ILASS

2 - 4 September 2019

PARIS

29th **E**uropean **C**onference on **L**iquid **A**tomization and **S**pray **S**ystems

IFP Energies nouvelles · CNRS · SORBONNE UNIVERSITÉ · ilass EUROPE · ∂'Alembert Institut Jean Le Rond ∂'Alembert

Foreword

Stéphane Zaleski
Chairman of ILASS-Europe Paris 2019 conference

This booklet contains the **program** of the 29th Conference of the Institute for Liquid Atomization and Spray Systems, **ILASS-Europe Paris 2019**. Multiphase flow is everywhere in nature and technology. Liquid sprays play a particular role through their dynamics, delivering one of the most efficient manners of heat and mass transfer. Understanding their formation, through atomization, remains a major challenge of modern physics. Engineering makes special use of sprays and atomization, notably through liquid fuel combustion, spray cooling and agricultural sprays, but the natural sciences are not left behind, through processes as important as wave breaking in the ocean or the very peculiar physics of sneezing. Our choice of plenary lecturers reflects this fact, with Professor **Lydia Bourouiba** who performed particularly striking studies of the latter phenomena, and Professors **Raul Payri** and **Heinz Pitsch** who have performed extremely challenging works on the experimental, theoretical and numerical aspects of Atomization and Sprays.

At the time of writing, this program assembles **141 oral** presentations and **19 poster** presentations, making it one of the most successful ILASS-Europe conferences in history. This feat has been made possible by the kind patronage of the **ILASS-Europe committee** and its president, **Antonio Lozano**, by the contributions of our scientific committee listed on the following page and the **generous help** of the **reviewers** of the papers. These are, in addition to the members of the scientific committee, Michele Battistoni, Pascal Boulet, Lydia Bourouiba, Christian Chauveau, Michael Dodd, Fabien Evrard, Antonino Ferrante, Fabrice Fouchet, Benedetta Franzelli, Pierre Haldenwang, Jan Jedelsky, Jean-François Krawczynski, Corine Lacour, Thibaut Menard, Alessandro Montanaro, Vincent Moureau, Salvador Navarro-Martinez, Heinz Pitsch, Julien Réveillon, Nicolas Rimbert, Mehrzad Roudini, Karin Schlottke, Fabien Thiesset, Berend Van Wachem, Joao Marcelo Vedovoto, Katharina Warncke, Marc Wittner and Davide Zuzio.

We wish to extend special thanks for their support and hospitality to **Sorbonne Université** and its president, Jean Chambaz, to the **Faculty of Science** and its Dean, Stéphane Régnier and to **Institut Jean Le Rond ∂'Alembert** and its Director, Pierre-Lagrée. Special thanks need to go to our sponsor **IFP Energies nouvelles**, and for its support of the young researcher prize. We thank our **Industrial Partners** A2 Photonic Sensors, Dantec Dynamics, LaVision, Oxford Lasers Ltd and TSI for their participation and support.

Last but not least we wish to thank the **International Conference Center of Sorbonne Université** (CICSU) and its director, Christine Arrondeau. I personally wish to thank our local organizing committee for its ceaseless efforts, with a special mention to its **technical and administrative staff** who put to efficient use the long hours they devoted to the preparation of this event and to Institut Jean Le Rond ∂'Alembert for its generous provision of this support staff.

These remarks would not be complete without a warm **invitation** to participate in the **ILASS-Europe 2020** in Tel Aviv and **ICLASS 2021** in Edinburgh. We wish these conferences as much success as the Paris edition, and more.

ILASS 2019 Organising committee

Chairman : Stéphane Zaleski
Christophe Dumouchel Daniel Fuster Chaouki Habchi
Guillaume Legros Stéphane Popinet
Sandrine Bandeira Raphaël Leiba Simona Otarasanu

ILASS 2019 Scientific committee

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Dr.-Ing. Grazia Lamanna
Professor Dr. Antonio Lozano
Dr. Ana Moita
Dr.-Ing. habil Stéphane Popinet
Dr. Simona Tonini
Professor Dr. Stéphane Zaleski

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Useful Information

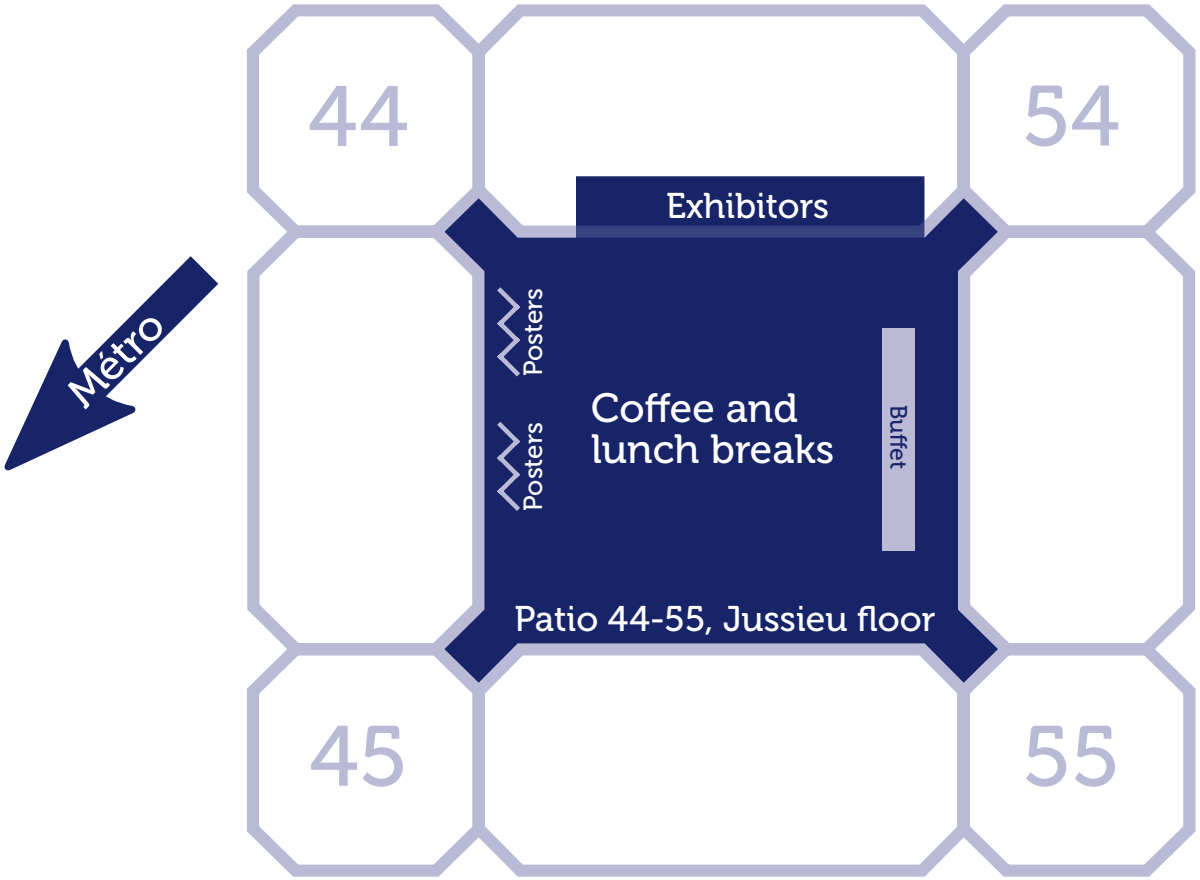
ILASS19 conference will take place on the Pierre and Marie Curie campus colloquially known as **Jussieu** campus due to the metro station name. It is the main science campus of Sorbonne University in Paris.

The campus address is:
Sorbonne University - Campus Pierre et Marie Curie
4, place Jussieu 75005 PARIS

Keynote Lectures will take place in Lecture hall 25.

Sessions will be held at the **International Conference Center** of the campus. It is situated on the first floor of the 44-54 wing.

Coffee breaks and lunches will be offered in the covered 44-55 patio at Jussieu floor.



The **poster session** will be held on **Tuesday 3rd September during lunch break** on the **Jussieu floor** of patio 44-55 but the poster will be available during the whole conference.

International Conference Center

1. 44-54 - 1st floor
   rooms 105, 107, 109 & 112
2. 44-45 - 1st floor
   room 108
3. Lecture hall 25
   Jussieu floor
4. Patio 44-55
   Coffee, lunch breaks
   & exhibitors
   Jussieu floor
5. Tipi
   Ice Breaker Party
   Jussieu floor

Sorbonne University provides access to the **eduroam** network for internet connection. If you don't have access to this network via your institution, please ask a login and password for wifi access to the registration desk.

The **conference gala dinner** will be held on the "Louisiane Belle" boat. The meeting point is at Austerlitz Quay – in front of the Austerlitz train station – at 7pm. The boat will then go for a ride on the Seine at 7:45pm.

