OF LIQUID CRYSTAL ELASTOMERS **Donghao Li** (Fudan University, China) Corresponding Author Yongzhong Huo (Institute of Mechanics and Computational Engineering, Department of Aeronautics and Astronautics, Fudan University, Shanghai, China, China)
FrSM0328	12:00~12:20	A MULTISCALE APPROACH TO PREDICT EFFECTIVE CONDUCTIVITY OF CORE-SHELL INCLUSION COMPOSITE USING ASYMPTOTIC HOMOGENIZATION METHOD **Karthiban A** (Indian Institute of Technology Madras, India) Corresponding Author Anubhab Roy (Indian Institute of Technology Madras, India)
FrSM0329	12:20~12:40	DISORDER-INDUCED STIFFNESS ENHANCEMENT OF NANOCOMPOSITES **Yaroslav M. Beltukov** (Ioffe Institute, Russia) Corresponding Author Yaroslav M. Beltukov (Ioffe Institute, Russia)
FrSM0330	12:40~13:00	ELASTICITY IN ANISOTROPIC AND LAYERED MEDIA **Ernian Pan** (National Yang Ming Chiao Tung University, China-Taipei) Corresponding Author Ernian Pan (National Yang Ming Chiao Tung University, China-Taipei)

SM04	Damage & fracture mechanics	
Moderator	Johannes Storm (Technische Universität Dresden, Germany) / Joseph MARAE DJOUDA (ENS Paris-Saclay, France)	
Room	Room 322A, 3F	
FrSM0441	11:00~11:20	INVESTIGATION ON THE FRACTURE OF THIN CURVED SHELLS UNDER CONCENTRATED IMPACT WITH A NOVEL DYNAMIC DAMAGE MODEL **Yi Shen** (Beijing Institute of Technology, China) Corresponding Author Jianqiao Li (Beijing Institute of Technology, China)
FrSM0442	11:20~11:40	3D CHARACTERIZATIONS OF FRACTURE BEHAVIOR OF 3D PRINTED CARBON FIBER REINFORCED POLYMER COMPOSITES **Joseph MARAE DJOUDA** (ENS Paris-Saclay, France) Corresponding Author Joseph MARAE DJOUDA (ENS Paris-Saclay, France)
FrSM0443	11:40~12:00	FRACTURE MECHANISMS OF MULTI-CRACK COMPETITION IN STRAIN TOLERANT THERMAL BARRIER COATINGS **Bowen Lyu** (Institute of New Materials, Guangdong Academy of Sciences, China) Corresponding Author Bowen Lyu (Institute of New Materials, Guangdong Academy of Sciences, China)
FrSM0444	12:00~12:20	EXPERIMENTS AND NONLOCAL CONTINUUM MODELING OF THE SIZE-DEPENDENT FRACTURE IN ELASTOMERS **Jeongun Lee** (Korea Advanced Institute of Science and Technology, Korea, Republic of) Corresponding Author Hansohl Cho (Department of Aerospace Engineering, Korea Advanced Institute of Science and Technology, Korea, Republic of)
FM14	Computational fluid dynamics	
Moderator	Seungwon Shin (Hongik University, Korea, Republic of)	
Room	Room 322B, 3F	
FrFM1444	11:00~11:20	ANALYSES OF HYPERSONIC AXISYMMETRIC INSTABILITY BY OPEN-SOURCE SOFTWARE **Diego Exposito-Brioso** (Beijing University of Technology, China) Corresponding Author Diego Exposito-Brioso (Beijing University of Technology, China)
FrFM1445	11:20~11:40	A NON-NEWTON-FOURIER CONSTITUTIVE MODEL FOR HYPERSONIC REACTING FLOWS WITH VIBRATIONAL NON-EQUILIBRIUM **Shuhua Zeng** (Zhejiang University, China) Corresponding Author Shuhua Zeng (Zhejiang University, China)
FrFM1446	11:40~12:00	NUMERICAL STUDY ON FLOW DYNAMICS OF TWO JETS IMPINGING A CATALYTIC SAMPLE **Thibaut Juhan** (Ecole Centrale de Lyon, France) Corresponding Author Thibaut Juhan (Ecole Centrale de Lyon, France)
FrFM1447	12:00~12:20	EFFECT OF TAPER RATIO ON THE FLOW INDUCED VIBRATIONS OF A CIRCULAR CYLINDER **Mayank Verma** (University of Iowa, USA) Corresponding Author Ashoke De (Department of Aerospace Engineering, Indian Institute of Technology Kanpur, India))

FM06	Drops, bubbles and interfaces	
Moderator	Jinkee Lee (Sungkyunkwan University, Korea, Republic of) / Darren G Crowdy (Imperial College London, United Kingdom)	
Room	Room 323A, 3F	
FrFM0668	11:00~11:20	UNSTEADY BUBBLE MIGRATION BY NONLINEAR SURFACTANT SPREADING **Darren G Crowdy** (Imperial College London, United Kingdom) Corresponding Author Darren G Crowdy (Imperial College London, United Kingdom)
FrFM0669	11:20~11:40	SURFACTANT-LADEN DROPLET IMPACT ON A SILICONE OIL LAYER ABOVE WATER POOL **Donghoon Lee** (Sungkyunkwan University, Korea, Republic of) Corresponding Author Jinkee Lee (Sungkyunkwan University, Korea, Republic of)
FrFM0670	11:40~12:00	COUPLED BULK AND INTERFACIAL TRANSPORT OF SURFACTANTS GOVERN THE SETTLING OF A DROP TOWARDS A WALL **SAYALI NITIN JADHAV** (Indian Institute of Technology Gandhinagar, India) Corresponding Author SAYALI NITIN JADHAV (Indian Institute of Technology Gandhinagar, India)
FrFM0671	12:00~12:20	SURFACTANT-LADEN BUBBLE BURSTING: MARANGONI EFFECTS ON CAPILLARYWAVES AND WORTHINGTON JET FORMATION AT LARGE BOND NUMBER **Paula Daniela Pico** (Imperial College London, United Kingdom) Corresponding Author Paula Daniela Pico (Imperial College London, United Kingdom)
FM05	Convection	
Moderator	zijing ding (Harbin Institute of Technology, China) / Haithem Taha (University of California, Irvine, USA)	
Room	Room 323B, 3F	
FrFM0540	11:00~11:20	OPTIMIZING HEAT TRANSFER IN RAYLEIGH-BéNARD CONVECTION CELLS: A COMPREHENSIVE STUDY OF TEMPERATURE DISTRIBUTION EFFECTS **Merera Senbeto Jiren** (Pusan National University, Korea, Republic of) Corresponding Author Mustafa Yousif (Pusan National University, Korea, Republic of)
FrFM0541	11:20~11:40	STUDY ON BAFFLE OPTIMIZATION TO ENHANCE CONVECTION IN PHASE CHANGE MATERIAL **Yun Young Ji** (Sungkyunkwan Univ., Korea, Republic of) Corresponding Author Han Seo Ko (Sungkyunkwan University, Korea, Republic of)
FrFM0542	11:40~12:00	EFFECT OF SLIP LENGTH ON INSTABILITY AND HEAT TRANSPORT IN PENETRATIVE CONVECTION **Zhen Ouyang** (Harbin Institute of Technology, China) Corresponding Author zijing ding (Harbin Institute of Technology, China)
FrFM0544	12:00~12:20	EXPERIMENTAL AND NUMERICAL ANALYSIS OF 3D FLOW INTERACTION WITHIN A LATTICE COOLING CHANNEL OF A GAS TURBINE BLADE **Jumin Hong** (Seoul national university, Korea, Republic of) Corresponding Author Wontae Hwang (Seoul National University, Korea, Republic of)

