TECHNISCHE UNIVERSITÄT DARMSTADT

Droplets 2021

5th International Conference on Droplets

Online event

16-18 August 2021

https://www.sfb1194.tu-darmstadt.de/droplets_2021

Scientific Program

CRC 1194 Interaction between Transport and Wetting Processes

Organisers

Tatiana Gambaryan-Roisman	Institute for Technical Thermodynamics, TU Darmstadt
Peter Stephan	Institute for Technical Thermodynamics, TU Darmstadt
Steffen Hardt	Institute for Nano- and Microfluidics, TU Darmstadt
Hans-Jürgen Butt	Max-Planck-Institute for Polymer Research
Dieter Bothe	Mathematical Modelling and Analysis, TU Darmstadt
Thomas Antritter	Institute for Technical Thermodynamics, TU Darmstadt

International Scientific Committe

David Brutin (FR)	**Elise Lorenceau (FR)**
Alidad Amirfazli (CA)	**Chiara Neto (AU)**
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Ping Cheng (CN)	**Chao Sun (CN)**
Tristan Gilet (B)	**Dongsheng Wen (CN)**
Pirouz Kavehpour (USA)	

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Monday, August 16

08:15 – 8:30 **Welcome**

08:30 – 9:30 **Plenary Lecture**

Nanobubbles explain the large slip observed on lubricant-infused surfaces
Christopher Vega-Sánchez, Sam Peppou-Chapman, Liwen Zhu, and Chiara Neto
School of Chemistry and the University of Sydney Nano Institute, The University of Sydney, NSW 2006 Australia

Oral Sessions

Virtual Room 1

9:40-11:00	**Droplets of Complex Fluids I**
9:40	**Wetting and spreading of complex liquids over porous media** Wellington Tafireyi, Anna Trybala, and Victor Starov *Loughborough University, United Kingdom*
10:00	**Effect of relative humidity on the retraction dynamics of blood drop after impacting a solid substrate** Houssine BENABDELHALIM, David BRUTIN *Aix Marseille University / CNRS, France*
10:20	**Dynamic arrest during the spreading of a yield stress fluid drop** Grégoire Martouzet *ILM Lyon, France*
10:40	**Getting into the skin of thin-skinned emulsion drops stressed by elasticity and capillarity** G. Ginot[1], F. Walzel[1], L. Jacomine[1], M. Hamann[1], S. Pivard[1], J. Farago[1], R. Hohler[2], W. Drenkhan[1] *[1]Institut Charles Sadron, Universite de Strasbourg | CNRS, France,* *[2]Institut des Nanosciences, Sorbonne Universite | CNRS, France*

Virtual Room 2

9:40-11:00	**Wetting and Spreading I**
9:40	**Formation of liquid cratering from the impact of liquid marbles on rough solid substrates** Y. Zhang, C. Yang, H. C. Shum *Department of Mechanical Engineering, HKU, Pokfulam Rd., Hong Kong SAR, China*
10:00	**Drop Dynamics of non-Newtonian dairy solutions** Ayoub Abdollahi[1], Frederick S. Wells[1], 2, A. M. Sefidan[4], Mathieu Sellier[4] and Geoff R. Willmott[1, 2, 3] *[1] The Department of Physics, The University of Auckland, New Zealand* *[2] The MacDiarmid Institute for Advanced Materials and Nanotechnology, New Zealand* *[3] School of Chemical Sciences, The University of Auckland, New Zealand* *[4] School of Mechanical Engineering, The University of Canterbury, New Zealand*
10:20	**Contact angle of EGaIn with interfacial oxide layer** Sangyun Jung, Jongwon Lee, Sejin Choi and Wonjung Kim *Department of Mechanical Engineering, Sogang University, South Korea*
10:40	**Charging of impacting drops onto superhydrophobic surfaces** Diego Díaz[1], Diana Garcia-Gonzalez[1, 2], Stefan Weber[1, 3], Hans-Jürgen Butt[1], Amy Stetten[1], and Michael Kappl[1] *[1] Max Planck Institute for Polymer Reasearch, Germany* *[2] Physics of Fluids group, Max-Planck Center Twente for Complex Fluid Dynamics, Department of Science and Technology, Netherlands* *[3] Department of Physics, Johannes Gutenberg University, Germany*

Virtual Room 3

9:40-11:00	**Collision Phenomena I**
9:40	**Jet through Droplet: Influence of the liquid properties on the dynamics of a jet impacting a pendant droplet** Miguel A. Quetzeri-Santiago[1], Devaraj van der Meer[2], David Fernandez Rivas[3] *[1]Mesoscale Chemical Systems Group, MESA+ Institute and Faculty of Science and Technology, University of Twente, The Netherlands* *[2]Physics of Fluids Group, Max-Planck Center for Complex Fluid Dynamics, MESA+ Research Institute, J.M. Burgers Center for Fluid Dynamics and Faculty of Science and Technology, University of Twente, The Netherlands*
10:00	**High-speed droplet impact onto deformable substrates** Michael J. Negus[1], Matthew R. Moore[1], James M. Oliver[1], Radu Cimpenau[2] *[1]Mathematical Institute, University of Oxford, UK* *[2]Mathematics Institute, Zeeman Building, University of Warwick, UK*
10:20	**Slippery hydrophobicity for liquid impact resistance** Prasenjit Kabi[1], Vikramjeet Singh[1], Priyankan Datta[1], and Manish K. Tiwari[1,2] *[1] Nanoengineered System Laboratory, Mechanical Engineering, University College London, UK* *[2] Wellcome/EPSRC Centre for Interventional and Surgical Sciences, University College London, UK*
10:40	**Post-impact drop velocity in general multi-liquid systems** Ben D. Fudge[1], Radu Cimpeanu[2], and Alfonso A. Castrejón-Pita[1] *[1] Fluid Dynamics Laboratory, Department of Engineering Science, University of Oxford, UK* *[2] Mathematics Institute, University of Warwick, UK*

Virtual Room 1

11:10-12:10	**Droplets of Complex Fluids II**
11:10	**Stability of evaporating drops comprising binary mixtures** Katie Thomson[1], Adam Williams[1], George Karapetsas[2], Omar Matar[3], Yutaku Kita[4], Khellil Sefiane[1], and Prashant Valluri[1] *[1] Institute for Multiscale Thermofluids, School of Engineering, University of Edinburgh, UK* *[2] Department of Chemical Engineering, Aristotle University of Thessaloniki, Greece* *[3] Department of Chemical Engineering, Imperial College London, UK* *[4] Department of Mechanical Engineering, Kyushu University, Japan*
11:30	**A numerical study of a droplet spreading between Newtonian and viscoplastic stratified fluids** Chris Dritselis and George Karapetsas *Department of Chemical Engineering, Aristotle University of Thessaloniki,,Greece*
11:50	**Superspreading – It seems like the mystery has been unraveled …** Joachim Venzmer *Evonik Operations GmbH, Research Interfacial Technology, Essen, Germany*

Virtual Room 2

11:10-12:30	**Wetting and Spreading II**
11:10	**Dynamics of wetting using Langevin's approach : a review** Joël De Coninck *Laboratoire de Physique des Surfaces et des Interfaces, University of Mons, Belgium*
11:30	**A continuum model of nanodrop spreading** Mykyta V. Chubynsky[1], Sreehari Perumanath[1], Rohit Pillai[2], Matthew K. Borg[2], and James E. Sprittles[1] *[1]Mathematics Institute, University of Warwick, UK* *[2]School of Engineering, University of Edinburgh, UK*
11:50	**Nanodroplets deform soft substrates: elasticity vs. capillarity** Binyu Zhao[1,2], Elmar Bonaccurso[3], Günter K. Auernhammer[1], and Longquan Chen[2] *[1] Leibniz-Institute of Polymer Research Dresden, Germany* *[2] School of Physics, University of Electronic Science and Technology of China, China* *[3] Airbus Central R&T, Materials X, Munich 81663, Germany*
12:10	**High speeds of impacting micron-sized droplets suppress the splashing** Yoshiyuki Tagawa[1], Masashi Usawa[1], Yuta Fujita[1], Guillaume Riboux[2] and José Manuel Gordillo[2] *[1] Department of Mechanical Systems Engineering, Tokyo University of Agriculture and Technology* *[2] Área de Mecánica de Fluidos, Departamento de Ingeniería Aeroespacial y Mecánica de Fluidos, Escuela Superior de Ingenieros, Universidad de Sevilla*