In addition to the registration time on Sunday 1st September during the Ice Breaker party, the **registration** will be open from 8:00 to 18:00 on **Monday 2nd** at the Welcome Desk (room 44-54 112).

How to get to ILASS19 conference?

Pierre et Marie Curie Campus is located in Paris city centre and can be reached by multiple ways.

By plane

Both Orly (ORY) and Roissy - Charles de Gaulles (CDG) airports are good choices for travelling by plane to the conference.

From Orly Airport we recommend you to travel to the conference with Orlybus (bus reaching *Denfert-Rochereau* station, ~8€) or to use Orlyval (automatic shuttle) and the RER line B until *Saint-Michel - Notre-Dame* station (~12€).

From CDG airport, use RER line B to reach Paris city centre (~10€).

By train

The campus is close to two main train stations: *Gare de Lyon* (20 minutes walk) and *Gare d'Austerlitz* (10 minutes walk). All the other inner city train stations are 30 minutes away from the campus with public transportation.

Last steps to the campus

The conference holding campus is connected to the metro lines 7 and 10 but also to bus lines 63, 67, 86 and 89.

Timetable

Ice Breaker Party and Sunday registration :
Tipi (patio 32-43, Jussieu floor)
Coffee breaks and Lunch :
Patio 44-55, Jussieu floor
Gala Dinner :
Louisiane Belle, Austerlitz Quay (Quai d'Austerlitz)

- Room 44-54 105
- Room 44-54 107
- Room 44-54 109
- Lecture hall 25

Sunday 1th

16:30 20:00	Registration
17:00 20:00	Ice Breaker Party - Opening Gala

Monday 2nd

08:30 09:00	Welcoming talks – *Jean Chambaz (President of Sorbonne University) and Stéphane Zaleski (Conference chairman)*		
09:00 09:45	Keynote Lecture - Experimental and numerical study of primary atomization – *Raul Payri*		
09:50 10:50	Atomizers I	Droplet - Numerical I - ESR	Droplet - Experimental I
10:50 11:15	Coffee break		
11:15 12:55	Atomizers II - ESR	Droplet - Numerical II - ESR	Droplet - Experimental II - ESR
12:55 14:15	Lunch		
14:15 15:55	Atomizers III	Droplet - Numerical III - ESR	Droplet - Experimental III
15:55 16:20	Coffee break		
16:20 18:00	Atomizers IV	Droplet - Numerical IV	Droplet - Experimental IV
18:15 19:30	ILASS-EUROPE Annual General Meeting - Room 44-45 108		

Additional meeting:
Monday 2nd (1pm to 3:30pm): ILASS-EUROPE ACM - Annual Committee and A&S Editorial Board Meeting - Room Paul Germain

Tuesday 3rd

09:00 09:45	Keynote Lecture - Unsteady Fragmentation – *Lydia Bourouiba, Massachusetts Institute of Technology, Cambridge, USA*		
09:50 10:50	Atomizers V	Automotive I - Internal Flow	Internal flow I
10:50 11:15	Coffee break		
11:15 12:35	Atomizers VI	Droplet - Numerical V	Droplet - Experimental V
12:55 14:15	Lunch - Poster Session		
14:15 15:55	Combustion I - ESR	Automotive II - ESR	Experimental techniques I - ESR
15:55 16:20	Coffee break		
16:20 17:40	Atomizers VII	Droplet - Numerical VI	Atmospheric, agricultural and medical sprays
19:00 23:00	Gala Dinner		

Wednesday 4th

09:00 09:45	Keynote Lecture - From Fuel to Power (and Emissions): A numerical journey though automotive injection and combustion systems – *Heinz Pitsch, Institut für Technische Verbrennung, RWTH Aachen University, Aachen, Germany*		
09:50 10:50	Atomizers VIII	Droplet - Numerical VII	Experimental techniques II
10:50 11:15	Coffee break		
11:15 12:55	Automotive III	Droplet - Numerical VIII	Exibitors presentations
12:55 14:15	Lunch		
14:15 15:55	Combustion II	Atomizers IX	Automotive IV
15:55 16:20	Coffee break		
16:20 17:40		Atomizers X	Automotive V

Additional meeting:

Tuesday 3rd (17:00 - 18:30) Chairmans' Award Committee - Award for Best Presentation/Paper (Room Paul Germain)

Keynote Lectures

Monday 2nd September 2019

Raul Payri – Experimental and numerical study of primary atomization
CMT Motores Termicos
Universidad de Valencia, Valencia, Spain

Lecture hall 25

The analysis of sprays is becoming more and more challenging during the last decades. On the experimental side, OEMs are pushing towards state-of-the-art injection condition, with pressures reaching thousands of bars. On the other hand, the surge of Direct Numerical Simulation (DNS) allows to increase every year the complexity of the flow studied, until a point where atomizing sprays are becoming a feasible simulation. In this context, Prof. Payri will discuss the latest approach used within his research group for analyzing sprays, where Near Field microscopy analysis are coupled with DNS, in order to improve the knowledge on turbulence, atomization and comparability between experiments and simulations.

Tuesday 3rd September 2019

Lydia Bourouiba – Unsteady Fragmentation
Massachusetts Institute of Technology, Cambridge, USA

Lecture hall 25

Understanding secondary droplet formation from fluid fragmentation is critical for understanding or controlling a large class of industrial, environmental, and healthcare processes involving spray. Despite the complexity and diversity of modes of unsteady fluid fragmentation into secondary droplets, universality across geometry and fluid systems emerges. We discuss results from our joint experimental and theoretical investigations elucidating the role of unsteadiness in shaping a ubiquitous, yet neglected class of fluid fragmentation problems. In particular, we revisit fundamental assumptions of hydrodynamic instability and reveal how unsteadiness and multi-scale dynamics couple to select the sizes and speeds of secondary droplets generated.

Heinz Pitsch – From Fuel to Power (and Emissions): A numerical journey though automotive injection and combustion systems
Institut für Technische Verbrennung, RWTH Aachen University, Aachen, Germany

Lecture hall 25

E-fuels are chemical energy carriers made from renewable electricity and carbon dioxide. They can provide energy storage to cope with the volatility of a renewable energy market and be used as clean and sustainable fuels for mobility and transport. The group of oxymethylene ethers (OMEx) has great potential in this regard. To use these fuels, injection and combustion systems have to be re-designed and optimized, and numerical simulations are an essential element in this process. Different relevant aspects will be discussed in this presentation including simulations of nozzle internal flows and their effect on wall film formation and atomization and the resulting influence on mixing and ignition. Reduced order models which are used for fuel design by connecting fuel structure, properties, and injection with pollutant formation will also be described.

Session Timetables

Monday 2nd September 2019

09:50	**Session : Atomizers I**	44-54 105
10:50	Chair : Chaouki Habchi	
09:50	**Large Eddy Simulation of Flashing Cryogenic Liquid with a Compressible Volume of Fluid Solver** **Gärtner Jan Wilhelm**[1], Rees Andreas[2], Kronenburg Andreas[1], Sender Joachim[2], Oschwald Michael[2], Loureiro Daniel[1] *[1]Institut für Technische Verbrennung, Universität Stuttgart (Germany), [2]Institute of Space Propulsion, German Aerospace Center (DLR) (Germany)*	246753
10:10	**CFD simulation of pseudo-diesel injections at high-load conditions employing the PC-SAFT EoS and VLE calculations** **Rodriguez Carlos**[1], Rokni Houman[2, 1], Koukouvinis Phoevos[1], Gupta Ashutosh[3], Gavaises Manolis[1] *[1]City University London (United Kingdom), [2]Afton Chemical Ltd. (United Kingdom), [3]Afton Chemical Corp. (United States)*	247349
10:30	**A comparative study of DNS of airblast atomization using CLSMOF and CLSVOF methods** **Asuri Mukundan Anirudh**[1], Ménard Thibaut[2], Berlemont Alain[1], Brändle De Motta Jorge Cesar[3] *[1]Complexe de recherche interprofessionnel en aérothermochimie (France), [2]Complexe de recherche interprofessionnel en aérothermochimie (France), [3]Complexe de recherche interprofessionnel en aérothermochimie (France)*	244679

09:50	**Session : Droplet - Numerical I - ESR**	44-54 107
10:50	Chair : Stéphane Zaleski & Daniel Fuster	
09:50	**NUMERICAL MODELLING OF THE TRANSITION FROM A CLOSED WALL FILM TO DISCRETE LIQUID RIVULETS** **Seck Adrian**[1], Weigand Bernhard[1] *[1]Institut für Thermodynamik der Luft- und Raumfahrt, Universität Stuttgart (ITLR) (Germany)*	245799
10:10	**Impact of nanodrops on smooth surfaces with various wettabilities: splash phenomena and film dewetting** **Braeckeveldt Bertrand**[1], Marengo Marco[2], De Coninck Joel[1] *[1]Laboratory of Physics of Surfaces and Interfaces, Department of Physics, University of Mons (Belgium), [2]School of Computing, Engineering and Mathematics (United Kingdom)*	244585
10:30	**Numerical investigation of high-speed droplet impact using a multi-scale two-fluid approach** **Nykteri Georgia**[1], Koukouvinis Phoevos[1], Gonzalez Avila Silvestre Roberto[2], Ohl Claus-Dieter[2], Gavaises Manolis[1] *[1]City, University of London (United Kingdom), [2]Otto-von-Guericke University Magdeburg (Germany)*	247434