FM04	Compressible flow	
Moderator	Jan Vimmr (University of West Bohemia, Faculty of Applied Sciences, Czech Republic) / TAN DUY VO (Korea University, Korea, Republic of)	
Room	Room 324A, 3F	
FrFM0439	11:00~11:20	CHOKING OF PARALLEL COMPRESSIBLE STREAMS WITH SHEAR AND WALL FRICTION **Jan Van den Berghe** (von Karman Institute for Fluid Dynamics & Université Catholique de Louvain, Belgium) Corresponding Author Jan Van den Berghe (von Karman Institute for Fluid Dynamics & Université Catholique de Louvain, Belgium)
FrFM0440	11:20~11:40	STUDY ON INTERNAL FLOW CHARACTERISTICS OF A THREE-DIMENSIONAL AXISYMMETRIC DUAL-THROAT NOZZLE **Zhu Ao Qi** (Zhejiang Sci-Tech University, China) Corresponding Author Kexin Wu (Zhejiang Sci-Tech University, China)
FrFM0441	11:40~12:00	RAREFACTION EFFECTS ON HEAT FLUX AND STRESS IN A CYLINDER WITH ROTATING LID **Shesh Narayan Dhurandhar** (Indian Institute of Technology Madras, India, India) Corresponding Author Shesh Narayan Dhurandhar (Indian Institute of Technology Madras, India, India)
FrFM0442	12:00~12:20	NUMERICAL INVESTIGATION OF HEAT TRANSFER CHARACTERISTICS IN ROTATING COOLING GAS TURBINE BLADE **TAN DUY VO** (Korea University, Korea, Republic of) Corresponding Author Jaiyoung Ryu (Korea University, Korea, Republic of)
FrFM0443	12:20~12:40	ENERGY REDISTRIBUTION IN COMPRESSIBLE FLOW AROUND A CYLINDER NEAR THE HEATED WALL **yizhou tao** (Shanghai Institute of Technology, China) Corresponding Author Xiang Qiu (Shanghai Institute of Technology, China)
FrFM0444	12:40~13:00	EFFECTS OF WALL TEMPERATURE ON SCALING LAW IN HIGH-TEMPERATURE SUPERSONIC TURBULENT CHANNEL FLOWS **Xiaoping Chen** (Zhejiang Sci-Tech University, China) Corresponding Author Xiaoping Chen (Zhejiang Sci-Tech University, China)

FM02	Boundary layers	
Moderator	Davide Modesti (Delft University of Technology, Netherlands) / Adrien Cédric Lopez (Paris-Saclay University, France)	
Room	Room 324B, 3F	
FrFM0246	11:00~11:20	FRICTION AND HEAT TRANSFER PREDICTION IN FORCED-AIR CONVECTION **Davide Modesti** (Delft University of Technology, Netherlands) Corresponding Author Davide Modesti (Delft University of Technology, Netherlands)
FrFM0247	11:20~11:40	THE SKELETON OF SUPERSTRUCTURES IN A TURBULENT BOUNDARY LAYER **Zhenxun Dong** (Beihang University, China) Corresponding Author Chong Pan (Beihang University, China)
FrFM0248	11:40~12:00	TURBULENT BOUNDARY LAYER WITH LOGARITHMIC LATTICES **Adrien Cédric Lopez** (Paris-Saclay University, France) Corresponding Author Adrien Cédric Lopez (Paris-Saclay University, France)
FrFM0249	12:00~12:20	CHARACTERISTIC SPECTRA OF SUBMESOSCALE STRUCTURES IN THE ATMOSPHERIC BOUNDARY LAYER ACCORDING TO EXPERIMENTAL DATA **Natalia Victorovna Vazaeva** (A.M. Obukhov Institute of Atmospheric Physics, Russian Academy of Sciences, Russia) Corresponding Author Natalia Victorovna Vazaeva (A.M. Obukhov Institute of Atmospheric Physics, Russian Academy of Sciences, Russia)
FM10	Geophysical and environmental fluid dynamics	
Moderator	Pan Jia (Harbin Institute of Technology, China) / Wontae Hwang (Seoul National University, Korea, Republic of)	
Room	Room 325A, 3F	
FrFM1026	11:00~11:20	HYDRODYNAMIC ROUGHNESS INDUCED BY A MULTISCALE TOPOGRAPHY **Pan Jia** (Harbin Institute of Technology, China) Corresponding Author Pan Jia (Harbin Institute of Technology, China)
FrFM1027	11:20~11:40	INERTIAL WAVE ATTRACTORS IN ROTATING SPHERICAL AND CYLINDRICAL FLUID LAYERS: INSTABILITIES, ZONAL FLOWS AND ROSSBY WAVES **Evgeny Ermanyuk** (Lavrentyev Institute of Hydrodynamics, Russia) Corresponding Author Evgeny Ermanyuk (Lavrentyev Institute of Hydrodynamics, Russia)
FrFM1028	11:40~12:00	FORCED INTERNAL WAVE ATTRACTORS: LINEAR INVISCID THEORY AND ENERGY BUDGET **Zakhar Vladimirovich Makridin** (Lavrentyev Institute of Hydrodynamics SB RAS, Russia) Corresponding Author Zakhar Vladimirovich Makridin (Lavrentyev Institute of Hydrodynamics SB RAS, Russia)

FM07	Multiphase and particle-laden flows	
Moderator	Seunghwan Shin (ETH Zurich, Switzerland) / Lakshmana dora Chandrala (Indian Institute of Technology Hyderabad, India)	
Room	Room 325B, 3F	
FrFM0746	11:00~11:20	DENSE TURBULENT SUSPENSIONS AT A LIQUID INTERFACE **Seunghwan Shin** (ETH Zurich, Switzerland) Corresponding Author Seunghwan Shin (ETH Zurich, Switzerland)
FrFM0747	11:20~11:40	A SHARP METHOD FOR THE SIMULATION OF FLOW PAST A LIQUID BODY WITH ARBITRARY SHAPE AND INTERFACE CONDITION: FROM BUBBLE TO PARTICLE **Bolin Wei** (Xi'an Jiaotong University, China) Corresponding Author Jie Zhang (Xi'an Jiaotong University, China)
FrFM0748	11:40~12:00	REVISION OF THE TWO-FLUID MOMENTUM EQUATIONS FOR TURBULENT BUBBLY FLOWS **Ali Sadeghi Chehelgaz** (Chungnam National University, Korea, Republic of) Corresponding Author Byoung Jae Kim (Chungnam National University, Korea, Republic of)
FrFM0749	12:00~12:20	AN EXPERIMENTAL STUDY OF IMMISCIBLE JETS: SIMULTANEOUS PIV AND PLIF MEASUREMENTS **Lakshmana dora Chandrala** (Indian Institute of Technology Hyderabad, India) Corresponding Author Lakshmana dora Chandrala (Indian Institute of Technology Hyderabad, India)
FrFM0750	12:20~12:40	DYNAMICS OF LIQUID JET ON ROTATING DISKS **Seungjoo Lee** (Seoul National University, Korea, Republic of) Corresponding Author Ho-Young Kim (Seoul National University, Korea, Republic of)

FM16	Vortex dynamics	
Moderator	Federico Canepa (University of Genoa, Italy) / Almog Greenberg (Tel Aviv University, Israel)	
Room	Room 325C, 3F	
FrFM1631	11:00~11:20	VORTEX CHARACTERIZATION IN EXPERIMENTAL DOWNBURST FLOWS THROUGH WAVELET IDENTIFICATION **Federico Canepa** (University of Genoa, Italy) Corresponding Author Federico Canepa (University of Genoa, Italy)
FrFM1632	11:20~11:40	ON THE POSSIBILITY OF ACTIVE HYDRODYNAMIC SENSING **Almog Greenberg** (Tel Aviv University, Israel) Corresponding Author Almog Greenberg (Tel Aviv University, Israel)
FrFM1633	11:40~12:00	EFFECT OF PRANDTL NUMBER ON THE EVOLUTION OF A BUOYANT VORTEX DIPOLE **V Praveen Kumar** (Indian Institute of Technology Madras, India) Corresponding Author V Praveen Kumar (Indian Institute of Technology Madras, India)
FrFM1634	12:00~12:20	STUDY OF TEMPERATURE SEPARATION IN RANQUE-HILSCH VORTEX TUBE FLOW OF COMPRESSIBLE GAS **Kannan Shaji** (Daejoo Machinery Co. Ltd., Korea, Republic of) Corresponding Author HEUY DONG KIM (Andong National University, Korea, Republic of)
FrFM1635	12:20~12:40	MIXING DYNAMICS OF TRANS/SUPERCRITICAL JETS UNDER EXCITATION **Ali Sarvari** (Sharif University of Technology, Iran) Corresponding Author Ali Sarvari (Sharif University of Technology, Iran)
FrFM1636	12:40~13:00	EXPERIMENTAL INVESTIGATION OF TORSIONAL VORTEX-INDUCED VIBRATIONS OF A CIRCULAR CYLINDER ATTACHED TO THE END OF AN ELASTIC BEAM **Yaroslav Demchenko** (Lomonosov Moscow State University, Russia) Corresponding Author Yaroslav Demchenko (Lomonosov Moscow State University, Russia)