Virtual Room 3

11:10-12:30	**Collision Phenomena II**
11:10	**Surfactant-laden Drop Bouncing** Aditya Jha[1], Christophe Clanet [2], and David Quéré[1] *[1] PMMH, UMR 7636, ESPCI, 75005 Paris* *[2] LadHyX, UMR 7646, École polytechnique, 91128 Palaiseau*
11:30	**Can face masks atomize cough droplets?** Shubham Sharma[1], Roven Pinto[1], Abhishek Saha[2], Swetaprovo Chaudhuri[3], and Saptarshi Basu[1] *[1] Department of Mechanical Engineering, Indian Institute of Science, Bengaluru, India.* *[2] Department of Mechanical and Aerospace Engineering, University of California San Diego, USA* *[3] Institute for Aerospace Studies, University of Toronto, Canada.*
11:50	**Non-coalescence of oscillating multiple compound droplets on coplanar EWOD platform** Rutvik Lathia, Nitish Sagar, and Prosenjit Sen *Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science (IISc), Bangalore, India*
12:10	**Exploring a new dimension in high-speed liquid-liquid impact** Radu Cimpeanu[1], Matther R. Moore[2] *[1]Mathematics Institute, University of Warwick, UK* *[2]Mathematical Institute, University of Oxford, UK*

Virtual Room 1

13:10-14:50 Droplets on Complex Substrates I

13:10 **Keynote Lecture:**
Contact angles and Droplet Motion on Slippery Surfaces
Glen McHale
Institute for Multiscale Thermofluids, University of Edinburgh, UK.

13:50 **Numerical Simulation of wetting on textured surfaces with Lattice Boltzmann Method**
Stéphane Valette, Vincent Neyrand, Jean-Michel Bergheau, and Alexandre Epalle
Laboratoire de Tribologie et Dynamique des Systèmes, Ecole Centrale de Lyon, France

14:10 **Numerical simulation of wetting dynamics on viscoelastic substrates**
Dominic Mokbel[2], Sebastian Aland[1,2]
[1] TU Bergakademie Freiberg, Germany
[2] HTW Dresden, Germany

14:30 **Contact-Angle Hysteresis and Contact-Line Friction on Slippery Liquid-like Surfaces**
Hernán Barrio-Zhang, Élfego Ruiz-Gutierrez, Steven Armstrong, Glen McHale, Gary G. Wells and Rodrigo Ledesma Aguilar
Institute for Multiscale Thermofluids, School of Engineering, University of Edinburgh, UK

Virtual Room 2

13:10-14:50 Wetting and Spreading III

13:10 **Keynote Lecture:**
Theory of bubble tips in strong viscous flows
Jens Eggers
School of Mathematics, University of Bristol, UK

13:50 **Wetting origins: how droplets meet surfaces**
Sreehari Perumanath[1], Mykyta V. Chubynsky[2], Rohit Pillai[1], James E Sprittles[2], and Matthew K. Borg[1]
[1] School of Engineering, University of Edinburgh, UK
[2] Mathematics Institute, University of Warwick, UK

14:10 **Wetting and Evaporation of Hygroscopic Drops**
Senthil Kumar Parimalanathan, Alexey Rednikov, and Pierre Colinet
Transfers, Interfaces and Processes Laboratory, Belgium

14:30 **Evaporation of a respiratory droplet and residual thin-film on impermeable and porous surfaces in the context of COVID-19**
Sanghamitro Chatterjee, Janani Srree Murallidharan, Amit Agrawal, and Rajneesh Bhardwaj
Department of Mechanical Engineering, Indian Institute of Technology Bombay, India

Virtual Room 3

13:10-14:50	**Coalescence, Breakup, and Atomization I**
13:10	**Keynote Lecture:** **Experiments attempting to unify the picture of wetting dynamics** Kristina Davitt *University of Paris, France*
13:50	**Droplet splashing on curved substrates** Thomas C. Sykes[1], Benjamin Fudge[1], Miguel A. Quetzeri-Santiago[2], J. Rafael Castrejón-Pita[3], and Alfonso A. Castrejón-Pita[1] *[1] Department of Engineering Science, University of Oxford, UK* *[2] Faculty of Science and Technology, University of Twente, The Netherlands* *[3] School of Engineering and Materials Science, Queen Mary University of London, UK*
14:10	**Drop impact on thin film: mixing, thickness variations and ejections** Justin Parmentier, Vincent Terrapon, and Tristan Gilet *Department of Aerospace & Mechanical Engineering, University of Liège, Belgium*
14:30	**Fragmentation of Acoustically Levitated Fuel Droplets using Nano-Femtosecond Laser Pulses** Vishal S. Jagdale[1], Yogeshwar Nath Mishra[2,3], Devendra Deshmukh[1], Dag Hanstorp[2] *[1] Discipline of Mechanical Engineering, Indian Institute of Technology-Indore, India* *[2] Department of Physics, University of Gothenburg, Sweden* *[3] NASA-Jet Propulsion Laboratory, California Institute of Technology, USA*

Virtual Room 1

15:00-16:20	**Droplets on Complex Substrates II**
15:00	**Drops on Soluble Coatings - Experimental Investigation of the Influence of Substrate Thickness on Wetting and Surface Restructuring** Christian Wolf, Peter Stephan and Tatiana Gambaryan-Roisman *Institute for Technical Thermodynamics, Technical University of Darmstadt, Germany*
15:20	**Imaging moving wetting ridges on liquid-infused surfaces** Abhinav Naga, William S. Y. Wong, Anke Kaltbeitzel, Azadeh Sharifi-Aghili, and Doris Vollmer *Max Planck Institute for Polymer Research, Mainz, Germany*
15:40	**Dynamic wetting of droplets on vibrated complex surfaces** Elise Contraires[1,2,3], Li Fu[4], Mohammed Boussenna[1], Matthieu Guibert[5], Alain Le Bot[1] and Stéphane Benayoun[1] *[1] Laboratoire de Tribologie et Dynamique des Systèmes, France* *[2] Centre de Recherche Paul Pascal,* *[3] Institut Carnot Ingénierie, France* *[4] Institut de Physique de Nice, UMR 7010, CNRS, Université Côte d'Azur, FR-06100 Nice, France.* *[5] Centre de Recherche en Astrophysique de Lyon, France*
16:00	**Fluid separation and network deformation in soft wetting of swollen elastomers** Jonathan T. Pham[1], Zhuoyun Cai[1], Artem N. Skabeev[2], Svetlana Morozova[3] *[1] Chemical and Materials Engineering, University of Kentucky, Lexington, KY, USA* *[2] Institute für Organische Chemie und Mackromolekulare Chemie, Universität Jena, Germany* *[3] Macromolecular Science and Engineering, Case Western Reserve University, USA*

Virtual Room 2

15:00-16:20	**Wetting and Spreading IV**
15:00	**Capillary Bridges on Liquid Infused Surfaces** Halim Kusumaatmaja[1], Alvin Shek[1], Jack Panter[1] and Ciro Semprebon[2] *[1] Department of Physics, Durham University* *[2] Department of Mathematics, Physics and Electrical Engineering, Northumbria University*
15:20	**Dewetting of thin lubricating films under aqueous drops on slippery surfaces** Bidisha Bhatt, Shivam Gupta, Manas Khan, and Krishnacharya Khare *Department of Physics, Indian Institute of Technology Kanpur, India*
15:40	**Delayed lubricant depletion of liquid infused surfaces through nanostructure tuning** Sophia K. Laney[1], Martyna Michalska[1], Junho Oh[2], Manish K. Tiwari[2,3], Ivan P. Parkin[4], and Ioannis Papakonstantinou[1] *[1] Photonic Innovations Lab, Department of Electronic & Electrical Engineering, University College London, UK* *[2] Nanoengineered Systems Laboratory, Department of Mechanical Engineering, University College London, UK* *[3] Wellcome/EPSRC Centre for Interventional and Surgical Sciences (WEISS), University College London, UK* *[4] Department of Chemistry, University College London, UK*
16:00	**The unique attributes of droplets shaped by surface tension gradients on high energy surfaces** Nate J Cira *Cornell University, Department of Biomedical Engineering, Ithaca NY*