09:50	**Session : Droplet - Experimental I**	44-54 109
10:50	Chair : Grazia. Lamanna	
09:50	**Liquid/Liquid encapsulation: effects of wettability and miscibility** **Baumgartner David**[1], Benez Pierre[1], Brenn Günter[1], Planchette Carole[1] *[1]Technische Universität Graz (Austria)*	244913
10:10	**On the effect of a thin liquid film on the crown propagation in drop impact studies** **Lamanna Grazia**[1], Geppert Anne[1], Weigand Bernhard[1] *[1]University of Stuttgart, Institute of Aerospace Thermodynamics (Germany)*	243794
10:30	**Satellite drops formation during piezo-based inkjet printing** Marangon Francesco[1], Hsiao Wen Kai[1], Brenn Günter[2], **Planchette Carole**[2] *[1]RCPE (Austria), [2]Technische Universität Graz (Austria)*	244918

11:15	**Session : Atomizers II - ESR**	44-54 105
12:55	Chair : Simona Tonini & Günter Brenn	
11:15	**Multi-scale spray atomization model** **Anez Javier**[1], Réveillon Julien[2], Demoulin F.x[3], Duret Benjamin[1], Dabonneville Felix[4] *[1]Complexe de recherche interprofessionnel en aérothermochimie (France), [2]COmplexe de Recherche Interprofessionnel en Aérothermochimie (France), [3]COmplexe de Recherche Interprofessionnel en Aérothermochimie (France), [4]COMSOL (France)*	247060
11:35	**Numerical and experimental investigation of pressure-swirl nozzles produced by additive manufacturing** **Lüscher Patrick**[1], Bochsler Janine[1], Weiss Daniel A.[1], Huber Marc[2], Löffel Kaspar[2], Van Nieulande René[3], Duda Tom[4] *[1]Institute of Thermal and Fluid Engineering, FHNW (Switzerland), [2]Institute of Product and Production Engineering, FHNW (Switzerland), [3]Emerson Automation Solutions (Netherlands), [4]Emerson Automation Solutions (Switzerland)*	246268
11:55	**Simultaneous microscopic investigation of nozzle internal flow and primary breakup using a transparent high-pressure nozzle** **Kirsch Valeri**[1], Schumacher Leif[2], Bieber Malte[2], Kneer Reinhold[1], Reddemann Manuel Armin[1] *[1]Institute of Heat and Mass Transfer RWTH Aachen University (Germany), [2]Institute of Heat- and Mass Transfer (Germany)*	244727
12:15	**Numerical Simulation of Internal Flashing in a GDI Injector Nozzle** **Mandumpala Devassy Bejoy**[1], Benković Dajana[2], Petranovic Zvonimir[1], Edelbauer Wilfried[3], Vujanovic Milan[4] *[1]Development Engineer - Multiphase Flow (Austria), [2]University of Zagreb (Croatia), [3]Senior Project Leader - Multiphase Flow (Austria), [4]Assistant Professor (Croatia)*	247241
12:35	**Effect of Pressure Swirl Atomizer Geometry on Spray Performance** Abd El-Rahman Ibrahim[1], Gad Hamada[1], **Baraya Eslam**[1], Farag Tharwat[1] *[1]Mechanical Power Engineering Department. Faculty of Engineering, Port Said University, Port Said (Egypt)*	244097

11:15	**Session : Droplet - Numerical II - ESR**	44-54 107
12:55	Chair : Sergei Sazhin & Lucio Araneo	
11:15	**An unstructured conservative level-set algorithm coupled with dynamic mesh adaptation for the computation of liquid-gas flows** **Janodet Romain**[1], Vaudor Geoffroy[1], Lartigue Ghislain[1], Benard Pierre[1], Moureau Vincent[1], Mercier Renaud[2] *[1]CORIA (France), [2]SAFRAN Tech (France)*	247427
11:35	**Numerical analysis of droplets subcritical evaporation and transcritical mixing using a tabulated real-fluid thermodynamics method coupled to a homogeneous equilibrium model** Yi Ping[1, 2], **Jafari Sajad**[1, 2], Yang Songzhi[1, 2], Habchi Chaouki[1, 2] *[1]Institut Carnot IFPEN Transports Energies (France), [2]IFP Energies nouvelles (France)*	234493
11:55	**Liquid jet and droplet deformation induced by non-uniform acoustic radiation pressure distribution** **Herrera Leclerc Rafael**[1], Blaisot Jean-Bernard[1], Richard Christine[2], Baillot Françoise[1] *[1]Complexe de recherche interprofessionnel en aérothermochimie (France), [2]Laboratoire de Mathématiques Raphaël Salem (France)*	247556
12:15	**From droplets to particles: Transformation criteria** **Cheron Victor**[1], Brändle De Motta Jorge Cesar[1], Vaudor Geoffroy[1], Ménard Thibaut[1], Berlemont Alain[1] *[1]Complexe de recherche interprofessionnel en aérothermochimie (France)*	244271
12:35	**A hybrid Eulerian-Lagrangian approach for simulating liquid sprays** **Evrard Fabien**[1], Denner Fabian[1], Van Wachem Berend[1] *[1]Otto-von-Guericke-Universität Magdeburg (Germany)*	243747

11:15	**Session : Droplet - Experimental II - ESR**	44-54 109
12:55	Chair : Ana Moita & Antonio Lozano	
11:15	**Study of supercooled water droplet chain evolving in a cold environment: Experimental and modelling study** **Stiti Mehdi**[1], Labergue Alexandre[1], Castanet Guillaume[1], Lemoine Fabrice[1] *[1]Laboratoire dÉnergétique et de Mécanique Théorique Appliquée (France)*	244182
11:35	**Weakly nonlinear instability of a viscoelastic liquid jet** **Cottier Louise**[1], Brenn Günter[2], Renoult Marie-Charlotte[1] *[1]INSA Rouen Normandie (France), [2]Graz University of Technology, Institute of Fluid Mechanics and Heat Transfer (Austria)*	247452
11:55	**Insights on Bubbling Formation after Drop Impact on Thin Liquid Films** **Ribeiro Daniela**[1, 2], Panão Miguel[3], Silva André[1, 2], Barata Jorge[1, 2] *[1]LAETA/UBI_AEROG-Aeronautics and Astronautics Research Center (Portugal), [2]University of Beira Interior [Portugal] (Portugal), [3]Faculty of Sciences and Technology [Coimbra] (Portugal)*	245741
12:15	**LIF-thermometry with MDR-enhanced energy transfer for micro-droplet temperature imaging for varying ambient pressures** **Schumacher Leif**[1], Palmer Johannes[1], Kirsch Valeri[2], Reddemann Manuel A.[1], Kneer Reinhold[1] *[1]Institute of Heat and Mass Transfer, RWTH Aachen University (Germany), [2]Institute of Heat and Mass Transfer, RWTH Aachen University (Germany)*	244990
12:35	**Spray-drying of oil-in-water emulsions: oil droplet break-up during the atomization by pressure-swirl atomizers** **Taboada Martha**[1], Gaukel Volker[1], Karbstein Heike P.[1] *[1]Karlsruhe Institute of Technology, Institute of Process Engineering in Life Sciences, Chair of Food Process Engineering (Germany)*	244601

14:15 **15:55**	**Session : Atomizers III** Chair : Francois-Xavier Demoulin & Fabien Evrard	44-54 105
14:15	**Internal flow characteristics in Spill-return pressure-swirl atomizers** **Maly Milan**[1], Sapik Marcel[1], Cejpek Ondrej[1], Lizal Frantisek[1], Ondracek Vladimir[2], Jicha Miroslav[1], Jedelsky Jan[1] *[1]Brno University of Technology (Czech Republic), [2]PBS Velka Bites, a. s. (Czech Republic)*	247487
14:35	**Atomization characteristics of a compact disc-type ultrasonic atomizer unit** **J T Nithin**[1], M Lokesh[1], N Balasubramanian[1], T N C Anand[1] *[1]Indian Institute of Technology Madras (India)*	247377
14:55	**Droplet Sizing of electrospray based on Interferometric Laser Imaging** **Kebriaee Azadeh**[1], Rezaei Hasan[1] *[1]Sharif University of Technology (Iran)*	246912
15:15	**Experimental study of the influence of the boundary conditions on the atomization process in an unconfined atmospheric burner** **Payri Raul**[1], Salvador F. Javier[1], Gimeno Jaime[1], Cardona Santiago[1] *[1]Universitat Politecnica de Valencia (Spain)*	247390
15:35	**Inert Gas Metal Atomization Using a Laval Nozzle, Preheated Gas and Radial Melt Injection** **Chaves Humberto**[1] *[1]TU-Bergakademie Freiberg, Institut für Mechanik und Fluiddynamik (Germany)*	247473