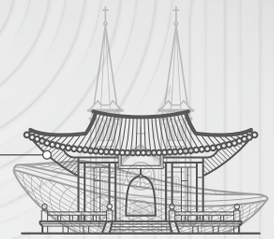
FM14	Computational fluid dynamics	
Moderator	YEON WON LEE (Pukyong National University, Korea, Republic of) / Thibaut Juhan (Ecole Centrale de Lyon, France)	
Room	Room 325D, 3F	
FrFM1448	11:00~11:20	FLOW PAST TWO-DIMENSIONAL POLYGONS AT LOW REYNOLDS NUMBER **Baharathiraja Subramanian** (Modern Higher Secondary School, India) Corresponding Author Senthil Kumar Raman (Kalasalingam Academy of Research and Education, India)
FrFM1449	11:20~11:40	BIFURCATIONS IN TAYLOR-COUETTE FLOW WITHIN AN ELLIPTICAL ENCLOSURE WITH AN ECCENTRICALLY PLACED INNER CYLINDER **Akash Unnikrishnan** (Indian Institute of Technology Gandhinagar, India) Corresponding Author Akash Unnikrishnan (Indian Institute of Technology Gandhinagar, India)
FrFM1450	11:40~12:00	A NUMERICAL STUDY ON THE SUPPRESSION OF VORTEX SHEDDING AROUND A CYLINDRICAL STRUCTURE USING ACTIVE AND PASSIVE CONTROL APPROACHES **Hongwu Zhao** (Pukyong National University, Korea, Republic of) Corresponding Author YEON WON LEE (Pukyong National University, Korea, Republic of)
FrFM1451	12:00~12:20	INVESTIGATING STEADY-STATE SOLUTIONS IN LID-DRIVEN SEMICIRCULAR CAVITY FLOW AT ELEVATED REYNOLDS NUMBERS **Miloud Zellouf** (University of Biskra, Algeria) Corresponding Author Atmane Thelib (University of Biskra, Algeria)

MS05	Data-driven mechanics and artificial intelligence	
Moderator	Bernd R. Noack (Harbin Institute of Technology, China) / Joon Sang Lee (Yonsei University, Korea, Republic of)	
Room	Room 503, 5F	
FrMS0555	11:00~11:20	DAMAGE DETECTION IN COMPOSITE STRUCTURE THROUGH GUIDED LAMAB WAVE AND DEEP LEARNING **MUNYANEZA Olivier** (kumoh National Institute of Technology, Korea, Republic of) Corresponding Author Jung Woo Sohn (Kumoh National Institute of Technology, Korea, Republic of)
FrMS0556	11:20~11:40	AI-BASED GENERATIVE NETWORKS FOR NOVEL-VIEW SYNTHESIS IN CORONARY ANGIOGRAPHY **Jun Hong Kim** (Yonsei Univ., Korea, Republic of) Corresponding Author Joon Sang Lee (Yonsei Univ., Korea, Republic of)
FrMS0557	11:40~12:00	PI-DEEPONET FOR 4D BLOOD FLOW ANALYSIS UNDER LAMINAR FLOW CONDITIONS **Hyo Seung Lee** (Pohang University of Science and Technology, Korea, Republic of) Corresponding Author Sangjoon Lee (POSTECH, Korea, Republic of)
FrMS0558	12:00~12:20	ERROR ANALYSIS IN A CONVOLUTIONAL NEURAL NETWORK-DRIVEN FLOW FIELD RECONSTRUCTION FRAMEWORK VIA LOCAL REYNOLDS NUMBER DISTRIBUTION **KEWEI GAO** (Chonnam national university, Korea, Republic of) Corresponding Author Hyunwook Kang (Chonnam national university, Korea, Republic of)
FrMS0559	12:20~12:40	ENERGY EFFICIENT DATA DRIVEN MECHANICS – VARIABLE SPIKING FOURIER NEURAL OPERATOR **Shailesh Garg** (Indian Institute of Technology Delhi, India) Corresponding Author Shailesh Garg (Indian Institute of Technology Delhi, India)
FrMS0560	12:40~13:00	DATA-ASSISTED PHYSICS-INFORMED DEEP LEARNING FOR EFFICIENT AI CFD **Sungyeon Kim** (GIST, Korea, Republic of) Corresponding Author Seongim Choi (GIST, Korea, Republic of)

MS07	Non-reacting and reacting fluid dynamics for sustainable propulsion systems	
Moderator	Adam Michael Steinberg (Georgia Institute of Technology, USA) / Thierry Schuller (IMFT, CNRS, France)	
Room	Room 504, 5F	
FrMS0711	11:00~11:20	PITCH THRUST VECTORING OF SUPERSONIC JET USING STREAMWISE INJECTION AND DUAL SYNTHETIC JET **John Chemmanoor Joseph** (Andong National University, Korea, Republic of) Corresponding Author HEUY DONG KIM (Andong National University, Korea, Republic of)
FrMS0712	11:20~11:40	PULSATING DETONATION INSTABILITY AT ELEVATED PRESSURE **Zifeng Weng** (Tsinghua University, China) Corresponding Author Rémy Mével (Tsinghua University, China)
FrMS0713	11:40~12:00	DYNAMICS OF DROP FORMATION IN PRESENCE OF INTERFACIAL MASS TRANSFER **Muzammilanwar Sarfaraz Khan** (CSIR-National Chemical Laboratory, Pune, India, India) Corresponding Author Amol A. Kulkarni (CSIR-National Chemical Laboratory, India)
MS05	Data-driven mechanics and artificial intelligence	
Moderator	Jici Wen (Institute of Mechanics, Chinese Academy of Sciences, China) /	
Room	Room 505, 5F	
FrMS0561	11:00~11:20	DATA-DRIVEN MULTI-PHYSICAL COUPLED CONSTITUTIVE MODEL AND ITS FINITE ELEMENT IMPLEMENTATION **Jici Wen** (Institute of Mechanics, Chinese Academy of Sciences, China) Corresponding Author Jici Wen (Institute of Mechanics, Chinese Academy of Sciences, China)
FrMS0562	11:20~11:40	APPLICATION OF DATA-DRIVEN TT-HODMD ON WIND PREDICTION **Keren Li** (Beijing Institute of Technology, China) Corresponding Author Xuerui Mao (Beijing Institute of Technology, China)
FrMS0563	11:40~12:00	COMPOSITE MATERIAL MICROSTRUCTURE RECONSTRUCTION USING DENOISING DIFFUSION MODELS **Arnaud Gwendal Ridard** (McGill University, Canada) Corresponding Author Yaoyao Fiona Zhao (McGill University, Dept. of Mechanical Engineering, Canada)
FrMS0564	12:00~12:20	FRACTURE ON STEROIDS: ENABLING RELIABLE & HIGH-THROUGHPUT SMALL SCALE FRACTURE TESTING VIA EXPERIMENTS, SIMULATIONS & MACHINE LEARNING **Christos Athanasiou** (Georgia Tech, USA) Corresponding Author Christos Athanasiou (Georgia Tech, USA)

SM09	Additive manufacturing	
Moderator	Xin Yan (Beihang University, China) / Hao-Ping Yeh (Technical University of Denmark, Denmark)	
Room	Room 506, 5F	
FrSM0913	11:00~11:20	MICROSCALE AND MESOSCALE PROCESS SIMULATION FOR 3D PRINTED CONTINUOUS FIBER-REINFORCED THERMOPLASTIC COMPOSITES **Xin Yan** (Beihang University, China) Corresponding Author Xin Yan (Beihang University, China)
FrSM0914	11:20~11:40	PARAMETRIC PHYSICS-INFORMED NEURAL NETWORK ASSISTED SIMULATION IN SELECTIVE LASER SINTERING OF POLYMERS **Hao-Ping Yeh** (Technical University of Denmark, Denmark) Corresponding Author Hao-Ping Yeh (Technical University of Denmark, Denmark)
FrSM0915	11:40~12:00	SELF-SUPERVISED FAULT DETECTION AND CLASSIFICATION IN LASER POWDER BED FUSION **Bumsoo Park** (KAIST, Korea, Republic of) Corresponding Author Seungchul Lee (KAIST, Korea, Republic of)