Virtual Room 3

15:00-16:20	**Coalescence, Breakup, and Atomization II**
15:00	**Thin film instability driven dimple mode of air film failure during drop impact on smooth surfaces** Lige Zhang, Tejaswi Soori, Arif Rokoni and Ying Sun *Department of Mechanical Engineering and Mechanics, Drexel University, USA*
15:20	**Production of submicron droplets via partial coalescence** Steffen Hardt and Mostafa Shojaeien *Technische Universität Darmstadt, Fachbereich Maschinenbau, Fachgebiet Nano- und Mikrofluidik, Germany*
15:40	**Jet break-up and drop oscillation in the presence of surfactants** Evangelina Antonopoulou[1], Oliver Harlen[2], Mark Walkley[3] *[1] Mathematical Institute, University of Oxford, UK* *[2] School of Mathematics, University of Leeds, UK* *[3] School of Computing, University of Leeds, UK*
16:00	**Partial Coalescence of Liquid Metal Droplets in a Viscous Quiescent Fluid** Ryan McGuan[1], Robert Candler[2], and H. Pirouz Kavehpour[1] *[1] Department of Mechanical and Aerospace Engineering, University of California, Los Angeles, USA [2] Department of Electrical and Computer Engineering, University of California, Los Angeles, USA*

Poster Sessions

Virtual Room1	
16:30-17:10	**Lightning Talks Posters 1.1 & 1.4 (Complex Fluids and Substrates)**
Virtual Room 2	
16:30-17:10	**Lightning Talks Posters 1.2 & 1.4 (Wetting and Spreading)**
Virtual Room 3	
16:30-17:10	**Lightning Talks Posters 1.3 & 1.4 (Collision Phenomena, Coalescence, Breakup, Atomization and Sprays)**
BBB Breakout Rooms	
17:20-18:20	**Poster discussion**

List of Posters

1.1 Complex Fluids and Substrates

1.1.1 **Scaling of novel forces on droplets in non-Newtonian confined flow**
PhD Shamik Hazra | Indian Institute of Technology, Madras | India

1.1.2 **Ouzo Effect in Droplet Evaporation under Controlled Environmental Condition**
Sahar Andalib | University of California at Los Angeles | United States

1.1.3 **Governing equations and solution multiplicities for a static ridge of nematic liquid crystal**
Joseph Cousins | University of Glasgow | United Kingdom

1.1.4 **Self-Assembly and Phase Separation in Globular Protein Drying Droplets with and without Thermotropic Liquid Crystals**
PhD Anusuya Pal | Worcester Polytechnic Institute | United States

1.1.5 **Colloidal deposits of an evaporating sessile droplet in confined geometries**
Prof. Rajneesh Bhardwaj | IIT Bombay | India

1.1.7 **Single droplet impingement of urea water solution on porous surfaces**
Carola Kuhn | Karlsruhe Institute of Technology (KIT) | Germany

1.1.8 **Wetting behavior of surfaces with tunable topography**
Gissela Constante | University of Bayreuth | Germany

1.1.9 **Contact Angles and Dewetting Dynamics in Visco-Elastic Substrates**
PhD Khalil REMINI | Saarland University | Germany

1.1.10 **Liquid Droplets over a Liquid-impregnated Surface: Cheerios and Reverse-Cheerios Effects**
PhD Butunath Majhy | Indian Institute of Technology Madras | India

1.2 Wetting and Spreading I

1.2.1 **Drop recoil after impact on hydrophobic glass**
PhD Hai-Meng Huang | Université Grenoble Alpes, CNRS, GrenobleINP, LRP | France

1.2.2 **Sessile drops in weightlessness: an ideal playground for challenging Young's equation**
Prof. Marc Medale

1.2.3 **Floating liquid marbles, their stability and collapse patterns**
PhD Apoorva Sneha Ravi | IIT gandhinagar | India

1.2.4 **Influence of surrounding pressure on the dynamics of spreading and wetting**
Sumaiya Farzana | Univeristy of Alberta | Canada

1.2.5 **Anomalous flow behavior of viscous fluid droplets**
PhD Maja Vuckovac | Aalto University | Finland

1.2.6 **Experimental study on cold Leidenfrost phenomenon for droplets of low surface energy fluid**
PhD Xinyuan Liu | China

1.2.7 **Investigation of Cassie-Wenzel transition on thin porous material**
PhD Wellington Tafireyi | Loughborough University | United Kingdom

1.2.8 **Negative Dielectrowetting of Thick and Thin Films**
PhD Andrew M. J. Edwards | Nottingham Trent University | United Kingdom

1.2.9 **Impact behaviour of compound droplets on superamphiphobic surfaces**
PhD Shiji Lin | University of Electronic Science and Technology of China | China

1.2.10 **Ultrafast Bubble Bursting and Passive Anti-Foaming by Superamphiphobic Surfaces**
Katharina Hegner | Max Planck Institute for Polymer Research | Germany

1.3 Collision Phenomena, Coalescence, Breakup and Sprays I

1.3.1 **Impact of a droplet on a circular superhydrophilic region surrounded by a superhydrophobic region**
PhD Niladri Sekhar Satpathi | Indian Institute of Technology, Madras | India

1.3.2 **Inertial stretching separation in binary droplet collisions**
PhD KARRAR H AL-DIRAWI | University of Leeds | United Kingdom

1.3.3 **Dependence of Drop-on-drop Impact Dynamics on Droplet Deposition Boundary Condition on a Superhydrophobic Substrate**
PhD Ankush Jaiswal | IIT Kanpur | India

1.3.4 **A FRET study of droplet collisions in microemulsions**
Matthew Royle | Durham University | United Kingdom

1.3.5 **Floating and bouncing dynamics of water droplets on immiscible liquid pool**
Junior professor Harikrishnan A R | Birla Institute of Technology and Science Pilani | India

1.3.6 **Viscous droplet impact on a cantilever beam**
Gaurav Upadhyay | IIT Bombay | India

1.3.7 **Coalescence cascade during merging of unequal droplets: a numerical study**
Junior professor Harish Viswanathan | Sheffield Hallam University | United Kingdom

1.3.8 **Coalescence in surfactant-stabilized concentrated emulsions: The hole nucleation theory revisited**
PhD Huy-Hong-Quan Dinh | Total S.A/ESPCI | France

1.3.9 **Fragmentation of optically and acoustically levitated droplets by femtosecond laser**
PhD D. Chaitanya Kumar Rao | University of Gothenburg | Sweden

1.4 Complex Fluids and Substrates II; Wetting and Spreading II; Collision Phenomena, Coalescence, Breakup, Atomization and Sprays II

1.4.1 **Adaptation of PS/PAA copolymer to water**
Li Xiaomei | MPI für Polymerforschung | Germany

1.4.2 **Dynamic wetting behavior and hydrophobic loss of tunable PDMS-based elastomers for high-voltage applications**
Florian Praße | Hochschule Zittau/Görlitz | Germany

1.4.3 **Nanodroplets Wetting an Elastic Half-Space**
Nikolai Kubochkin | Technical University of Darmstadt | Germany

1.4.4 **Bioinspired multifunctional glass surfaces: from wettability and antireflectance to antibacterial activity**
PhD Martyna Michalska | University College London | United Kingdom

1.4.5 **Cusps-filaments at receding viscoelastic contact line**
PhD Saksham Sharma | University of Cambridge | United Kingdom

1.4.6 **Nanoparticles modulate contact angle hysteresis in electrowetting**
SUMIT KUMAR | IIT Kharagpur | India

1.4.7 **Adhesion force measurement for liquid-solid interface using force tensiometer**
Palak Jain | University fo Alberta | Canada

1.4.8 **Electrospreading of Viscous Droplets on a Dielectric Surface**
SUMIT KUMAR | IIT Kharagpur | India

1.4.9 **Characterizing the spatio-temporal dynamics of sprays from high speed recordings of gas-assisted atomizers**
Matheus Rover Barbieri | Universität Bremen | Germany

1.4.10 **Bouncing of liquid drops upon coalesence on a superhydrophobic surface**
Debarshi Debnath | IIT Mandi | India

Tuesday, August 17

Oral Sessions

Virtual Room 1

08:10-09:50 Droplets on Complex Substrates III

08:10 **Keynote Lecture:**
Rolling of non-wetting droplets down a gently inclined plane
Ory Schnitzer[1], Anthony M. J. Davis[2], and Ehud Yariv[3]
[1] Department of mathematics, Imperial College London
[2] Department of mechanical and aerospace engineering, University of California San Diego
[3] Department of mathematics, Technion—Israel Institute of Technology

08:50 **Dynamics of Fluid Transport on (Super)biphilic Surfaces: the Role of Asymmetry**
David Feldmann, Bat-El Pinchasik
Tel-Aviv University, School of Mechanical Engineering, Israel

09:10 **Quantifying surface wetting properties using droplet probe AFM**
Dan Daniel, Zunita Florida, Chee Leng Lay, Xue Qi Koh, Anqi Sng, and Nikodem Tomczak
*Institute of Materials Research and Engineering, Agency for Science Research and Technology (A*STAR), Singapore*