14:15	**Session : Droplet - Numerical III - ESR**	44-54 107
15:55	Chair : Fabien Thiesset & Stéphane Popinet	
14:15	**Numerical simulation of primary breakup of nonturbulent liquid jets in high-viscous gaseous crossflows** **Hashemi Mohammad**[1], Jadidi Mehdi[1], Dolatabadi Ali[1] *[1]Department of Mechanical, Industrial and Aerospace Engineering, Concordia University (Canada)*	244528
14:35	**Comparison of mapped and synthetic inflow boundary conditions in Direct Numerical Simulation of sprays** Payri Raul[1], Salvador F. Javier[1], Gimeno Jaime[1], **Crialesi-Esposito Marco**[1] *[1]Universitat Politecnica de Valencia (Spain)*	244085
14:55	**Simulation of light scattering and imaging of spray systems using the open-access software ?Multi-Scattering?** **Jönsson Joakim**[1], Berrocal Edouard[1] *[1]Division of Combustion Physics, Department of Physics, Lund University (Sweden)*	246310
15:15	**On ethanol droplet evaporation in the presence of background fuel vapor** **Pinheiro Abgail Paula**[1], Vedovoto João Marcelo[1], Da Silveira Neto Aristeu[1], Van Wachem Berend[2] *[1]Federal University of Uberlândia (Brazil), [2]Otto-von-Guericke-Universität Magdeburg (Germany)*	247566
15:35	**Experimental and numerical study of a high-pressure waterjet** **Urazmetov Oleg**[1], Cadet Marcel[2], Teutsch Roman[2], Schindler Christian[3], Antonyuk Sergiy[4] *[1]Institute of Particle Process Engineering, Technische Universität Kaiserslautern (Germany), [2]Technische Universität Kaiserslautern, Institute for Mechanical and Automotive Design (Germany), [3]RWTH Aachen University, Chair and Institute of Rail Vehicles and Transport Systems (Germany), [4]Institute of Particle Process Engineering, Technische Universität Kaiserslautern (Germany)*	247545

14:15	**Session : Droplet - Experimental III**	44-54 109
15:55	Chair : Louis-Marie Malbec & Christophe Dumouchel	
14:15	**Breakup of a surfactant-laden drop in a continuous air jet stream** **Joshi Sumit**[1], Ranade Sushrut[1], T N C Anand[1] *[1]Indian Institute of Technology Madras (India)*	244532
14:35	**Visualization of Ethyl Alcohol Droplet Breakup with Large Deformations in a Continuously Accelerated Flow Field** Sor Suthyvann[1], **Garcia-Magariño Adelaida**[1], Lopez Pablo[2], Velazquez Angel[2] *[1]Instituto Nacional de Técnica Aeroespacial (Spain), [2]Universidad Politécnica de Madrid (Spain)*	247582
14:55	**Modelling the occurrence of bouncing in droplet collision for different liquids** Sui Maohong[1], Sommerfeld Martin[2], Pasternak Lars[2] *[1]Otto-von-Guericke-Universität Magdeburg, Multiphase Flow Systems, Institute for Process Engineering (Germany), [2]Otto-von-Guericke-University Magdeburg, Multiphase Flow Systems, Institute for Process Engineering (Germany)*	244715
15:15	**Investigation of Velocity and Droplet Size Distributions of Flash Boiling LN2-Jets With Phase Doppler Anemometry** **Rees Andreas**[1], Araneo Lucio[2], Salzmann Heiko[1], Kurudzija Eldin[1], Suslov Dmitry[1], Lamanna Grazia[3], Sender Joachim[1], Oschwald Michael[1] *[1]Institute of Space Propulsion, German Aerospace Center (DLR) (Germany), [2]Politecnico di Milano [Milan] (Italy), [3]Institute of Aerospace Thermodynamics, University of Stuttgart (Germany)*	286174
15:35	**The Effect of Impact Angle on the Secondary Droplets at High Impact Velocity** **Burzynski David A.**[1], Bansmer Stephan E.[1] *[1]Technische Universität Braunschweig, Institut für Strömungsmechanik (Germany)*	244783

16:20	**Session : Atomizers IV**	44-54 105
18:00	Chair : Humberto Chaves & Mark Linne	
16:20	**Velocity Measurement of High-Pressure Gasoline Direct Injections in the Primary Atomization Region on Flash Boiling Conditions** Gröger Karsten[1], **Kawaharada Noritsune**[1], Klippenstein Andreas[1], Dinkelacker Friedrich[1] *[1]Institute of Technical Combustion, Leibniz University Hannover (Germany)*	244541
16:40	**Electrification mechanism and constituted near-electrode layers inside electrostatic atomizers** Kashir Babak[1], Perri Anthony E.[1], Yarin Alexander L.[1], **Mashayek Farzad**[1] *[1]Department of Mechanical and Industrial Engineering, University of Illinois at Chicago (United States)*	242261
17:00	**Dynamics of liquid sheet breakup due to perforations in impingement atomization** **Etteneni Nikhil Kumar**[1], Avulapati Madan Mohan[1] *[1]Indian Institute of Technology Tirupati (India)*	243990
17:20	**Two-Fluid Atomization and Spray Impact** **Strob Ramona**[1], Babaria Tejas[1], Schaldach Gerhard[1], Thommes Markus[1] *[1]TU Dortmund University, Laboratory of Solids Process Engineering (Germany)*	246831
17:40	**A 3-Phase Solver for the Simulation of Internal Nozzle Cavitating Flows in Fuel-Injectors using OpenFOAM** Giussani Filippo[1], Piscaglia Federico[1], **Helie Jérome**[2], M. Aithal Shashikant[3] *[1]Politecnico di Milano, Dept. of Aerospace Science and Technology (DAER) (Italy), [2]Contientnal Automotive France, Advanced System Engineering, Toulouse (France), [3]Argonne national laboratory (United States)*	247410

16:20 **18:00**	**Session : Droplet - Numerical IV** Chair : Vincent Moureau & Katharina Warncke	44-54 107
16:20	**A new theoretical framework for characterizing the transport of liquid in turbulent two-phase flows** **Thiesset Fabien**[1], Ménard Thibaut[1], Dumouchel Christophe[1] *[1]Complexe de recherche interprofessionnel en aérothermochimie (France)*	247480
16:40	**Selected Results of the Collaborative Research Center ?Droplet Dynamics under Extreme Ambient Conditions? SFB-TRR 75** **Schulte Kathrin**[1], Weigand Bernhard[1], Tropea Cameron[2] *[1]Institute of Aerospace Thermodynamics, University of Stuttgart (Germany), [2]Institute of Fluid Mechanics and Aerodynamics, Technische Universität Darmstadt (Germany)*	236417
17:00	**The International Research Training Group "Droplet Interaction Technologies" (DROPIT): Selected Results** **Weigand Bernhard**[1], Cossali Gianpietro Elvio[2], Lamanna Grazia[3], Tonini Simona[2] *[1]Institut für Thermodynamik der Luft- und Raumfahrt (Germany), [2]University of Bergamo (Italy), [3]Institut für Thermodynamik der Luft- und Raumfahrt, Universität Stuttgart (Germany)*	242293
17:20	**Droplet Evaporation under High Pressure and Temperature Conditions: A Comparison of Experimental Estimations and Direct Numerical Simulations** **Steinhausen Christoph**[1], Reutzsch Jonathan[1], Lamanna Grazia[1], Weigand Bernard[1], Stierle Rolf[2], Gross Joachim[2], Preusche Andreas[3], Dreizler Andreas[3] *[1]Institute of Aerospace Thermodynamics, University of Stuttgart (Germany), [2]Institute for Thermodynamics and Thermal Process Engineering, University of Stuttgart (Germany), [3]Institute of Reactive Flows and Diagnostics, Technical University of Darmstadt (Germany)*	244627
17:40	**Direct Numerical Simulations of Oscillating Liquid Droplets: a Method to Extract Shape Characteristics** **Reutzsch Jonathan**[1], Varma Raja Kochanattu Gautham[2], Ibach Matthias[1], Kieffer-Roth Corine[1], Tonini Simona[2], Cossali Gianpietro Elvio[2], Weigand Bernhard[1] *[1]Institut für Thermodynamik der Luft- und Raumfahrt, Universität Stuttgart (ITLR) (Germany), [2]University of Bergamo (Italy)*	244795