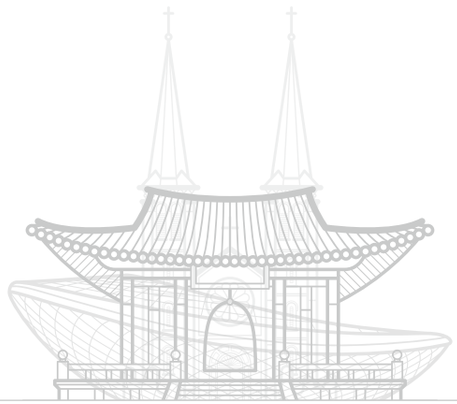
Plenary Lecture 2 Closing lecture		
Moderator	Sanjay Mittal (IIT Kanpur, India)	
Room	Convention Hall, 5F	
FrPL0001	14:00~15:00	SPATIOTEMPORAL SIGNATURES OF ELASTO-INTERIAL TURBULENCE (EIT) IN COMPLEX FLUIDS **Gareth H. McKinley** (MIT, USA) Corresponding Author Gareth H. McKinley (MIT, USA)



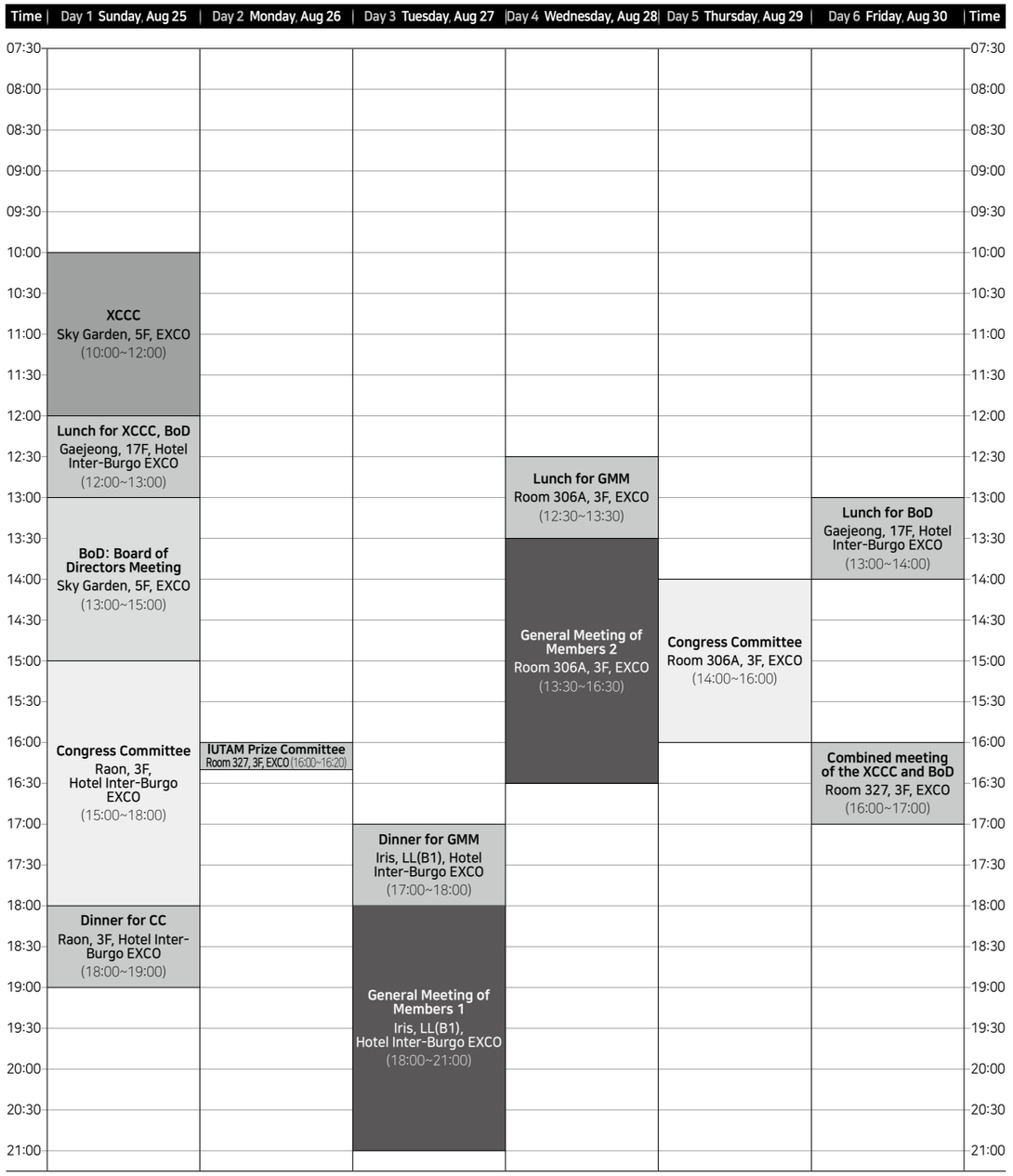
ICTAM 2024
THE 26TH INTERNATIONAL CONGRESS OF
THEORETICAL AND APPLIED MECHANICS

IUTAM Meetings at ICTAM 2024

No.	IUTAM meeting	Day	Date	Time	Room
1	XCCC: Executive Committee of the Congress Committee	Sun	Aug 25	10:00~12:00	Sky Garden, 5F, EXCO
2	Lunch for XCCC, BoD	Sun	Aug 25	12:00~13:00	Gaejeong, 17F, Hoter Inter-Burgo EXCO
3	BoD: Board of Directors Meeting	Sun	Aug 25	13:00~15:00	Sky Garden, 5F, EXCO
4	CC: Congress Committee	Sun	Aug 25	15:00~18:00	Raon, 3F, Hoter Inter-Burgo EXCO
5	Dinner for CC	Sun	Aug 25	18:00~19:00	
6	IUTAM Prize Committee	Mon	Aug 26	16:00~16:20	Room 327, 3F, EXCO
7	Dinner for General Meeting of Members	Tue	Aug 27	17:00~18:00	Iris, LL(B1), Hoter Inter-Burgo EXCO
8	General Meeting of Members 1	Tue	Aug 27	18:00~21:00	
9	Lunch for General Meeting of Members	Wed	Aug 28	12:30~13:30	Room 306A, 3F, EXCO
10	General Meeting of Members 2	Wed	Aug 28	13:30~16:30	
11	CC: Congress Committee	Thu	Aug 29	14:00~16:00	Room 306A, 3F, EXCO
12	Lunch for Board of Directors (BoD)	Fri	Aug 30	13:00~14:00	Gaejeong, 17F, Hoter Inter-Burgo EXCO
13	Combined meeting of the XCCC and BoD	Fri	Aug 30	16:00~17:00	Room 327, 3F, EXCO

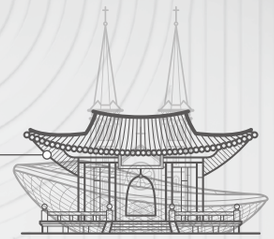


IUTAM Meeting PAG



*Updated as of August 2024, this program is subject to change

Tour & Accommodation



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THE 26TH INTERNATIONAL CONGRESS OF
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Tour Program

Congress Tour

≫ **Date** & **Time** : August 28(Wed) 12:20~19:00

Tour schedule could be changed depending on local conditions.
Please check the website for real-time information on the location of the buses for the tour.