09:30 **Visualizing and quantifying wettability alteration by silica nanofluids**
Shidong Li[1], Anqi Sng[2], Dan Daniel[2], Hong Chung Lau[3], Ole Torster[4,5], Ludger P. Stubbs
*[1] Institute of Chemical and Engineering Sciences (ICES), Agency for Science Research and Technology (A*STAR), Singapore*
*[2] Institute of Materials Research and Engineering, Agency for Science Research and Technology (A*STAR), Singapore*
[3] Department of Civil and Environmental Engineering, National University of Singapore, Singapore
[4] PoreLab, Norwegian Center of Excellence, Norway
[5] Department of Geoscience and Petroleum, Norwegian University of Science and Technology (NTNU), Norway

Virtual Room 2

08:10-09:50 Droplets at Extreme Conditions I

08:10 **Keynote Lecture:**
Direct Numerical Simulation (DNS) of Drop Dynamics
Bernhard Weigand
Universität Stuttgart, Germany

08:50 **Nonlinear shape oscillations of inviscid liquid droplets**
S. Akbari[1], D. Plümacher[1], D. Zrnic [2], G. Brenn[2], M. Smuda[1], F. Kummer[1], Y. Wang[1], and M. Oberlack[1]
[1] Chair of Fluid Dynamics, Darmstadt University of Technology, Germany
[2] Institute of Fluid Mechanics and Heat Transfer, Graz University of Technology, Austria

09:10 **Sessile volatile drop evaporation under microgravity**
Sanjeev Kumar[1], Marc Médale[1], Paolo Di Marco[2] and David Brutin[1]
[1] Aix-Marseille University, France
[2] DESTEC, University of Pisa, Italy

09:30 **Leidenfrost droplet evaporation dynamics: from puddles to spherical caps**
Suryansh Gupta, Nagesh D. Patil
Department of Mechanical Engineering, Indian Institute of Technology Bhilai, India

Virtual Room 3

08:30-09:50	**Numerical Methods I**
08:30	**Keynote Lecture:** **Droplet Dynamics in the Presence of Gas Nanofilms: Bouncing, Merging, Wetting & Levitation** James E. Sprittles[1], Mykyta V. Chubynsky[1], Indrajit Chakraborty[1], and Duncan A. Lockerby[2] *[1] Mathematics Institute, University of Warwick, UK* *[2] School of Engineering, University of Warwick, UK*
09:10	**Boundary conditions for dynamic wetting - A mahematical analysis** Mathis Fricke and Dieter Bothe *Mathematical Modeling and Analysis, TU Darmstadt, Germany*
09:30	**Modelling of Bubble Growth and Diffusion in a Combusting Metal Droplet** Andrew J. L. Lange, Mathieu Sellier, and James N. Hewett *Department of Mechanical Engineerung, University of Canterbury, New Zealand*

Virtual Room 1

10:00-11:20	**Phase Change I**
10:00	**Picolitre Pancakes** Colin D. Bain[1], Lisong Yang[1], Amir A. Pahlavan[2], Howard A. Stone[2] *[1] Department of Chemistry, Durham University, UK* *[2] Department of Mechanical and Aerospace Engineering, Princeton University, USA*
10:20	**Evaporation Dynamics of 2D Droplet Arrays** Fouzia. F. Ouali, Andrew M. J. Edwards, DAvid J. Fairhust, Joseph Kilbride, Carl V. Brown, and Pierre Le Minter *Soft Group, School of Science and Technology, Nottingham Trent University, UK*
10:40	**Freezing of a nanofluid droplet: from pointy tip to flat plateau** Yugang Zhao[1,2], Chun Yang[3], and Ping Cheng[1,4] *[1] Shanghai Key Laboratory of Multiphase Flow and Heat Transfer in Power Engineering, School of Energy and Power Engineering, University of Shanghai for Science and Technology, P. R. China* *[2] Key Laboratory of Icing and Anti/De-icing, China Aerodynamics Research and Development Center, P. R. China* *[3] School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore* *[4] MOE Key Laboratory of Power Machinery and Engineering, School of Mechanical Engineering, Shanghai Jiaotong University, P. R. China*
11:00	**Non-Leidenfrost levitation of a droplet iver liquid surface** Evgeny Mogilevskiy[1], Boris Kriuk[2], and Fedor Kriuk[2] *[1] Lomonosov Moscow State University, Russia* *[2] 171 High School, Moscow, Russia*

Virtual Room 2

10:00-11:20	**Droplets at Extreme Conditions II**
10:00	**Numerical analysis of shock-focusing phenomena during shock-bubble interaction** Alexander Bußmann, Josef M. Winter, Stefan Adami, and Nikolaus A. Adams *Technical University of Munich, Germany*
10:20	**Micro-Droplet Trampolining on Smooth Substrate at Reduced Pressure** Gaoyuan Wang, Ruina Xu, and Peixue Jiang *Key Laboratory for Thermal Science and Power Engineering of Ministry of Education, Beijing Key Laboratory for CO2 Utilization and Reduction Technology, Department of Energy and Power Engineering, Tsinghua University, China*
10:40	**Walking, Climbing, and Shooting: Complex Dynamics in Drops on Vibrated Substrates** Lyes Kahouadji[1], Seungwon Shin[2], Jalel Chergui[3], Damir Juric[3] and Omar K. Matar[1] *[1] Department of Chemical Engineering, Imperial College London, UK* *[2] Department of Mechanical and System Design Engineering, Hongik University, Republic of Korea* *[3] Université Paris Saclay, Centre National de la Recherche Scientifique (CNRS), Laboratoire Interdisciplinaire des Sciences du Numérique (LISN), France*
11:00	**Impinging spray on superhydrophobic meshes** Lijie Sun and Longquan Chen *School of Physics, University of Electronic Science and Technology of China, China*

Virtual Room 3

10:00-11:20	**Numerical Methods II**
10:00	**Experimental and numerical investigation of the inner and outer flow structure of an adhering droplet in shear flow** Sebastian Burgmann[1], Martin Rohde[1], Veronika Krämer[2], Michael Dues[3] and Uwe Janoske[1] *[1] Chair of Fluid Mechanics, Bergische Universität Wuppertal, Germany* *[2] Robert Bosch GmbH, Engineering Simulation (PS-XS/EXF1)*
10:20	**A parallelized initialization algorithm for triangulated surfaces immersed in arbitrary unstructured meshes for VOF and level-set methods** Dirk Gründing, Tobais Tolle, Dieter Bothe, and Tomislav Maric *Institute for Mathematical Modeling and Analysis, TU Darmstadt, Germany*
10:40	**Optimal Control of Droplets with Contact Angles** Henning Bonart[1,2] *[1] Max Planck Institute for Polymer Research, Germany* *[2] TU Darmstadt, Germany*
11:00	**A high-order numerical method for wetting, dewetting and heat transfer** Matthias Rieckmann, Florain Kummer, Martin Smuda *TU Darmstadt, Germany*

Poster Sessions

Virtual Room 1	
11:30-12:10	**Lightning Talks Posters 2.1 (Phase Change)**
Virtual Room 2	
11:30-12:10	**Lightning Talks Posters 2.2 (Applications)**
Virtual Room 3	
11:30-12:10	**Lightning Talks Posters 2.3 (Modeling and Numerics)**
BBB Breakout Rooms	
12:20-13:20	**Poster discussion**

List of Posters

2.1 Phase Change

2.1.1 **Evaporation of Sessile Droplets on Slippery Liquid-Like Surfaces and Slippery Liquid-Infused Porous Surfaces (SLIPS)**
PhD Steven Armstrong | University of Edinburgh | United Kingdom

2.1.2 **Measurement of dynamic wetting of a nanofluids droplet and nanoparticles deposition during evaporation**
PhD Eita Shoji | Tohoku University | Japan

2.1.3 **Thin liquid film contact boiling and breakup at drop impact**
PhD Elizaveta Gatapova | Kutateladze Institute of Thermophysics SB RAS | Russian Federation

2.1.4 **Dynamic Point Source Modelling of Evaporating Sessile Droplets**
Sophie Malcolm | The University of Edinburgh | United Kingdom

2.1.5 **Two-Dimensional evaporation dynamics of a respiratory droplet in context of COVID-19**
PhD Sreeparna Majee | Indian Institute of Science Bangalore | India

2.1.6 **Internal flow in evaporating sessile water drops: Dominance of Marangoni flow**
Tejaswi Josyula | IIT Madras | India