16:20	**Session : Droplet - Experimental IV**	44-54 109
18:00	Chair : Cameron Tropea & Guillaume Castanet	
16:20	**On the behaviour of urea on a heated wall. A revealed Leidenfrost-like temperature during urea thermolysis.** **Malbec Louis-Marie**[1, 2], Habchi Chaouki[2, 1], Bohbot Julien[1, 2], Drennan Scott[3], Quan Shaoping[3], Maciejewski Dan[3] *[1]Institut Carnot IFPEN Transports Energie (France), [2]IFP Energies nouvelles (France), [3]Convergent Science, Inc. (United States)*	247547
16:40	**Comparison between splash of a droplet in isolation and in a spray impact** **Kalantari Davood**[1], Tropea Cameron[2] *[1]University of SANRU (Iran), [2]Technische Universität Darmstadt (Germany)*	251268
17:00	**Drop impact in the regime of film boiling : transient evolution of the heat transfer and the vapor film thickness** Castanet Guillaume[1], Chaze William[1], **Caballina Ophélie**[1], Collignon Romain[1], Lemoine Fabrice[1] *[1]Laboratoire d'Énergétique et de Mécanique Théorique Appliquée (France)*	247542
17:20	**Time resolved thermographic characterization of heat transfer and fluid dynamics in nanofluid droplets for cooling applications** Matos Fabricio[1], Liang Qiu[1], Pontes Pedro[1], **Moita Ana**[1], Ribeiro Ana Paula[1], Moreira António[1] *[1]Instituto Superior Tecnico Universidade de Lisboa (Portugal)*	247334
17:40	**A study of a single droplet impinging onto a sloped surface: Jet-Fuel and Biofuel mixtures** **Ferrão Inês**[1, 2], Barata Jorge[1, 2], Silva André[1, 2] *[1]LAETA/UBI_AEROG-Aeronautics and Astronautics Research Center (Portugal), [2]University of Beira Interior [Portugal] (Portugal)*	245065

09:50	**Session : Atomizers V**	44-54 105
10:50	Chair : Heinz Pitsch	
09:50	**LP-model for ECN Spray A penetration** **Kolodnytska Ruslana**[1], Emekwuru Nwabueze[2] *[1]Zhytomyr State Technological University (Ukraine), [2]Coventry University (United Kingdom)*	247571
10:10	**Multi-scale simulation of the atomization of a liquid jet in cross-flow in the presence of an acoustic perturbation** **Zuzio Davide**[1], Thuillet Swann[1], Rouzaud Olivier[1], Senoner Jean-Mathieu[1], Laurent Claire[1], Gajan Pierre[1] *[1]ONERA/DMPE, Université de Toulouse (France)*	247510
10:30	**New insights in the role of turbulence for simulating primary breakup of prefilming airblast atomization** **Warncke Katharina**[1], Sadiki Amsini[1], Janicka Johannes[1] *[1]Department of Energy and Power Plant Technology, Technische Universität Darmstadt (Germany)*	244682

09:50	**Session : Automotive I - Internal Flow**	44-54 107
10:50	Chair : Manolis Gavaises	
09:50	**Experimental cavitation and spray measurement in real-size nozzles with high-resolution neutron imaging** **Thimm Lennart**[1], Trtik Pavel[2], Hansen Hauke[1], Jollet Sven[3], Dinkelacker Friedrich[1] *[1]Leibniz Universität Hannover [Hannover] (Germany), [2]Paul Scherrer Institut (Switzerland), [3]Paul Scherrer Institut (Switzerland)*	235546
10:10	**Features of Internal Flow and Spray for a Multi-Hole Diesel Fuel Injector Tip** **Fitzgerald Russell**[1], Della Vecchia Giovanni[2], Peraza Jesús[3], Martin Glen[1] *[1]Caterpillar Inc. (United States), [2]Caterpillar Peterborough (United Kingdom), [3]CMT-Motores Térmicos (Spain)*	246151
10:30	**CFD simulations of diesel multi-hole injector internal flow and spray jet development at increasing chamber pressure and temperature conditions** **Chasos Charalambos**[1] *[1]Frederick University (Cyprus)*	244721

09:50 – 10:50 Session : Internal flow I

44-54 109

Chair : Raul Payri

09:50 Linking cavitation collapse energy with the erosion incubation period

251240

Magnotti Gina M.[1], Battistoni Michele[2], Saha Kaushik[3], Som Sibendu[1]

[1]Argonne National Laboratory (United States), [2]Università degli Studi di Perugia (Italy), [3]Indian Institute of Technology Delhi (India)

10:10 Adaptive mesh interface capturing for cavitating compressible flows using Discontinuous Galerkin discretisation.

247086

Papoutsakis Andreas[1], Koukouvinis Phoevos[1], Gavaises Manolis[1]

[1]City University London (United Kingdom)

10:30 Modelling of Liquid Oxygen Two-Phase Flow Expansion At Sub- And Supercritical Pressure Conditions

247279

Lyras Theodoros[1], Karathanassis Ioannis K.[2, 1], Koukouvinis Phoevos[2, 1], Gavaises Manolis[1]

[1]City University London (United Kingdom), [2]Combustion Research Facility, Sandia National Laboratories (United States)

11:15 – 12:55 Session : Atomizers VI

44-54 105

Chair : Joachim Domnick & Qiaoyan Ye

11:15 Breakup simulation of a viscous liquid using a coaxial high-speed gas jet

244749

Ye Qiaoyan[1], Shen Bo[2], Tiedje Oliver[1]

[1]Fraunhofer Institute for Manufacturing Engineering and Automation (Germany), [2]University of Applied Sciences (Germany)

11:35 Simulation of the primary breakup of non-Newtonian liquids at a high-speed rotary bell atomizer for spray painting processes using a VOF-Lagrangian Hybrid Model

247319

Shen Bo[1], **Ye Qiaoyan**[2], Tiedje Oliver[2], Domnick Joachim[1]

[1]University of Applied Sciences Esslingen (Germany), [2]Fraunhofer Institute for Manufacturing Engineering and Automation (Germany)

11:55 Prediction of the hydrodynamic characteristics of 2,5-dimethylfuran fuel sprays using the moments of the droplet size distribution

247025

Emekwuru Nwabueze[1], Wang Chongming[1]

[1]Coventry University (United Kingdom)

12:15 Numerical and Experimental Investigations of Primary Breakup of High-Viscous Fluid at Elevated Pressure

245486

Zhang Feichi[1], Zirwes Thorsten[2], Wachter Simon[3], Jakobs Tobias[3], Habisreuther Peter[1], Zarzalis Nikolaos[1], Trimis Dimosthenis[1], Kolb Thomas[3]

[1]Karlsruhe Institute of Technology, Engler-Bunte-Institute/Division for Combustion Technology (Germany), [2]Karlsruhe Institute of Technology, Steinbuch Centre for Computing (Germany), [3]Karlsruhe Institute of Technology, Institute for Technical Chemistry (Germany)

12:35 Comparison of spray quality for two different flow configurations: Central liquid jet versus annular liquid sheet

241573

Wachter Simon[1], Jakobs Tobias[1], Kolb Thomas[1, 2]

[1]Karlsruhe Institute of Technology, Institute for Technical Chemistry (Germany), [2]Karlsruhe Institute of Technology, Engler-Bunte-Institute (Germany)

11:15	**Session : Droplet - Numerical V**	44-54 107
12:35	Chair : Daniel Fuster & Daniel A. Weiss	
11:15	**A novel consistent momentum-conserving subgrid method for high density-ratio liquid-gas flows using the Volume-of-Fluid method for staggered grids** Zaleski Stéphane[1], Fuster Daniel[2], **Pal Sagar**[3] *[1]Institut Jean Le Rond d'Alembert (France), [2]CNRS (UMR 7190), Univ. Pierre et Marie Curie, Institut Jean le Rond d'Alembert (France), [3]CNRS (UMR 7190), Univ. Pierre et Marie Curie, Institut Jean le Rond d'Alembert (France)*	233738
11:35	**Weakly nonlinear shape oscillations of a viscous drop** Zrnic Dino[1], Plohl Gregor[1], **Brenn Günter**[1] *[1]Institute of Fluid Mechanics and Heat Transfer, Graz University of Technology (Austria)*	243554
11:55	**Measurement of colloid concentration in drops using the time-shift technique** **Li Lingxi**[1], Li Can[2], Rosenkranz Simon[3], Schäfer Walter[3], Tropea Cameron[4] *[1]Institute of Fluid Mechanics and Aerodynamics, Technische Universität Darmstadt (Germany), [2]Zhejiang University (China), [3]AOM-Systems GmbH (Germany), [4]Institute of Fluid Mechanics and Aerodynamics, Technische Universität Darmstadt (Germany)*	268603
12:15	**Liquid spray injection in the expansion volume of a CO2 high voltage circuit breaker** **Errante Paolo**[1, 2], Corre Christophe[2], Makhlouf Samir[1] *[1]SuperGrid Institute (France), [2]Laboratoire de Mécanique des Fluides et d'Acoustique (France)*	243648