Tour Daegu

TD - 1 Daegu Bukjijangsa Temple → Daegu Bangjja Yugi (Korean bronzeware) Museum → Daegu Textile Museum


Bukjijangsa Temple


Daegu Bangjja Yugi Museum


Daegu Textile Museum

TD - 2 Daegu Daegu Textile Museum → Memorial Stone for Admiral Sin Sung-gyeom → Donghwasa Temple


Daegu Textile Museum


Memorial Stone for Admiral Sin Sung-gyeom


Donghwasa Temple

TD - 3 Daegu Hyangchon Cultural Center → Daegu Modern Historical Alleyway → Seomun Market


Hyangchon Cultural Center


Daegu Modern Historical Alleyway


Seomun Market

TD - 4 Daegu Seomun Market → Apsan Mountain → Dongseong-ro


Seomun Market


Apsan Mountain

Dongseong-ro

TD - 5 Daegu Daegu Modern Historical Alleyway → Daegu National Museum → Daegu Art Museum


Daegu Modern Historical Alleyway


Daegu National Museum


Daegu Art Museum

TD - 6 Daegu Mt. Palgong Botanic Garden → Donghwasa Temple → Daegu Bangjja Yugi Museum


Mt. Palgong Botanic Garden


Donghwasa Temple


Daegu Bangjja Yugi Museum

Tour Gyeongju

TG - 1 Gyeongju Hwangridan-gil → Daereungwon Ancient Tomb Comple → Cheomseongdae

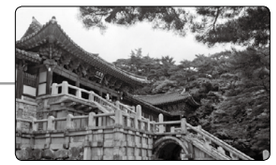

Hwangridan-gil


Daereungwon Ancient Tomb Comple


Cheomseongdae

TG - 2 Gyeongju Bulguksa Temple → Seokguram → Hwangridan-gil

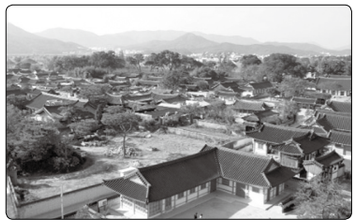

Bulguksa Temple

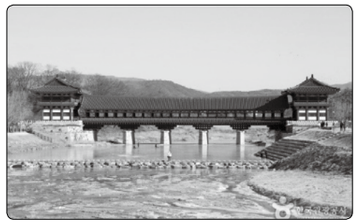

Seokguram


Hwangridan-gil

TG - 3 Gyeongju Donggung Palace and Wolji Pond → Gyochon Village → Woljeonggyo Bridge → Gyeongju National Museum


Donggung Palace and Wolji Pond


Gyochon Village


Woljeonggyo Bridge

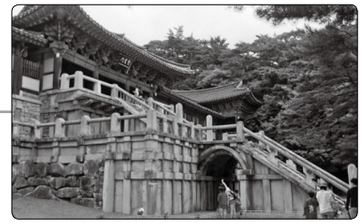

Gyeongju National Museum

TG - 4 Gyeongju Gyeongju National Museum → Daereungwon Ancient Tomb Complex → Cheomseongdae → Bulguksa Temple


Gyeongju National Museum

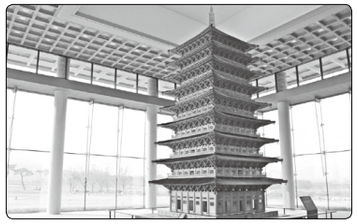

Daereungwon Ancient Tomb Complex


Cheomseongdae


Bulguksa Temple

TG - 5 Gyeongju Yangdong Folk Village Artifact Exhibition Hall → Hwangnyongsa Temple History and Culture Center → Donggung Palace and Wolji Pond


Yangdong Folk Village Artifact Exhibition Hall


Hwangnyongsa Temple History and Culture Center


Donggung Palace and Wolji Pond

Tour Busan

TB - 1 Busan United Nations Peace Memorial → Dongbaekseom Island (Haeundae) → Haedong Yonggung Temple


United Nations Peace Memorial

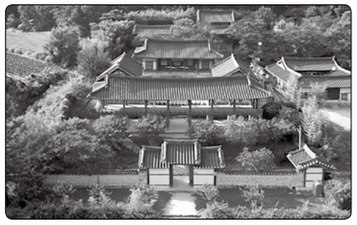

Dongbaekseom (Haeundae)


Haedong Yonggung Temple

Tour Andong

TA - 1 Andong Andong Hahoe Village → Byeongsan Private Confucian Academy


Andong Hahoe Village


Byeongsan Private Confucian Academy

Tour Gimcheon

TC - 1 Gimcheon Gimcheon Jikjisa Temple


Gimcheon Jikjisa Temple

Tour Hapcheon

TH - 1 Hapcheon Daegu Daejoo Machinery → Haeinsa Temple → Daegu Dodong Confucian Academy


Daegu Daejoo Machinery Co. Ltd


Haeinsa Temple


Daegu Dodong Confucian Academy

Technical Tour

LG Electronics Smart Park Tour

TT - 1 Changwon	Lighthouse Factory → Signature Gallery

Lighthouse Factory

LG Electronics

Signature Gallery

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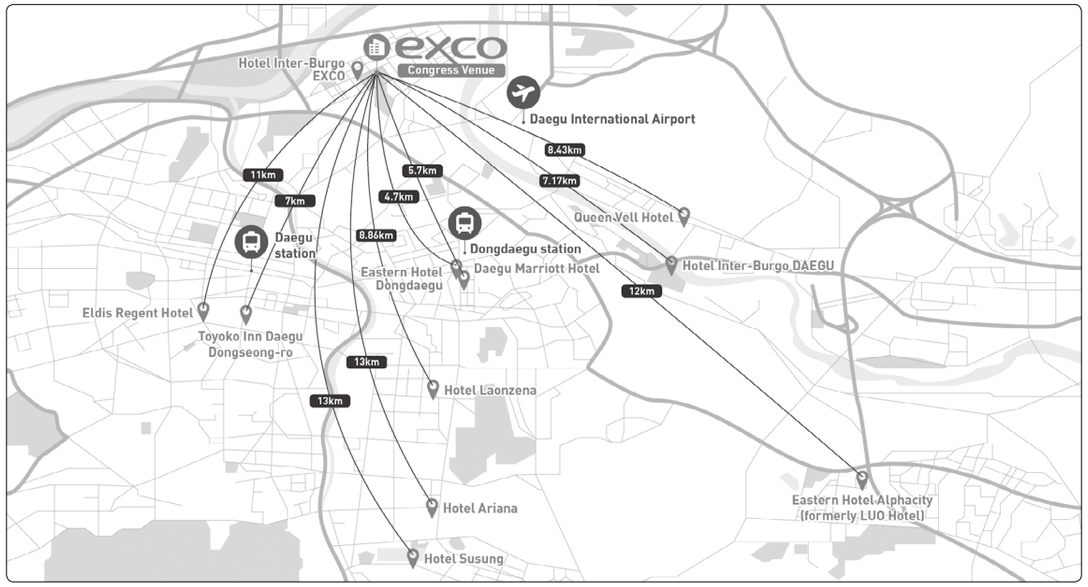
Optional Tour

Optional tours can be booked and paid for on-site registration desk.
The price of the tours ranges from KRW 50,000 to KRW 90,000.
For more information about the tours, please refer to the QR code below.

City	Tour	Time	Course	Fee
Daegu	OP-1	13:00~17:00	Donghawsa Temple → Palgongsan Cable Car	KRW 70,000
	OP-2	13:00~17:00	Apsan Cable car → Suseong Lake	KRW 60,000
	OP-3	13:00~17:00	Modern Historical Alleyway → Seumun Market	KRW 50,000
	OP-4	09:30~15:00	Samunjin History Park → Samunjin Ferry → Gangjeong Goryeongbo Weir (The ARC)	KRW 70,000
	OP-5	12:00~17:00		KRW 70,000
	OP-W	12:00~18:00	Midamjang Beauty Experience Center → Oriental Medicine Experience Town → Dongseongro	KRW 85,000
Pohang	OP-6	12:30~19:00	Yeonorang Seonyeo Theme Park → Pohang Jukdo Market	KRW 85,000
Gyeongju	OP-7	12:30~19:00	Bulguksa Temple → Hwangridan-gil → Daereungwon Ancient Tomb Complex	KRW 90,000
Andong	OP-8	12:30~19:00	Hahoe Village → Byeongsan Private Confucian Academy	KRW 90,000

Accommodation

Map



Contacts

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≫ +82-53-602-7114

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≫ +82-53-327-7000

Toyoko Inn Daegu Dongseong-ro
≫ 15, Dongseong-ro 1-gil, Jung-gu, Daegu
≫ +82-53-428-1045

Queen Vell Hotel
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≫ +82-53-282-1000

Hotel Ariana
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≫ +82-53-763-9000

Hotel Laonzena
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≫ +82-53-718-7000

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≫ frontdesk@eldishotel.com

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≫ 106-7 Yonghak-ro, Suseong-gu, Daegu
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≫ 24, Dongbu-ro 22-gil, Dong-gu, Daegu Eastern Hotel
≫ +82-53-759-5355
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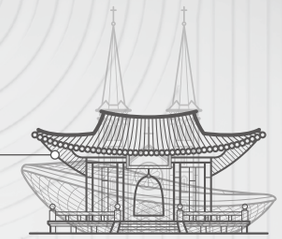
Eastern Hotel Alphacity (formerly LUO Hotel)
≫ 19-8, Alpha City 1-ro 4-gil, Suseong-gu, Daegu
≫ +82-53-217-6500

Lunch & Restaurant Information



Lunch

≫ Participants can exchange their lunch coupon, which is found on the back of their name tag, for a lunch box available in the Grand Ballroom hall or for a meal at restaurants inside and outside of EXCO.