2.1.7 **Experimental investigation of the sessile droplet evaporation process based on different surface roughness and wettability**
PhD Zhihao Zhang | University of Nottingham | United Kingdom

2.1.9 **Flow near the contact line during coalescence of droplets**
Yabo Zhao | China

2.1.10 **Perpetuating drop-wise condensation under cyclic thermal stresses**
PhD Prasenjit Kabi | University College London | United Kingdom

2.1.11 **Foam formation using soft porous media**
PhD Phillip Johnson | Loughborough University | United Kingdom

2.1.12 **Sol-Gel Derived Tin Oxide Rhombohedra and Fern-Dendrites**
Vishal Kamathe | Symbiosis Institute of Technology | India

2.2 Applications

2.2.1 **Optical Fiber: A Potential Method for Critical Micelle Concentration Measurement**
PhD Farzaneh Hajirasouliha | Northumbria University | United Kingdom

2.2.2 **Harvesting energy from high frequency impinging water droplets by a droplet-based electricity generator**
PhD lili wang | Hong Kong

2.2.3 **Raman Spectroscopy of Deposits from Agrochemical Formulations**
PhD Nicola Haynes | Durham University | United Kingdom

2.2.4 **Numerical Model of Milk Droplet Spray Drying**
Ali Mohammadi Sefidan | University of Canterbury | New Zealand

2.2.5 **Viscosity-induced suppression of coffee-ring effect in pharmaceutical drops**
Junior professor Alexandros Askounis | University of East Anglia | United Kingdom

2.2.6 **Influence of varying evaporation conditions upon dry drop pattern differentiation of serum and plasma collected from four volunteers**
Dr. Maria Olga Kokornaczyk | Switzerland

2.2.7 **Spread and retraction for non-Newtonian drop impacts on micropatterned surfaces**
Santhosh Kumar Pandian | University of Auckland | New Zealand

2.2.8 **A hierarchical porous membrane with super liquid repellency for enhanced desalination.**
PhD Prexa Shah | Max Planck Institute for Polymer Research | Germany

2.2.9 **Ferrofluid drop impacts in a non-uniform field**
Prof. Geoff R. Willmott | The MacDiarmid Institute for Advanced Materials and Nanotechnology | New Zealand

2.2.10 **Outward and inward protections of different mask designs against aerosol transmissions**
Xue Qi Koh | Singapore

2.2.11 **Comparative experiments on the droplet impact of blood onto a glass substrate**
Yuto Yokoyama | Tokyo University of Agriculture and Technology | Japan

2.2.12 **Image Feature Extraction for Spreading and Splashing Drops on a Solid Surface using a Feedforward Neural Network (FNN)**
Jingzu Yee | Tokyo University of Agriculture and Technology | Japan

2.3 Modeling and Numerics

2.3.1 **Phase Field Investigation of Air Bubble Evolvement and the Effect of Dynamic Contact Angle**
PhD ZUNRU FU | Beihang University | China

2.3.2 **Numerical study of droplets on fibres - spreading and motion on fibre strands.**
Francisco Bodziony | Technical University of Darmstadt | Germany

2.3.3 **A numerically consistent, semi-implicit, collocated, unstructured Finite Volume discretization of the two-phase Navier-Stokes equations in a single-field formulation for high density ratios**
PhD Tomislav Maric | TU Darmstadt | Germany

2.3.4 **Rebound Suppression of a Droplet on a Solvophobic Surface by a Small Amount of Polymer**
PhD Eunsang Lee | Technische Universität Darmstadt | Germany

2.3.5 **On a toroidal method to solve the sessile drop oscillation problem**
PhD Saksham Sharma | University of Cambridge | United Kingdom

2.3.6 **Non-Newtonian Slippery Liquid Infused Porous Surfaces using the lattice-Boltzmann algorithm**
PhD Sirio Orozco-Fuentes | Northumbria University, Newcastle | United Kingdom

2.3.7 **Theory and Simulations of Dielectrowetting**
PhD Élfego Ruiz-Gutierrez | The University of Edinburgh | United Kingdom

2.3.8 **Numerical analysis of water hammer pressure during high speed droplet impact**
PhD Priyankan Datta | University College London | United Kingdom

2.3.9 **Numerical Investigation of Hydrodynamics and Heat Transport during the Coalescence of Multiple Drops Impacting a Hot Wall**
Henrik Sontheimer | Technical University of Darmstadt | Germany

2.3.10 **Local acceleration of liquid film spreading on smooth substrate induced by interaction with a single short pillar**
Kogen OZAWA | Tokyo University of Science | Japan

2.3.11 **A Multiscale Simulation Method for Droplet Dynamic Wetting**
PhD Hanyi Liu | Beihang University | China

2.3.12 **Numerical Simulation of Evaporation of Pinned Urea-Water Droplets in Restricted Domain**
Moritz Mildenberger | Technical University of Darmstadt | Germany
Olaf Schumacher | Technical University of Darmstadt

13:50 – 14:50 **Plenary Lecture**

Hydrodynamic quantum analogs
John Bush
Department of Mathematics, MIT, USA

Oral Sessions

Virtual Room 1

15:00-16:20	**Phase Change II**
15:00	**Fine detection of contaminants by measuring the tip angle of frozen water drops** François Boulogne, Anniina Salonen *Université Paris-SAclay, CNRS, France*
15:20	**Evolution of and deposition from an evaporting annular droplet** L. M. Mills[1], H.-M.D'Ambrosio[1], S. K. Wilson[1], B. R. Duffy[1], A. W. Wray[1], and K. Sefiane[2] *[1] Department of Mathematics and Statistics, University of Strathclyde, UK* *[2] Instutite dor Multiscale Themorfluids, School of Engineering, University of Edinburgh, UK*
15:40	**MRI and localised spectroscopy of sessile droplets** Jonas Kind and Christina Thiele *Clemens-Schöpf-Institut, Technische Universität Darmstadt*
16:00	**Evaporation of colloidal drops on inclined surfaces** M. Parsa[1], D. Osborne[2], and A. Askounis[2] *[1] Department of Mechanical and Construction Engineering, Northumbria University, UK* *[2]School of Engineering, Faculty of Science, University of East Anglia, UK*

Virtual Room 2

15:00-16:20	**Applications**
15:00	**Water-Based Electric Nanogenerator for Environmental Mechanical Energy Harvesting** Hao Wu[1], Frieder Mugele[2], Yunlong Zi[3], Zuankai Wang[1] *[1] City University of Hong Kong* *[2] University of Twente* *[3] The Chinese University of Hong Kong*
15:20	**Robust droplet-based generator with stable and high surface charge density under various harsh environments using a slippery surface** Song Yuxin[1], Xu Wanghuai[1], Liu Yuan[2] and Wang Zuankai[1] *[1] Department of Mechanical Engineering, City University of Hong Kong, P.R. China* *[2] School of Chemical Engineering and Technology, Sun Yat-sen University,China*
15:40	**Spray deposition and the dynamic surface tension of drops at millisecond time scales** Hanne Hoffman, Rick Sijs, Thijs de Goede, and Daniel Bonn *Van der Waals-Zeeman Institute, University of Amsterdam, Netherlands*
16:00	**The elastic Rayleigh drop** Saiful Tamim and Joshua Bostwick *Department of Mechanical Engineering, Clemson University, USA.*

Virtual Room 3	
15:00-16:20	**Numerical Methods III**
15:00	**Keynote Lecture:** **Modeling and Computing heat flow for evolving films and drops on nanoscale** Lou Kondic, Ryan Allaire, and Linda J. Cummings *Department of Mathematical Sciences, New Jersey Institute of Technology, USA*
15:40	**Electric forces and stresses on evaporating sessile droplets in microgravity** Alekos Ioannis Garivalis, Paolo Di Marco *DESTEC, University of Pisa, Italy*
16:00	**Numerical modelling of instabilities in volatile sessile drops in weightlessness** Sanjeev Kumar, Marc Médale and David Brutin *Aix-Marseille University, CNRS, France*

Poster Sessions

Virtual Room 1	
16:30-17:10	**Lightning Talks Posters 3.1 (Microfluidics and Droplet Manipulation)**
Virtual Room 2	
16:30-17:10	**Lightning Talks Posters 3.2 (Heat and Mass Transfer)**
Virtual Room 3	
16:30-17:10	**Lightning Talks Posters 3.3 (Aerosols, Emulsions, Sprays, Dispersions and Printing)**
BBB Breakout Rooms	
17:20-18:20	**Poster discussion**