11:15	**Session : Droplet - Experimental V**	44-54 109
12:55	Chair : Edouard Berrocal & Marc Wittner	
11:15	**Spray impact on metallic meshes** Boscariol Cristina[1], Bouchard Dwight Jordan[2], Gibbons Michael[2], **Marengo Marco**[1], Chandra Sanjeev[2] *[1]School of Computing, Engineering and Mathematics (United Kingdom), [2]Department of Mechanical & Industrial Engineering, University of Toronto (Canada)*	244239
11:35	**Ceramic Pebble Production from the Break-Up of a Molten Laminar Jet** **Leys Oliver**[1], Waibel Patrick[2], Matthes Jörg[2], Knitter Regina[1] *[1]Institute for Applied Materials - Karlsruhe Institute of Technology (Germany), [2]Institute for Automation and Applied Informatics - Karlsruhe Institute of Technology (Germany)*	244756
11:55	**The effect of injector boost current on fuel spray characteristics** **Komada Keisuke**[1], Saito Manabu[2], Ueki Hironobu[3] *[1]Fukuoka Institute of Technology (Japan), [2]IRS (Japan), [3]Nagasaki University (Japan)*	244736
12:15	**Influence of droplet spatial distribution on spray evaporation** Rousseau Lola[1], Lempereur Christine[2], Orain Mikael[3], **Rouzaud Olivier**[2], Simonin Olivier[4] *[1]ONERA Toulouse (France), [2]ONERA, Toulouse (France), [3]ONERA, Fauga-Mauzac (France), [4]IMFT, CNRS, INPT, UPS (France)*	247463
12:35	**Simultaneous X-ray absorption and 2-photon Laser Induced Fluorescence for single-shot imaging of the spray formation region** Guénot Diego[1], Lundh Olle[1], Svendsen Kristoffer[1], Björklund Jonas[1], Hansson Martin[1], Gonzalez Isabel[1], Ekerfelt Henrik[1], Persson Anders[1], **Berrocal Edouard**[2] *[1]Division of Atomic Physics, Department of Physics, Lund University (Sweden), [2]Division of Combustion Physics, Department of Physics, Lund University (Sweden)*	244707

14:15 – 15:55 Session : Combustion I - ESR

44-54 105

Chair : Gilles Bruneaux & Christine Mounaïm-Rousselle

14:15 — **Comparison of the spray combustion characteristics of octanal and diesel** — 243901

Ruiz Irene[1], Ganippa Lionel[1], Megaritis Thanos[1]

[1]Brunel University London (United Kingdom)

14:35 — **Multi-scale powder dispersal solution using the General Dynamic Equation** — 244998

Shalel Amir[1], Katoshevski David[2], Bar-Kohany Tali[3]

[1]Safety and Management Engineering Unit, Ben-Gurion University of the Negev (Israel), [2]Ben Gurion University (Israel), [3]Tel-Aviv University& nrcn (Israel)

14:55 — **Influence of precursor concentration on spray and particle formation in flame spray pyrolysis** — 244871

Bieber Malte[1], Tischendorf Ricardo[2], Schmid Hans-Joachim[2], Reddemann Manuel A.[1], Kneer Reinhold[1]

[1]Institute of Heat and Mass Transfer, RWTH Aachen University (Germany), [2]Particle Technology Group, Paderborn University (Germany)

15:15 — **Study about the influence of an automatic meshing algorithm on numerical simulations of a gaseous-fueled Lean Direct Injection (LDI) gas turbine combustor in non-reactive conditions** — 247299

Payri Raul[1], Novella Ricardo[1], Carreres Marcos[1], **Belmar-Gil Mario**[1]

[1]Universitat Politècnica de València (Spain)

14:15 – 15:55 Session : Automotive II - ESR

44-54 107

Chair : Camille Hespel & Chaouki Habchi

14:15 — **Effect of Diesel injection pressures up to 450MPa on in-nozzle flow using realistic multicomponent surrogates** — 247504

Vidal Alvaro[1], Koukouvinis Phoevos[2], Gavaises Manolis[2]

[1]City University London (United Kingdom), [2]City, University of London (United Kingdom)

14:35 — **Spray characteristics of air-assisted urea-SCR sprays of sub-atmospheric temperatures** — 244798

Kulkarni Aniket P.[1], Rohani Behzad[1], Megaritis Thanos[1], Ganippa Lionel[1]

[1]College of Engineering Design and Physical Sciences, Brunel University London, (United Kingdom)

14:55 — **Locally variable turbulent Prandtl number considerations on the modeling of liquid rocket engines operating above the critical point** — 245086

Magalhães Leandro[1, 2], Barata Jorge[1, 2], Silva André[1, 2]

[1]University of Beira Interior [Portugal] (Portugal), [2]LAETA/UBI_AEROG-Aeronautics and Astronautics Research Center (Portugal)

15:15 — **Spray-wall interaction: study of preferential vaporization of fuel film as function of injection pressure and wall temperature** — 251376

Roque Ccacya Anthony Oswaldo[1], Foucher Fabrice[1], Helie Jérome[2]

[1]Université dÓrléans (France), [2]Continental Automotive SAS (France)

15:35 — **Evaluation of breakup models for marine diesel spray simulations** — 244322

Li Haohan[1], Verschaeren Roel[1], Decan Gilles[1], Beji Tarek[1], Verhelst Sebastian[1, 2]

[1]Ghent University (Belgium), [2]Lund University (Belgium)

14:15	**Session : Experimental techniques I - ESR**	44-54 109
15:35	Chair : Christopher Powell & Guillaume Legros	
14:15	**Substance related investigation of the evaporation characteristics of free falling alkane-ethanol droplets using Raman spectroscopy** **Hillenbrand Thomas**[1], Brüggemann Dieter[1] *[1]Chair of Engineering Thermodynamics and Transport Processes (LTTT), Bayreuth Engine Research Center (BERC), University of Bayreuth (Germany)*	244096
14:35	**Development and calibration of the LASER Pattern Shift Method for measuring the lamella topology during drop impact on walls** **Foltyn Patrick**[1], Roth Norbert[1], Weigand Bernhard[1] *[1]Institute of Aerospace Thermodynamics, University of Stuttgart (Germany)*	241623
14:55	**3D surface reconstruction of liquid structures in sprays using structured illumination and phase demodulation** **Roth Adrian**[1], Berrocal Edouard[1] *[1]Lund University, Department of Physics, Division of Combustion Physics, Lund, Sweden (Sweden)*	244275
15:15	**Fragmentation of a liquid metal jet into water** **Rimbert Nicolas**[1], Miloud Hadj-Achour[1], Michel Gradeck[1], Alexandre Labergue[1], Meignen Renaud[2] *[1]Laboratoire dÉnergétique et de Mécanique Théorique Appliquée (France), [2]Laboratoire de Physique du Corium, Service des Accidents Graves (France)*	247558

16:20	**Session : Atomizers VII**	44-54 105
17:40	Chair : Marco Marengo & Davide Zuzio	
16:20	**Increasing the Predictive Character of Spray Process Simulation by Multiphase Model Transitioning** **Schütze Jochen**[1], Gupta Vinay Kumar[2], Aguado Pablo[3], Hutcheson Paul[4], Esch Thomas[5], Braun Markus[1] *[1]ANSYS Germany GmbH (Germany), [2]ANSYS Software Pvt. Ltd. (India), [3]ANSYS Iberia (Spain), [4]ANSYS UK, Ltd. (United Kingdom), [5]ANSYS Germany GmbH (Germany)*	247502
16:40	**Incorporation of sheet breaker in a swirler-atomizer assembly for enhanced atomization** **Sharma Shraddha**[1], Thirumalachari Sundararajan[2], Sahu Srikrishna[3] *[1]PhD research scholar (India), [2]Professor (India), [3]Assistant Professor (India)*	243044
17:00	**Provision of rotating spindle in simplex atomizer to improve spray atomization** **Ghate Kushal**[1], Sundararajan Thirumalachari[2] *[1]PhD research scholar (India), [2]Professor (India)*	243096
17:20	**X-ray Characterization and Spray Measurements of ECN Spray G Using Alternative Fuels at Flashing Conditions** **Sforzo Brandon**[1], Tekawade Aniket[1], Matusik Katarzyna[1], Kastengren Alan[1], Ilavsky Jan[1], Powell Christopher[1] *[1]Argonne National Laboratory (United States)*	247553