≫ Lunch coupons are only valid for the specified date.

≫ Tour participants will receive a sandwich when boarding the tour bus.

≫ Lunch boxes will be distributed on a first-come, first-served basis in Grand Ballroom, where seating for dining is also available.

≫ The lunch box options include Regular, Vegetarian, and Halal. Please refer to the menu below for details.

Lunchbox menu (Distributed in Grand Ballroom, EXCO)

August 26 (Mon)		**August 27** (Tue)		**August 29** (Thu)		**August 30** (Fri)	
Regular							
Croissant sandwich & Avocado shrimp	Sweet and sour chicken and sauce & Pickled olives and tomatoes	Bagel Herb Cream Cheese Sandwich & olive oil pasta	Pork Barbecue & Butter Roasted Vegetables, Tomatoes, Corn	Egg Mayo Sandwich & Triangular Hashbrown and Sauce	Gwangyang Style Beef Bulgogi & Pickled Vegetables	Rye Bread Colcut Ham Sandwich & Tomato Caprese	Handmade Pork Tteokgalbi & Manbosha and Vegetables
Triangular grilled riceball & Fried tofu sushi	Corn & Paprika Salad & 3 Kinds of Seasonal Fruits	Bamboo Leaf Rice & Vegetable Fried Rice	2 Types of Fried Food & 2 Kinds of Seasonal Fruits & Yugwa	Triangular Tuna grilled Riceball & Fried Tofu Sushi	Tomato Olive Oil Salad & 2 Kinds of Seasonal Fruits & Cookie	Fried Rice & Dimsum	Pickled Vegetables& 2 Kinds of Seasonal Fruits & Madeleine
Vegetarian							
Croissant & Tomato Cream Cheese	Ratatouille & Triangular Hashbrown	Mapa Tofu in Tomato Sauce & Cottage Pie	Egg Curry & Triangular Hashbrown	Aglio e Olio Pasta & Grilled Mushrooms	Potato Curry & Triangular Hashbrown	Soybean Meat with Tomato Sauce & Grilled Vegetables	Egg Curry& Triangular Hashbrown
Curry Scent 'Poha' & Grilled Mushrooms	Green Salad & 3 Kinds of Seasonal Fruits	Chili Eggplant Soup & Rice	Green Salad & 3 Kinds of Seasonal Fruits	Stuffed Paratha & Pickled Vegetables	Green Salad & 3 Kinds of Seasonal Fruits	Vegan Scramble & Oat Rice and Mushrooms	Egyptian Beans Salad & 3 Kinds of Seasonal Fruits
Halal							
Aloo Gobhi	Prawn Masala	Vada	Chicken Korma	Veg.Pakoda	Chicken Dopiaza	Makai Matar Mushroom	Prawn Baguch
Chicken Curry	Butter Naan	Ghost Korma	Plain Naan	Lamb Curry	Garlic Naan	Mutton Rogan Josh	Plain Naan

≫ Each restaurant has a set menu, but additional menus are available for an extra charge.

≫ The coupon is valid for KRW 10,000. Additional payment is required for menus that exeed this amount.

Map for Restaurants

1. **Dadamtteul** (2F, EXCO)
2. **EXCO Restaurant: Sodam** (2F, EXCO)
3. **Café Tea : Malgeum** (1F, EXCO)
4. **Brother Dosirak** (1F, EXCO)
5. **XOXO Hotdog and Coffee** (1F, EXCO)
6. **Coffee Myungga** (1F, EXCO)
7. **Dongboseong**
8. **Gaejeung**
9. **Happy Cheese Smile**
10. **Lagom Kitchen**
11. **Seoul Ttukbaegi Gamjatang**
12. **Chakhan Hansik Buffet**
13. **Maek Chamsuccbul Sigyuk Sikdang**
14. **Palgong Dwaeji Jjigae**
15. **Hong-i-ne Shabu Kalguksu**
16. **Cheonan-mun**

Restaurants inside EXCO

1. Dadamtteul Vegetarian

Address West Wing, 2F, EXCO **Opening Hours** 11:00 ~ 21:00

≫ **Menu Eligible for Coupon**

No.	Menu
1	Korean-style buffet Vegetarian

2. EXCO Restaurant: Sodam Vegetarian

Address West Wing, 2F, EXCO **Opening Hours** 11:30 ~ 13:30

≫ **Menu Eligible for Coupon**

No.	Menu
1	Korean-style buffet Vegetarian

3. Café Tea : Malgeum

Address West Wing, 1F, EXCO **Opening Hours** 09:00 ~ 19:00

≫ **Menu Eligible for Coupon**

No.	Menu
1	Egg Sandwich + Americano (HOT)

4. Brother Dosirak Vegetarian

Address West Wing, 1F, EXCO **Opening Hours** 10:00 ~ 19:00

≫ **Menu Eligible for Coupon**

No.	Menu
1	Spicy Stir-fried Pork Lunch Box
2	Beef Bulgogi Lunch Box
3	Vegetarian lunch box Vegetarian

5. XOXO Hotdog and Coffee

Address West Wing, 1F, EXCO **Opening Hours** 09:30 ~ 19:30

≫ **Menu Eligible for Coupon**

No.	Menu
1	Original Hotdog + Americano
2	Ham, Egg and Cheese Sandwich + Americano
3	Bulgogi Hotdog

6. Coffee Myungga

Address West Wing, 1F, EXCO **Opening Hours** 08:00 ~ 22:00

≫ **Menu Eligible for Coupon**

No.	Menu
1	Croque Monsieur + Americano

Restaurants nearby EXCO

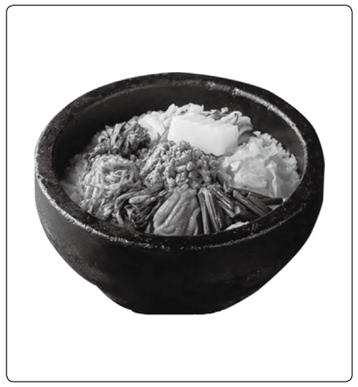
7. Dongboseong

Address 80, Yutongdanji-ro, Buk-gu, 2F (Hotel Inter-Burgo EXCO)
Opening Hours 11:30 ~ 21:30 (Break Time: 15:00 ~ 17:30, Last Order: 21:00)

≫ **Menu with Additional Payment**

No.	Menu	Price (KRW)
1	Seafood Spicy Noodle	₩ 16,000
2	Seafood black Bean Noodles	₩ 12,000
3	Crab Meat Soup	₩ 13,000

* Meal Coupon is valid for a KRW 10,000 menu. Additional payment is required for menus that exceed this amount.



8. Gaejeung Vegetarian

Address 80, Yutongdanji-ro, Buk-gu, 17F (Hotel Inter-Burgo EXCO)
Opening Hours 11:00 ~ 20:30 (Last Order: 20:00)

≫ **Menu with Additional Payment**

No.	Menu	Price (KRW)
1	Jeonju style bibimbap in a hot stone pot Vegetarian * If you prefer a vegetarian menu, This menu can accommodate your request to exclude meat.	₩ 14,000
2	Jeonju style bibimbap Vegetarian * If you prefer a vegetarian menu, This menu can accommodate your request to exclude meat.	₩ 13,000
3	Soybean Paste Jjigae + Vegetable Salad	₩ 12,000

* Meal Coupon is valid for a KRW 10,000 menu. Additional payment is required for menus that exceed this amount.

9. Happy Cheese Smile

Address 3, Exco-ro, Buk-gu, 3F (FXCO)
Opening Hours 11:10 ~ 20:30 (Last Order: 20:00)

≫ **Menu Eligible for Coupon**

No.	Menu
1	Smile Twibokki (Fried rice cake over the sweet and spicy Tteokbokki) + Soft Drink
2	Haechiseu Myeonbokki (Tteokbokki + Noddles) + Soft Drink
3	Twigim-Udong (Tempura Udon) + Soft Drink
4	Happi Jjoldon (Spicy chewy noodles & Pork Cutlet) + Soft Drink

≫ **Menu with Additional Payment**

No.	Menu	Price (KRW)
1	Dongaseu (Pork Cutlet) Plate	₩ 15,000
2	Chicken Plate (Tteokbokki + Noddles) + Soft Drink	₩ 15,000

* Meal Coupon is valid for a KRW 10,000 menu. Additional payment is required for menus that exceed this amount.