3.1 Microfluidics and Droplet Manipulation	
3.1.2	**Open surface droplet transport and controlled splitting using wettability patterning** PhD Imdad Uddin Chowdhury | Indian Institute of Technology Madras | India
3.1.3	**Interaction of Droplets with a fluid-fluid interface: instability and migration** PhD Shamik Hazra | Indian Institute of Technology, Madras | India
3.1.4	**Self-similar behaviour in a stretching liquid tin sheet after laser impact on a tin microdroplet** Bo Liu | Vrije University Amsterdam/ARCNL | Netherlands
3.1.5	**Design of Stretchable Superamphiphobic Surfaces for Programmable Liquid Manipulation** PhD Xiaoteng Zhou | Max Planck Institute for Polymer Research | Germany
3.1.6	**On-demand Droplet Generation Using Bulk Acoustic Waves** PhD Hemachandran E | Indian Institute of Technology Madras | India
3.1.7	**On-demand droplet trap, coalescence and release using standing bulk acoustic waves** PhD Lokesh Malik | IIT Madras | India
3.1.8	**Investigation of drop motion in three-dimensional microchannels using a moving-frame boundary-integral method** Gesse Roure | University of Colorado Boulder | United States
3.1.9	**Negative Magnetophoresis Based Aqueous Droplet Trapping and Coalescence** PhD Sachin Kumar Jain | IIT Madras | India
3.1.11	**Formation history of dissipative droplets exploited for micro-structuring** Owen Ernst | Leibniz-Institut für Kristallzüchtung | Germany
3.1.12	**In-field Droplet based Diagnostics using Surface Acoustic Waves Controlled with Opensource Electronics** Jethro Vernon | Northumbria University Newcastle | United Kingdom

3.2 Heat and Mass Transfer

3.2.2	**Investigation of single optically trapped aerosol droplets: Mass transport of water** Michael Gleichweit | ETH Zürich | Switzerland
3.2.3	**The influence of contact lines on heat transfer during droplet impact on heated surfaces** Prof. Patricia Weisensee | Washington University in St. Louis | United States
3.2.4	**Nonuniform heating of the solid base in evaporative lithography** PhD Konstantin Kolegov | Astrakhan State University | Russian Federation
3.2.5	**The inversion of the fluid flow in a water droplet on a sodium chloride substrate** Prof. Irina Vodolazskaya | Astrakhan State University | Russian Federation
3.2.6	**Sessile liquid drop evaporation: analytical solution in bipolar coordinates** PhD Peter Lebedev-Stepanov | FSRC "Crystallography and Photonics" RAS | Russian Federation
3.2.7	**Single Droplet Dynamics in Stagnation Flow Conditions** PhD Ali Alshehri | University of California, Los Angeles | United States
3.2.8	**Investigation of Droplet Evaporation on Copper Substrate with Different** PhD Xin Wang | United Kingdom
3.2.9	**Manipulation of Marangoni Convection Inside the Sessile Evaporating Droplet** Prof. Ashish Kumar Thokchom | Shiv Nadar University | India
3.2.11	**Spontaneous dynamics of Leidenfrost drops** Rodolfo Brandao | Imperial College London | United Kingdom

3.3 Aerosols, Emulsions, Sprays, Dispersions and Printing

3.3.1	**The Evaporation of a Tiny Droplet in a Well: Experiment and Theory** Seth Price | Durham University | United Kingdom
3.3.2	**Enhancing durability of fluorine-free transparent superhydrophobic coatings with metal oxide hybridisation of PDMS** PhD Norbert Janowicz | UCL | United Kingdom
3.3.3	**Separation of Droplet Aerosols in Coalescence Separators** Richard Hassel | Universität Paderborn | Germany
3.3.4	**Particle deposition study from an evaporating sessile droplet under unfavourable particle-substrate interaction** PhD Ahlem MOKHTARI | University of Science and Technology Algiers | Algeria
3.3.5	Banded μ-Marangoni Vortex inside the Sessile Evaporating Droplet PhD Appurva Tiwari | Shiv Nadar University | India
3.3.6	**Interfacial particle transport and aggregation in evaporating water-glycerol droplets: Iridescent Marangoni Ring Formation** Lijun Thayyil Raju | University of Twente | Netherlands
3.3.7	**Understanding flow features in drying droplets via Euler Characteristic Surfaces – A topological tool** Prof. TAPATI DUTTA | St.Xavier's College, Kolkata | India
3.3.8	**Changing the flow profile and resulting drying pattern of dispersion droplets via contact angle modification** Carmen Morcillo Perez | The University of Edinburgh | United Kingdom
3.3.9	**Deposition Patterns of Oppositely Charged Polyelectrolyte/Surfactant Droplets** PhD Jing Shi | Durham University | United Kingdom
3.3.10	**Absorption of surfactant-laden droplets into porous media** Ruben van Gaalen | Eindhoven University of Technology | Netherlands
3.3.11	**Morphologies and Dynamics of Micro-Droplet Impact onto an Idealised Scratch** Khaled H Al-Ghaithi | University of Leeds | United Kingdom
3.3.12	**Spray impact on a wettability patterned surface** PhD Tibin Thomas | Indian Institute of Technology Madras | India

Wednesday, August 17

08:30 – 9:30 **Plenary Lecture**

Charge-controlled wetting and electromechanical energy conversion
Frieder Mugele
Univ. Twente – Physics of Complex Fluids

Oral Sessions

Virtual Room 1

9:40-11:00	**Micro- and Nanofluidics I**
9:40	**Keynote Lecture:** **Electrokinetic transport in sub-nanometric droplet** Anne-Laure Biance *Institut Lumière Matière, Université Lyon 1, France*
10:20	**How viscosity influences the outcome of collisions between liquid droplets and another immiscible liquid jet** D. Baumgartner, G. Brenn, and C. Planchette *Institute of Fluid Mechanics and Heat Transfer, Graz University of Technology, Austria*
10:40	**Final stage of sessile droplet evaporation: thin liquid droplet** Elizaveta Gatapova *Kutateladze Institute of Thermophysics SB RAS, Russia*

Virtual Room 2

9:40-11:00	**Phase Change III**
9:40	**Keynote Lecture:** **Droplet Dynamics and its Implications during Dropwise Condensation on Engineered Surfaces** Sameer Khandekar *Indian Institute of technology Kanpur, Kanpur 208016, India*
10:20	**Quantifying vapour field around evaporating sessile drops using background-oriented schlieren technique** Yutaku Kita[1,2], Anushka Kapoor[3], Khellil Sefiane[2,3] and Yasuyuki Takata[1,2] *[1] Department of Mechanical Engineering, Kyushu University, Japan* *[2] International Institute for Carbon-Neutral Energy Research, Kyushu University, Japan* *[3] School of Engineering, University of Edinburgh, United Kingdom*
10:40	**On explosive boiling of Leidenfrost drops** Sijia Lyu[1], Huanshu Tan[2], Y. Wakata[1], X. Yang[1], C. K. Law[3], Detlef Lohse[4], Chao Sun[1] *[1] Center for Combustion Energy, and Department of Energy and Power Engineering, Tsinghua University, 100084 Beijing, China* *[2] Department of Chemical Engineering, University of California, Santa Barbara, USA* *[3] Department of Mechanical and Aerospace Engineering, Princeton University, Princeton, NJ 08544, USA 4 Physics of Fluids Group, University of Twente, Enschede, The Netherlands*

Virtual Room 3	
9:40-11:00	**Aerosols, Emulsions, Sprays I**
9:40	**Keynote Lecture:** **Functional droplet dynamics in the context of Covid 19** Saptarshi Basu *Mechanical Engineering, Indian Institute of Science, Bengaluru, India*
10:20	**Dynamics of respiratory saliva droplets** Avshalom Offner, Jacques Vanneste *School of Mathematics, The University of Edinburgh, UK*
10:40	**High-Time Resolution Measurements of Droplet Evaporation Kinetics and Particle Crystallisation Imaging** D. A. Hardy[1], J. S. Walker[1], P. Lemaitre[2] and J. P. Reid[1] *[1] University of Bristol, Bristol, BS8 1TS, United Kingdom* *[2] Institut de Radioprotection et de Sûreté Nucléaire, PSN-RES, SCA, LPMA, Gif-sur-Yvette, France*