16:20	**Session : Droplet - Numerical VI**	44-54 107
17:40	Chair : Stéphane Popinet & Nicolas Rimbert	
16:20	**Analytical modelling of heating and evaporation of drop clouds with temperature dependent gas properties** **Tonini Simona**[1], Cossali Gianpietro[2] *[1]University of Bergamo (Italy), [2]University of Bergamo (Italy)*	244134
16:40	**Recent developments in gas-droplet flow simulations based on the Fully Lagrangian Approach** **Rybdylova Oyuna**[1], Zaripov Timur[1], Li Yuan[1] *[1]School of Computing, Engineering and Mathematics (United Kingdom)*	244656
17:00	**New approaches to hydrodynamic modelling of the heating and evaporation of droplets and liquid films** **Sazhin Sergei**[1], Rybdylova Oyuna[1] *[1]University of Brighton (United Kingdom)*	239945
17:20	**Direct numerical simulation of drop impact on superhydrophobic patterned surfaces using the VoF method** **Baggio Martina**[1], Weigand Bernhard[2] *[1]University of Stuttgart (Germany), [2]Institut für Thermodynamik der Luft- und Raumfahrt (Germany)*	244386

16:20	**Session : Atmospheric, agricultural and medical sprays**	44-54 109
17:40	Chair : olfango Bertola & Nwabueze Emekwuru	
16:20	**Atomization of two colliding micro liquid jets in a respiratory inhaler: A computational study** **Saeedipour Mahdi**[1] *[1]Johannes Kepler University Linz [linz] (Austria)*	247446
16:40	**Influence of coaxial nozzle design on atomization of cell suspensions and cell survival rate** **Möller Georg**[1], Klein Sarah[2], Thiebes Anja Lena[2], Cornelissen Christian G.[2], Reddemann Manuel A.[1] *[1]Institute of Heat and Mass Transfer, RWTH Aachen University (Germany), [2]Department of Biohybrid & Medical Textiles (BioTex), AME - Institute of Applied Medical Engineering, Helmholtz Institute, RWTH Aachen University (Germany)*	241160
17:00	**Self-similar flow field of consumer sprays** **Hinterbichler Hannes**[1], Steiner Helfried[1], Brenn Günter[1] *[1]Institute of Fluid Mechanics and Heat Transfer, Graz University of Technology (Austria)*	243520
17:20	**A modified Young-Laplace approach to dynamic wetting of dilute polymer solutions** **Bertola Volfango**[1] *[1]Laboratory of Technical Physics, School of Engineering, University of Liverpool (United Kingdom)*	247103

09:50	**Session : Atomizers VIII**	44-54 105
10:50	Chair : Eran Sher	
09:50	**Nucleation inception temperature in boiling due to rapid heating - A universal correlation** **Bar-Kohany Tali**[1], Amsalem Yarden[1] *[1]Tel-Aviv University& nrcn (Israel)*	242816
10:10	**Criteria for Homogeneous Flash Boiling Atomization: An Experimental Approach** **Moshkovich Yahav**[1], Sher Eran[1], Levy Yeshayahou[1] *[1]Technion - Israel Institute of Technology [Haifa] (Israel)*	243024
10:30	**Experimental study of the dispersion of a fire suppression agent through a real size nozzle of an aircraft cargo cabin extinguisher system** **Payri Raul**[1], Gimeno Jaime[1], Marti-Aldaravi Pedro[2], Carvallo César[1] *[1]Universitat Politècnica de València (Spain), [2]Universitat Politecnica de Valencia (Spain)*	244917

09:50	**Session : Droplet - Numerical VII**	44-54 107
10:50	Chair : Christophe Dumouchel	
09:50	**Coupled Level set moment of fluid method for simulating multiphase flows** **Asuri Mukundan Anirudh**[1], Ménard Thibaut[2], Berlemont Alain[1], Brändle De Motta Jorge Cesar[3] *[1]Complexe de recherche interprofessionnel en aérothermochimie (France), [2]Complexe de recherche interprofessionnel en aérothermochimie (France), [3]Complexe de recherche interprofessionnel en aérothermochimie (France)*	244624
10:10	**Multiple fuel droplets evaporation effects on ambient conditions** Pinheiro Abgail Paula[1], **Vedovoto João Marcelo**[1], Maia Ribeiro Damasceno Marcelo[1], Da Silveira Neto Aristeu[1] *[1]Federal University of Uberlândia (Brazil)*	247563
10:30	**Investigation of vorticity production mechanisms in liquid atomization processes** **Fuster Daniel**[1], Rossi Maurice[1] *[1]Institut D'Alembert (France)*	246896

09:50	**Session : Experimental techniques II**	44-54 109
10:30	Chair : Jan Jedelsky	
09:50	**Uncertainty Assessment of Calibrated Structured Planar LIF/Mie Ratio-metric Imaging** **Corber Andrew**[1], Vena Patrizio[1], Chishty Wajid[1] *[1]National Research Council of Canada (Canada)*	251218
10:10	**Spray Visualization of an Urea Injector in the Deposit Tests of a Heavy-duty ATS System** **Bezci Zeren Hande**[1], Savci Ismail Hakki[1] *[1]Ford OTOSAN (Turkey)*	268002

11:15	**Session : Automotive III**	44-54 105
12:55	Chair : Frederic Ravet & Russell Fitzgerald	
11:15	**Atomization of a G-DI spray with air dissolved in gasoline and mono-component fuels** **Araneo Lucio**[1], Dondè Roberto[2] *[1]Politecnico di Milano [Milan] (Italy), [2]CNR-Institute of Condensed Matter Chemistry and Technologies for Energy (Italy)*	251396
11:35	**Spray cone angle prediction model considering nozzle hole geometry** **Najar Ibrahim**[1], Pinkert Fabian[2], Buchholz Bert[1], Hassel Egon[3], Stengel Benjamin[4] *[1]Chair of Piston Machines and Internal Combustion Engines, Rostock University (Germany), [2]FVTR-GmbH, Rostock (Germany), [3]Chair of Technical Thermodynamics, Rostock University (Germany), [4]Chair of Piston Machines and Internal Combustion Engines, Rostock University (Germany)*	236546
11:55	**effect of butanol and ABE blend on PRF80 spray behavior** **Mounaïm-Rousselle Christine**[1], Hespel Camille[1], Nguyen Tung-Lam[2] *[1]Laboratoire PRISME (France), [2]Laboratoire PRISME (France)*	245496
12:35	**Study on the Spray Dynamics and Sectional Spray Distribution using Spray Pattern Measurement of Multi-Hole GDI Injector** **Park Jeonghyun**[1], Park Jeong Hwan[2], Kim Hyung Ik[2], Park Suhan[3] *[1]Graduate School of Chonnam National University (South Korea), [2]Hyundai-Kefico (South Korea), [3]Chonnam National University [Gwangju] (South Korea)*	251180

11:15	**Session : Droplet - Numerical VIII**	44-54 107
12:55	Chair : Udo Fritsching & Jérôme Hélie	
11:15	**Viscous droplet breakup in narrow pore systems** **Wollborn Tobias**[1], Luhede Laura[1], Schulz Alexander[1], Fritsching Udo[1] *[1]Leibniz Institute for Materials Engineering - IWT; Particles and Process Engineering, University of Bremen (Germany)*	247384
11:35	**Probing liquid atomization using probability density functions, volume-based scale distributions and differential geometry** **Thiesset Fabien**[1], Dumouchel Christophe[1], Ménard Thibaut[1], Aniszewski Wojciech[2], Vaudor Geoffroy[1], Berlemont Alain[1] *[1]Complexe de recherche interprofessionnel en aérothermochimie (France), [2]Institut Jean Le Rond d'Alembert (France)*	247482
11:55	**Numerical Simulation of Droplet Breakup when Impacting a Narrow Gap** Andredaki Manolia[1], Bouchard Dwight Jordan[2], **Georgoulas Anastasios**[1], Chandra Sanjeev[2], Marengo Marco[1] *[1]Advanced Engineering Centre, School of Computing Engineering and Mathematics, University of Brighton (United Kingdom), [2]Department of Mechanical & Industrial Engineering, University of Toronto (Canada)*	245323
12:15	**Understanding encapsulation: a simplified approach using drop impact onto a solid sphere** Khojasteh Danial[1], Kamali Reza[2], **Marengo Marco**[3] *[1]Water Research Laboratory, School of Civil and Environmental Engineering, UNSW Sydney (Australia), [2]School of Mechanical Engineering, Shiraz University (Iran), [3]School of Computing, Engineering and Mathematics (United Kingdom)*	244595
12:35	**A multi-component real-fluid two-phase flow solver with high-order finite-difference schemes** **Wang Jianhang**[1, 2], Yang Songzhi[3, 1], Habchi Chaouki[3, 1], Hu Xiangyu[2], Adams Nikolaus[2] *[1]IFP Energies nouvelles (France), [2]Technical University of Munich (Germany), [3]Institut Carnot IFPEN Transports Energie (France)*	247232