10. Lagom Kitchen

Address 3, Exco-ro, Buk-gu, 3F (FXCO)
Opening Hours 11:00 ~ 20:30 (Break Time: 15:30 ~ 17:00, Last Order: 19:30)

≫ **Menu with Additional Payment**

No.	Menu	Price (KRW)
1	Carbonara	₩ 14,900
2	Seafood Oil Pasta	₩ 15,900
3	Scallop Steak Risotto	₩ 15,900
4	Chicken Risotto	₩ 15,900

* Meal Coupon is valid for a KRW 10,000 menu. Additional payment is required for menus that exceed this amount.

11. Seoul Ttukbaegi Gamjatang

Address 74, Yutongdanji-ro 8-gil, Buk-gu, 1F **Opening Hours** 07:00 ~ 24:00

≫ **Menu Eligible for Coupon**

No.	Menu	How to Eat
1	Korean Beef Soup	Korean Beef Soup (Sogogi Gukbap) requires mixing the rice into the soup.

≫ **Menu with Additional Payment**

No.	Menu	How to Eat	Price (KRW)
1	Pork Back Bone Stew in Pot (2 Servings)	Korean Beef Soup (Sogogi Gukbap) requires mixing the rice into the soup.	₩ 31,000

12. Chakhan Hansik Buffet Vegetarian

Address 72, Yutongdanji-ro 8-gil, Buk-gu, 1F
Opening Hours 07:00 ~ 21:00

≫ **Menu Eligible for Coupon**

No.	Menu	How to Eat
1	Hansik Buffet (Korean-style Buffet) Vegetarian	-
2	Scallop Steak Risotto	The tender pork bones are best eaten by shredding the meat off with chopsticks and enjoying it with vegetables and potatoes in the soup.
3	Dwaeji Gukbap(Pork and Rice Soup)	Gukbap requires mixing the rice into the soup.

Restaurants nearby EXCO

13. Maek Chamsuccbul Sigyuk Sikdang

Address 70, Yutongdanji-ro 8-gil, Buk-gu, 1F
Opening Hours 11:00 ~ 23:00 (Break Time: 15:00 ~ 16:30)

≫ **Menu Eligible for Coupon**

No.	Menu	How to Eat
1	Yukhoe (Beef tartare) Bibimbap	Mixing everything is the correct way to enjoy it, as "bibim" means mixed, and "bap" is Korean for rice.
2	Hanwoo Gomtang (Korean Beef Bone soup)	It is common to add rice directly to the soup or broth while eating. Gomtang is typically served with green onions and mineral salt on the side for individual seasoning preferences.
3	Sogogi Gukbap (Beef and Rice Soup)	Gukbap requires mixing the rice into the soup.

14. Palgong Dwaeji Jjigae

Address 66, Yutongdanji-ro 8-gil, Buk-gu, 1F **Opening Hours** 10:00 ~ 22:00

≫ **Menu Eligible for Coupon**

No.	Menu	Price (KRW)
1	Pork Stew	₩ 9,000

≫ **Menu with Additional Payment**

No.	Menu	Price (KRW)
1	Grilled Bulgogi	₩ 19,000
2	Squid Grilled Bulgogi	₩ 12,000
3	K BBQ Set	₩ 44,000

15. Hong-i-ne Shabu Kalguksu

Address 66, Yutongdanji-ro 8-gil, Buk-gu, 1F
Opening Hours 10:30 ~ 21:00 (Last Order: 20:30)

≫ **Menu Eligible for Coupon**

No.	Menu
1	Seafood Noodle Soup with Surf Clam

≫ **Menu with Additional Payment**

No.	Menu	How to Eat	Price (KRW)
1	Beef Wrap Shabu Noodle Soup (More than 2 People)	"Ssam" refers to a dish in which leafy vegetables like lettuce are wrapped around meat. In the case of "Shabu," cook the ingredients gradually throughout the meal.	₩ 13,000
2	Seafood Spring Onion Chives Pancake	-	₩ 12,000
3	Boiled Pork with Medical Herbs	-	₩ 16,000

* Meal Coupon is valid for a KRW 10,000 menu. Additional payment is required for menus that exceed this amount.

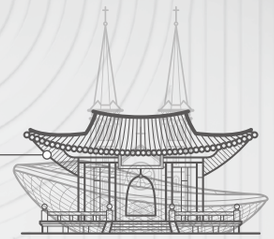
16. Cheonan-mun Chinese Restaurant

Address 62, Yutongdanji-ro 8-gil, Buk-gu, 1F
Opening Hours 11:00 - 21:30

≫ **Menu with Additional Payment**

No.	Menu
1	Samseon Ganjjajang Gopbaegi(Black Bean Sauce Noodles with Seafood (Double Portions))
2	Gochu Jjajan g(Spicy Black Bean Sauce Noodles with Chilli Peppers) + Soft Drink
3	Saeu Bokkeumbap (Shrimp Fried Rice) + Soft Drink
4	Teuk-Jjamppong (Spicy Seafood Noodle Soup Special)
5	Honghap Jjamppong(Spicy Seafood Noodle Soup with Mussels) + Gonggi-Bap(Steamed Rice)
6	Samseon Udon (Seafood Udon) + Gonggi-Bap (Steamed Rice)

Useful Information



Wi-Fi Access

≫ Wi-Fi access with the network name [EXCO_Free] is available at EXCO. No password required.

Cloakroom

≫ The cloakroom is located in the registration area and will be available for the entire duration of the Congress.

≫ Limited space will be available on a first-come, first-served basis.

≫ Valuables, fragile items, etc., will not be accepted.

≫ Items will be released to any person presenting the storage tag.

≫ Deposited items must be retrieved before the closing hour. Non-compliance may result in loss of the item.

≫ Congress organizers are not responsible for lost or misplaced items and claimed lost/found items are only released with proof of identification/confirmation of ownership.

Date	August 26 (Mon)	August 27 (Tue)	August 28 (Wen)	August 29 (Thu)	August 30 (Fri)
Time	07:30~19:00	07:30~19:00	07:30~12:30	07:30~19:00	07:30~16:40

Prayer Room

Prayer room is located in Room 520 on the 5th floor. It will be available for use throughout the duration of the congress.

Nursing Room (Infant Care Facilities)

The infant care room with privacy for parents and guardians of infants is located in the lobby, 1F, EXCO. The room is equipped with a sofa and a private area for diaper changes or nursing. It also has an electricity outlet and a water dispenser. Parents and guardians are responsible for their infant care supplies. The infant caring room is also unsupervised. ICTAM 2024 is not responsible for accidents or injuries that may occur in this area.

First Aid (Clinic)

It is located in the lobby, 1F, EXCO. The nurses and ambulances will be on standby, providing simple first aid/disinfection and general medicine, and ready to move the hospitals near EXCO in an emergency.

Parking

There are several parking areas at EXCO. The 1st parking lot (736 spots) is near Gate 4, and the 2nd parking lot (677 spots) is near Gate 1~3 on the West Wing.
Parking tickets can be purchased at the information desk on the first floor of West Wing. All prices are in Korean Won and are subject to change without notice.

Time	30 minutes	1 hour	2 hour	3 hour	4 hour	24 hour
Parking Fee	KRW 1,000	KRW 2,050	KRW 4,150	KRW 6,250	KRW 8,350	KRW 10,000

Shuttle Bus Service

Complimentary shuttle buses are provided between transportation facilities, main hotels, and EXCO during the ICTAM 2024. The schedules may change depending on the situation. Please visit the information desk for the latest schedules. The bus stop locations are posted on the ICTAM 2024 website at the notice board.

Useful Information

Time

Korean Standard Time (KST) is nine hours ahead of Greenwich Mean Time (GMT+9).

Electricity

220-volt outlets are most common in Korea. Please check the power supply before use.