Virtual Room 1	
11:10-12:10	**Micro- and Nanofluidics II**
11:10	**Reciprocating thermocapillary motion of liquid plug in a capillary tube - A numerical study** Arvind Pattamatta, Kalichetty Srinivasa Sagar, T Sundararajan *Department of Mechanical Engineering, IIT Madras, India*
11:30	**Interactions between a microfluidic droplet and a membrane** Tristan Gilet, and Stéphanie van Loo *Microfluidics Lab, Dept. Aerospace & Mechanical Engineering, University of Liège, Belgium*
11:50	**Surface acoustic wave driven droplet coalescence in a microwell** A. Sudeepthi[1], A. Nath[1], L. Y. Yeo[2] and A. K. Sen[1] *[1] Micro Nano Bio -Fluidics Unit, Department of Mechanical Engineering, Indian Institute of Technology Madras, India.* *[2] Micro/Nanophysics Research Laboratory, School of Engineering, Royal Melbourne Institute of Technology (RMIT University) Australia.*

Virtual Room 2

11:10-12:30	**Phase Change IV**
11:10	**Self-templating assembly of soft microparticles into complex tessellations** Fabio Grillo[1], Miguel Angel Fernandez-Rodriguez[1,2], Maria-Nefeli Antonopoulou1, Dominic Gerber[1] and Lucio Isa[1] *[1] Laboratory for Soft Materials and Interfaces, Department of Materials, ETH-Zürich, Zürich, Switzerland* *[2] Laboratory of Surface and Interface Physics, Biocolloids and Fluid Physics group, Department of Applied Physics, Faculty of Sciences, University of Granada, Granada, Spain*
11:30	**Frost Formation and Growth on Lubricated Surfaces: Challenges and Solutions** Lukas Hauer[1], William S. Y. Wong[1], Lou Kondic[2], and Doris Vollmer[1] *[1] Physics at Interfaces, Max Planck Institute for Polymer Research, Germany* *[2] Department of Mathematical Sciences and Center for Applied Mathematics and Statistics, New Jersey Institute of Technology, USA*
11:50	**Influence of substrate temperature on spreading, imbibition and evaporation of drops on substrates with nanofiber coatings** Michael Heinz, Peter Stephan, and Tatiana Gambaryan-Roisman *Institute for Technical Thermodynamics, Technical University of Darmstadt*
12:10	**Evaporation of binary mixtures on structured surfaces** Khaloud Al Balushi[1], Gail Duursma[1], Prashant Valluri[1], Khellil Sefiane[1], Daniel Orejon[1,2] *[1] Institute for Multiscale Thermofluids, School of Engineering, The University of Edinburgh, UK* *[2] International Institute for Carbon-Neutral Energy Research (WPI-I2CNER), Kyushu University, Japan*

Virtual Room 3

11:10-12:30	**Aerosols, Emulsions, Sprays II**
11:10	**Functional and Structured Particles by Inkjet Printing of Emulsions** Yilin Wang[1], Renhua Deng[2] and Colin D. Bain[1] *[1] Department of Chemistry, Durham University, UK* *[2] School of Chemistry and Chemical Engineering, Huazhong University of Science and Technology, China*
11:30	**Drop impact dynamics onto a deep liquid pool: Influence of free surface topology** Abhishek Singh, Parmod Kumar *School of Engineering, Indian Institute of Technology, India*
11:50	**Effect of surface properties on the impact behaviour of supercooled microdroplets in a high-speed airflow** Alexandre Laroche, Alexandre Cuco, Norbert Karpen, Vittorio Vercillo, and Elmar Bonaccurso *Airbus, Central Research & Technology, Germany*
12:10	**The influence of droplets on electrohydrodynamic instabilities** Sebastian Dehe and Steffen Hardt *Technische Universität Darmstadt, Fachbereich Maschinenbau, Fachgebiet Nano- und Mikrofluidik, Germany*

Virtual Room 1

13:10-14:50	**Droplet Manipulation I**
13:10	**Keynote Lecture:** **Which contact angle to measure? Status in academia and industry. An industry perspective.** Thomas Willers *KRÜSS GmbH*
13:50	**Adaptive Wetting of Polydimethylsiloxane** William S. Y. Wong, Lukas Hauer, Abhinac Naga, Anke Kaltbeitzel, Phillip Baumli, Rüdiger Berger, Maria D'Acunzi, Doris Vollmer, Hans-Jürgen Butt *Physics at Interfaces, Max Planck Institue for Polymer Research, Germany*
14:10	**Spatio- topological regulation of multiscale dendritic patterns in respiratory droplets using vapor mediated interactions** Omkar Hegde[1], Abdur Rasheed[1], and Saptarshi Basu[1] *[1] Department of Mechanical Engineering, Indian Institute of Science, India*
14:30	**Particle encapsulation in aqueous ferrofluid droplets and sorting of non-empty droplets from empty droplets using a magnetic field** Utsab Banerjee, Sachin Kumar Jain, and Ashis Kumar Sen *Indian Institute of Technology, Madras, India*

Virtual Room 2

13:10-14:50	**Heat and Mass Transfer I**
13:10	**Keynote Lecture:** **Wetting and vapor dynamics under drops impacting on hot plates** Kirsten Harth[1, 2], S.-H. Lee[3], M. Rump[2], M. Kim[3], K. Fezzaa[4], M. A. J van Limbeek[2], J. H. Je[3] and D. Lohse[2,5] *[1] Institute of Physics, Otto von Guericke University, Magdeburg, Germany.* *[2] Physics of Fluids, Max Planck Center and University of Twente, Enschede, The Netherlands.* *[3] X-ray Imaging Center, Pohang University of Science and Technology, Pohang, Republic of Korea. [4] X-ray Science Division, Advanced Photon Source, Argonne National Laboratory, Argonne, USA.* *[5] Max Planck Institute for Dynamics and Self-Organization, Göttingen, Germany.*
13:50	**Humidity effect and pahse-separation in evaporating binary mixture drops** Claudia Esposito, Senthil KUmar Parimalanathan, Alexey Rednikov, Pierre Colinet *Transfers, Interfaces and Processes Laboratory, Belgium*
14:10	**Evaporating drops on fiber: how the fiber influences their lifetime?** Marie Ciroart[1,2], Christophe Poulard[1], Frédéric Restagno[1], François Boulogne[1] *[1] Université Pairs-Saclay, CNRS, France* *[2] Saint-Gobain Recherche, France*
14:30	**Droplet splashing of nanofluids: an experimental study** Yunus Tansu Aksoy[1], Erin Koos[2], and Maria Rosaria Vetrano[1] *[1] KU Leuven, Department of Mechanical Engineering, Division of Applied Mechanics and Energy Conversion (TME), Belgium* *[2] KU Leuven, Department of Chemical Engineering, Soft Matter, Rheology and Technology (SMaRT), Belgium*

Virtual Room 3

13:10-14:50 Drying of Dispersions I

13:10 **Keynote Lecture:**
Effect of resiudal water on drying of suspensions in non-polar solvents
Steffan B. Fischer and Erin Koos
KU Leuven, Soft Matter, Rheology and Technology, Department of Chemical Engineering, Belgium

13:50 **Arrested evaporation kinetics and electro-hydrodynamics of saline sessile droplets under applied electric field**
Abhishek Kaushal[1] and Purbarun Dhar[2]
[1]Department of Mechanical Engineering, Indian Institute of Technology Ropar, India
[2]Department of Mechanical Engineering, Indian Institute of Technology Kharagpur, India

14:10 **Crystallization from evaporating droplets: Salt creeping and self-lifting crystals**
Noushine Shahidzadeh, Herish Salim, Daniel Bonn
University of Amsterdam, Institute of Physics, soft matter group, The Netherlands

14:30 **Droplet-impact-induced liquid film dewetting on superhydrophobic surfaces**
Zhongyuan Ni[1], Fuqiang Chu[2], and Dongsheng Wen[1,3]
[1] School of Aeronautic Science and Engineering, Beihang University, Beijing, China;
[2] School of Energy and Environmental Engineering, University of Science and Technology Beijing, Beijing, China;
[3] School of Chemical and Process Engineering, University of Leeds, Leeds, UK.

Virtual Room 1

15:00-16:20 Droplet Manipulation II

15:00 **Droplet impact dynamics on hydrophobic and slippery liquid-infused porous surfaces controlled by propagating surface acoustic waves**
Mehdi H. Biroun[1], Luke Haworth[1], Prashant Agrawal[1], Bethany Orme[1], Glen McHale[2], Mohammad Rahmati[1], Hamdi Torun[1], Ben Bin Xu[1], Richard YongQing Fu[1]
[1] Faculty of Engineering and Environment, Northumbria University, UK
[2] Institute for Multiscale Thermofluids, School of Engineering, University of Edinburgh, UK

15:20 **How do chemical patterns affect equilibrium droplet shapes?**
Y. Wu[1], F. Wang[1], S. Ma[1], M. Selzer[1,2], and B. Nestler[1,2]
[1] Institute of Applied Materials-Computational Materials Science/Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany
[2] Institute of Digital Materials Science/Karlsruhe University of Applied Sciences, Karlsruhe, Germany

15:40 **Dynamic dewetting from complex liquid film shapes**
Carl V. Brown[1], Andrew M. J. Edwards[1], Élfego Ruiz-Gutiérrez[2], Michael I. Newton[1], Gary G. Wells[2], Rodrigo Ledesma-Aguilar[2], and Glen McHale[2]
[1] SOFT Group, School of Science and Technology, Nottingham Trent University, UK
[2] Institute for Multiscale Thermofluids, School of Engineering, University of Edinburgh, UK.