Emergency Call

112 ..... Police
119 ..... Emergencies for Fire / Rescue & Hospital Services
1330 ..... Tourist Information Services
1339 ..... Medical Emergency
+82-53-740-0403, **+82-53-740-0433** ..... ICTAM Secretariat

Tip & Tax

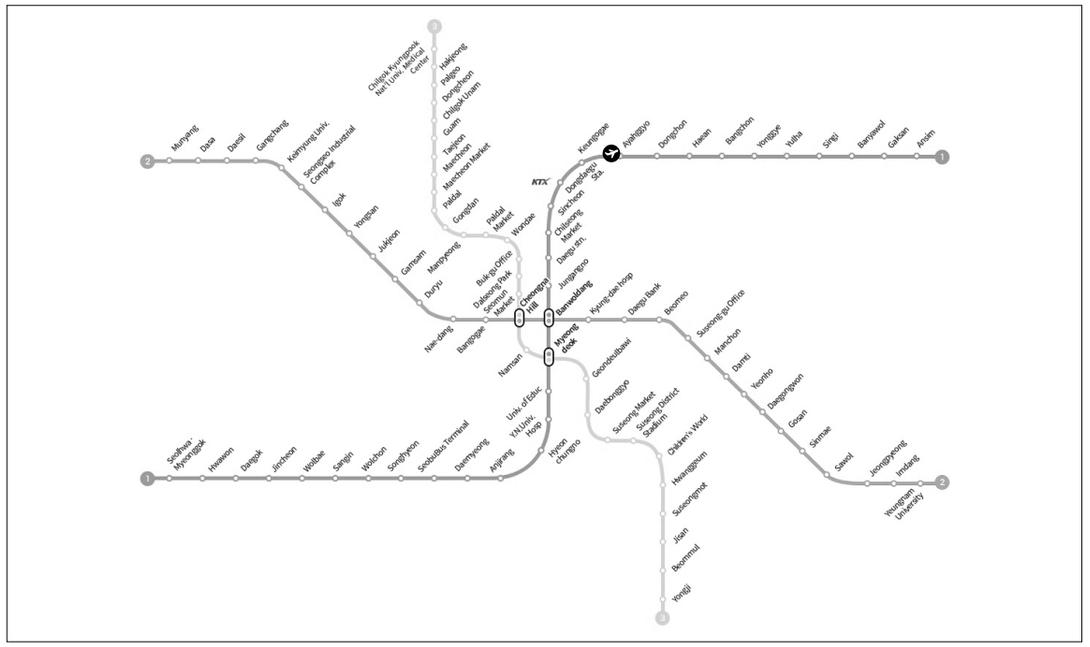
Tipping is not a regular practice in Korea. Service charges are included in the bill for rooms, meals, and other services at hotels and restaurants. Value-added tax (VAT) is levied on most goods and services at a standard rate of 10% and is included in the retail price.

Taxi

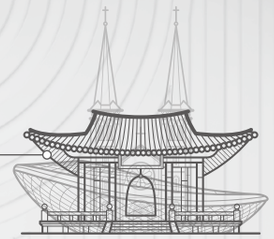
The fare is calculated from both the distance traveled and the time takes. Fares start from KRW 4,000 in Daegu. Tips are not required. Look for the word "빈차" on a taxi to know if it's vacant and available for you to catch.

Subway

Daegu has three metro lines: line 1 (red), line 2 (green), and line 3 (yellow). The first train of the day leaves the departure station at 5:30 AM, and the last one arrives around 11:00 PM.



Author Index



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Memo

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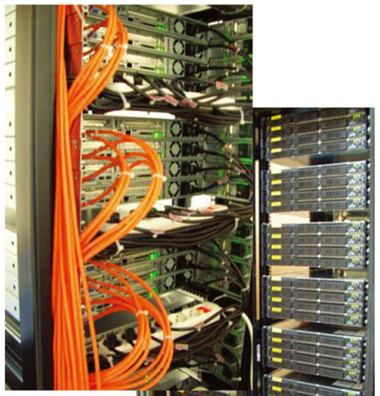
OOPSLINUX HPC SYSTEM
-Linux Cluster for HPC

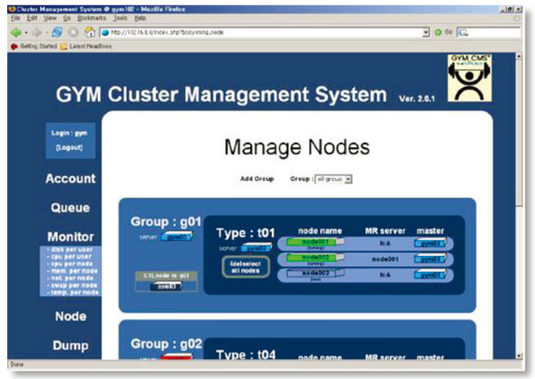
■ **범용 x86(_64)기반 서버와 예산에 맞춘 MPI 네트워 구성**

- 모든 벤더의 서버와 호환되는 구축/운용 솔루션
- 옴니패스, 인피니밴드, 이더넷 등 예산에 맞춘 MPI 네트워 구성



■ **리눅스 클러스터 구축/운용 솔루션 - GYM_CMS™**

- 웹 인터페이스를 통한 손쉬운 시스템 구축/운용
- openpbs, torque, slurm 등 큐 연동



■ **PGI™, Intel™ 등 고성능 컴파일러와 MPI 연동**

- 고성능 컴파일러와 MPI간 개발/구동 환경 구축
- NFS-RDMA, Lustre FS등 OFED 연동 File I/O 구축

■ **GPU기반 ML/AI 및 연산환경 지원/구축**

- CUDA기반 python모듈 : Tensorflow, Caffe 등
- CUDA지원 연산 애플리케이션 : VASP, LAMMPS, OpenFoam 등

■ **사용자 애플리케이션 설치/구동 기술지원 (상용/오픈소스)**

제일원리계산, 분자동력학, DFT	VASP, ABINIT, LAMMPS, NAMD, CPMD, Siesta, GROMACS, MPB, DMol3, Wien2K, quantum ESPRESSO
CFD, FEM, Multiphysics	ANSYS, FDS, STAR-CD, OpenFoam ABAQUS, ALGOR, COMSOL
고객사	KIMM, KIMS, KIST, NFRI, ADD, KIER, KAERI, 고려대, 국민대, 군산대, 서강대, 서울대, 순천대, 연세대, 인하대, 전남대, 제주대, 포스텍, 한밭대, 한양대, 홍익대 등

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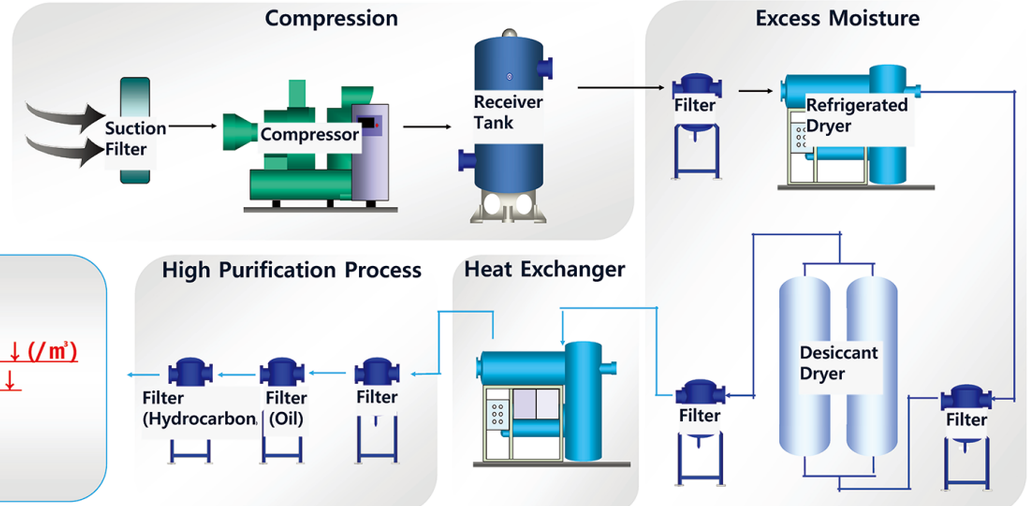
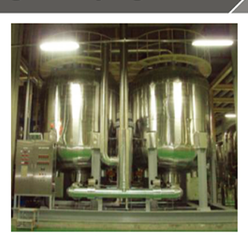


Particle : 0.1㎛/1EA ↓(/㎥)
Dew Point : -110℃ ↓

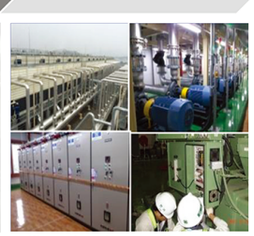
Compress → **Heat Exchange / Drying** → **Filter** → **Control / Test**


Compressor (20,000HP)


Refrigerated Dryer


Desiccant Dryer


Filter


Utility (Electric / Cooling Water)

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Home page : www.djair.co.kr

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