16:00 **Onset of droplet motion induced by superposition of shear flow and surface vibration**
Martin Rohde, Sebastian Burgmann, Beawer Barwari and Uwe Janoske
Chair of Fluid Mechanics, Bergische Universität Wuppertal, Germany

Virtual Room 2

15:00-16:20 Heat and Mass Transfer II

15:00 **Ultra-thin Robust and Thermally Conductive Vertical Graphene Lubricant- infused Surface for Continuous Dropwise Condensation**
Cheuk Wing Edmond Lam[1], Abinash Tripathy[1], Diana Davila Pineda[2], Matteo Donati[1], Athanasios Milionis[1], Chander Shekhar Sharma[3], and Dimos Poulikakos[1]
[1] Laboratory of Thermodynamics in Emerging Technologies, Department of Mechanical and Process Engineering, ETH Zurich, Sonneggstrasse 3, 8092 Zurich, Switzerland
[2] IBM Research, Saeumerstrasse 4, 8803 Rueschlikon, Switzerland
[3] Department of Mechanical Engineering, Indian Institute of Technology, Ropar, Nangal Road, Rupnagar, 140001 Punjab, India

15:20 **How wettability can optimize heat transfer for electronic systems.**
E. Gosselin[(1)], J.-C. Fernandez Toledano[(1)], S. Waeyenbergh[(1)], F. Clemens[(1)], Y. Canivez[(1)], L. Pietrasanta[(2)], M. Marengo[(2)] and J. De Coninck[(1)]
[1] Laboratoire de Physique des Surfaces et des Interfaces, University of Mons, 20, Place du Parc, 7000-Mons , Belgium
[2] Advanced Engineering Centre, University of Brighton, Brighton BN2 4GJ, U.K.

15:40 **Droplet stabilization by Thermal Marangoni**
Samira Shiri, Shayandev Sinha, Dieter A. Baumgartner, and Nate J. Cira
Rowland Institute, Harvard University, USA

16:00 **Evaporation of levitated droplets under radiative heating measured with Whispering Gallery Modes**
Javier Tello Marmolejo[1], Pablo Hernandez Munguia[1,2], Dag Hanstorp[1]
[1] Department of Physics, University of Gothenburg, Sweden
[2] Facultad de Ciencias, UNAM, Mexico

Virtual Room 3

15:00-16:20 Drying of Dispersions II

15:00 **Evaporative self-assembly of soft colloids in pendant and sessile drops: The formation of depletion zones**
Merin Jose and Dillip K. Satapathy
Soft Materials Laboratory, Department of Physics, IIT, India

15:20 **Contact-line deposits from multiple evaporating droplets**
A.W. Wray[1], P.S. Wray[2], B.R. Duffy[1], S.K. Wilson[1]
[1] Department of Mathematics and Statistics, University of Strathclyde, UK
[2] Drug Product Science and Technology, Bristol-Myers Squibb, ReedsLane, Moreton, Wirral, CH46 1QW, UK

15:40 **The effect of spatial variation of the evaporative flux on the deposition from an evaporating droplet**
H.-M.D'Ambrosio, S.K. Wilson, B.R.Duffy, A.W. Wray
Department of Mathematics and Statistics, University of Strathclyde, UK

16:00 **Mass transport in a drying drop of a charged colloidal dispersion: new insights using Mach-Zehnder interferometry**
Benjamin Sobac[1,3], Sam Dahaeck[1], Anne Bouchaudy[2] and Jean-Baptiste Salmon[2]
[1] TIPs Lab, université libre de Bruxelles, Belgium
[2] CNRS, Solvay, LOF, UMR 5258, Univ. Bordeaux, 33600 Pessac, France
[3] Current affiliation: CNRS: LFCR, UMR 5150, Univ, Pau&Pays Adour, 64600 Anglet, France

Virtual Room 1

16:30-17:50	**Droplet Manipulation III**
16:30	**Role of polarizability on interfacial tension and surface energy** Nusrat Ahmad[1], Aleksey Baldygin[1,2] Raymond Sanedrin[3], and Prashant R. Waghmare[1] *[1] interfacial Science and Surface Engineering Lab (iSSELab), Department of Mechanical Engineering, University of Alberta, Edmonton, Alberta, Canada* *[2]KRÜSS USA, 1020 Crews Rd, Mathews, NC 28105, United States,*
16:50	**Thermally regulated water drop self-propulsion using Laplace pressure manipulation** Mehran Abolghasemibizaki and Patricia Weisensee *Department of Mechanical Engineering & Materials Science, Washington University in St. Louis, MO, USA*
17:10	**Capillary dynamics of four-phase contact point while drop merging on hard and soft substrates** Peyman Rostami[1,2] and Günter K. Auernhammer[1,2] *[1] Leibniz Institute of Polymer Research Dresden, Germany* *[2] Max Planck Institute for Polymer Research, Mainz, Germany*
17:30	**Analysis of a Binary Sessile Droplet Evolution through Machine Learning Algorithms** Sahar Andalib, Kunihiko Taira, and H. Pirouz Kavehpour *Department of Mechanical and Aerospace Engineering, University of California, USA*

Virtual Room 2

16:30-17:50	**Heat and Mass Transfer III**
16:30	**Manipulating Programmable Droplets with Vapor Point-Sources** Giorgio Volpe *Department of Chemistry, University College London, 20 Gordon Street, WC1H 0AJ London, UK*
16:50	**Continuous Dropwise Condensation in Stagnation Flow Conditions** Ali Alshehri[1,2], Jonathan P- Rothstein[3], and H. Pirouz Kavehpour *[1] University of California, USA* *[2] King Fahd University of Petroleum and Minerals, Saudia Arabia* *[3] University of Massachusetts, USA*
17:10	**Coarsening droplet: hydrophilic slippery surface enabled coarsening effect for rapid water harvesting** Zongqi Guo[1], Lei Zhang[1], Deepak Monga[1], Howard A. Stone[2], and, Xianming Dai[1] *[1] Department of Mechanical Engineering, The University of Texas at Dallas, USA.* *[2] Department of Mechanical and Aerospace Engineering, Princeton University, USA.*
17:30	**Marangoni convection in a slender floating droplet** Alexander Nepomnyashchy, Ilya Simanovskii *Department of Mathematics, Technion - Israel Institute of Technology, Israel*

Virtual Room 3	
16:30-17:50	**Printing and Additive Manufacturing**
16:30	**Inkjet Printing on Superheated Surface** Mengsen Zhang, Zhiheng Zhao, Zhi Thao, und Lu Qiu *National Key Laboratory of Science and Technology on Areo-engine Areo-thermodynamics, School of Energy and Power Engineering, Beihang University, China*
16:50	**Influence of complex fluid properties on highly dynamic interfacial instabilities in gravure printing** Pauline Brumm[1,2], Yucan Zhu[1], Hans Martin Sauer[1,2] and Edgar Dörsam[1,2] *[1] Technical University of Darmstadt, Department of Mechanical Engineering, Institute of Printing Science and Technology, Magdalenenstr. 2, 64289 Darmstadt, Germany* *[2] Collaborative Research Center (CRC) 1194 – Interaction between Transport and Wetting Processes, Project C01, Germany*
17:10	**Inkjet printing without satellite drops** F. Marangon[1], W. K. Hsiao[1], G. Brenn[2], and C. Planchette[2] *[1] Research Center Pharmaceutical Engineering GmbH, A-8010 Graz, Austria* *[2] Institute of Fluid Mechanics and Heat Transfer, Graz University of Technology, A-8010 Graz, Austria*
17:30	**Magnetic field dependent solidification rate of a colloidal droplet** Abrar Ahmed, Marcel Glaser, and Prashant R Waghmare *interfacial Science and Surface Engineering Laboratory (iSSELab), Department of Mechanical Engineering, University of Alberta, Edmonton, Alberta T6G2G8, Canada*

18:00-18:15 **Awards and Close**