14:15 – 15:35 Session : Combustion II

44-54 105

Chair : Eva Gutheil & Salvador Navarro-Martinez

14:15 — 243771

Effect of Spray Bulging on Ignition of High Pressure Diesel Sprays

Avulapati Madan Mohan[1], Pos Radboud[2], Megaritis Thanos[2], Ganippa Lionel C[2]

[1]Indian Institute of Technology Tirupati (India), [2]Brunel University London (United Kingdom)

14:35 — 247373

Study on large-scale ignition in flame spread of randomly distributed droplet cloud near group-combustion-excitation limit in microgravity

Matsumoto Kodai[1], Yoshida Yasuko[2], Mikami Masato[2], Kikuchi Masao[3]

[1]Graduate School of Sciences and Technology for Innovation, Yamaguchi University (Japan), [2]Graduate School of Sciences and Technology for Innovation, Yamaguchi University (Japan), [3]Japan Aerospace Exploration Agency (Japan)

14:55 — 251301

The effects of polydisperse water sprays on extinction conditions of a curved counterflow methane?air non-premixed flames

Sarkar Sourav[1], Mukhopadhyay Achintya[1], Sen Swarnendu[1]

[1]Jadavpur University (India)

15:15 — 247672

Closure of the Scalar Dissipation Rate in the Spray Flamelet Equations

Olguin Hernan[1], Scholtissek Arne[2], Gonzalez Sebastian[1], Ihme Matthias[3], Hasse Christian[2], Gutheil Eva[4]

[1]Universidad Tecnica Federico Santa Maria [Valparaiso] (Chile), [2]Institute for Simulation of Reactive Thermo-Fluid Systems, TU Darmstadt (Germany), [3]Department of Mechanical Engineering, Stanford University (United States), [4]Interdisciplinary Center for Scientific Computing, Heidelberg University (Germany)

14:15 – 15:35 Session : Atomizers IX

44-54 107

Chair : Jean-Bernard Blaisot & Alessandro Montanaro

14:15 — 247562

Real-size Real-shape Real-pressure transparent nozzles to contribute to nozzle design and cavitation control for GDI

Agresta Antonio[1], **Helie Jerome**[2], Kull Eberhard[3], Lamarque Nicolas[2], Lyubar Anatoliy[4], Schuster Stefan[4]

[1]CPT Italy Srl (Italy), [2]CPT France SAS (France), [3]CPT Group GmbH (Germany), [4]CPT Germany (Germany)

14:35 — 244631

Towards lattice Boltzmann simulation of flow dynamics inside a model fuel injector: a first-stage study

Luo Tianpei[1, 2, 3], Zhang Jiaxian[1, 3], Xia Jun[2], Liu Yangwei[4], Liu Ruimin[3, 1], Yang Sifeng[3, 1], Zhao Hua[2]

[1]Beijing Engineering Research Center of Aerospace Testing Technology and Equipment, Beijing 100074, China (China), [2]Department of Mechanical and Aerospace Engineering & Institute of Energy Futures, Brunel University London, Uxbridge UB8 3PH, UK (United Kingdom), [3]Beijing Institute of Aerospace Testing Technology, Beijing 100074, China (China), [4]National Key Laboratory of Science and Technology on Aero-Engine Aero-Thermodynamics, School of Energy and Power Engineering, Beihang University, Beijing 100191, China (China)

14:55 — 247567

Entropy-based cavitation and primary atomization analysis with a 2D transparent injector

Blaisot Jean-Bernard[1], Abuzahra Fakhry[1], Sou Akira[2], Dumouchel Christophe[1]

[1]Complexe de recherche interprofessionnel en aérothermochimie (France), [2]Kobe University (Japan)

15:15 — 244856

Experimental investigation of spillback nozzle performance via pulsating LED shadowgraphy.

Cafaggi Giovanni[1], Jensen Peter Arendt[1], Glarborg Peter[1], Dam-Johansen Kim[1]

[1]DTU Chemical Engineering (Denmark)

14:15 – 15:55 Session : Automotive IV

44-54 109

Chair : João Marcelo Vedovoto & Robert M. Mcdavid

14:15 — 251504

Very High-Pressure Sprays of Gasoline from a GDI Multi-hole Injector

Montanaro Alessandro[1], Allocca Luigi[1], Meccariello Giovanni[1], De Vita Angelo[2]

[1]Istituto Motori, National Research Council (Italy), [2]Università degli Studi dell'Aquila (Italy)

14:35 — 247244

Large-eddy simulation of turbulent cavitating flow in a Diesel injector including needle movement, in OpenFOAM®

Kolovos Konstantinos[1], Kyriazis Nikolaos[2], Koukouvinis Phoevos[2], Gavaises Manolis[2], Li Jason Z.[3], Mcdavid Robert M.[3]

[1][1]Perkins Engines Company Ltd (United Kingdom), [2]City University London (United Kingdom), [3]Caterpillar Inc (United States)

14:55 — 244075

A Methodology for the hydraulic characterization of a Urea-Water Solution injector by means of Spray Momentum Measurement

Payri Raul[1], Bracho Gabriela[1], Gimeno Jaime[1], Moreno Armando[1]

[1]Universitat Politecnica de Valencia (Spain)

15:15 — 247367

3D Measurements of the Geometry, Internal Flow and Emerging Fuel Jet from the ECN Spray C Injector

Sforzo Brandon[1], Tekawade Aniket[1], Matusik Katarzyna[1], Kastengren Alan[1], **Powell Christopher**[1]

[1]Argonne National Laboratory (United States)

15:35 — 247197

Large eddy simulation of high-pressure ECN Spray A with the focus on the influence of injection pressure

Ghiji Mohammadmahdi[1], **Salehi Fatemeh**[2], Chen Longfei[3]

[1]Institute of Sustainable Industries and Liveable Cities, Victoria University (Australia), [2]School of Engineering, Macquarie University (Australia), [3]School of Energy and Power Engineering, Beihang University (China)

16:20 – 17:40 Session : Atomizers X

44-54 107

Chair : Raffaele Ragucci & Daniel Fuster

16:20 — 247265

Enhancement of the Madabhushi Liquid Jet in Crossflow Breakup Model by a Ligament Breakup Mechanism

Lambert Markus[1], Esch Thomas[2], Braun Markus[1], Elasrag Hossam[3]

[1]ANSYS Germany GmbH (Germany), [2]ANSYS Germany GmbH (Germany), [3]Ansys, Inc. (United States)

16:40 — 269251

Dynamic mode decomposition of elliptical liquid jets in crossflow

Mokhtarpour Keivan[1], Jadidi Mehdi[1], Dolatabadi Ali[1]

[1]Concordia University (Canada)

17:00 — 244909

A surface resolution criterion for two-phase flows DNS

Canu Romain[1], Duret Benjamin[1], Réveillon Julien[1], Demoulin François-Xavier[1]

[1]COmplexe de Recherche Interprofessionnel en Aérothermochimie (France)

17:20 — 269253

Large Eddy Simulation of Multi-Component Mixing Layers at High-Pressure Conditions

Kuetemeier Dennis[1], Ries Florian[1], Sadiki Amsini[1]

[1]Technische Universität Darmstadt, Energy and Power Plant Technology (Germany)

16:20	**Session : Automotive V**	44-54 109
17:40	Chair : Guillaume Legros & Fabrice Lemoine	
16:20	**Impact of multiple injections on adBlue Spray Decomposition in a SCR-like system using Large Eddy Simulation** Sadiki Amsini[1], **Nishad Kaushal**[1], Ries Florian[1], Liao Yujun[2], Panayotis Dimopoulos[2] *[1]Institute of Energy and Power Plant Technology, Technische Universität Darmstadt, (Germany), [2]Laboratory for Combustion Engines, Empa Swiss Federal Laboratories for Materials Science and Technology, (Switzerland)*	246834
16:40	**Characterization of Air Entrainment and Mixture Formation Processes of Multi-Hole Injector Spray for Diesel Engine: Comparison with Single-Hole Injector** **Kakami Shinichi**[1], Kim Jaeheun[2], Jin Yu[2], Nishida Keiya[2], Ogata Yoichi[2] *[1]Department of Mechanical System (Japan), [2]Department of Mechanical System Engineering, Hiroshima University (Japan)*	247383
17:00	**Experimental Investigation of the Effect of Surface Geometry on Spray Impingement and Its Macroscopic Behaviour** **Steinberg Christoph**[1], Lv Huijia[1], Hung David L.s.[1], Li Xuesong[1], Xu Min[1] *[1]Shanghai Jiao Tong University [Shanghai] (China)*	244351
17:20	**A novel discrete phase solver for high-speed spray simulations in industrial applications** **Divis Marcel**[1], Shapiro Evgeniy[2], Einspigel David[1] *[1]Ricardo Software, Ricardo Prague s.r.o (Czech Republic), [2]Ricardo Software, Ricardo UK Ltd (United Kingdom)*	244157
17:20	**Propane/diesel mixed fuels spray angle investigation in the near-nozzle field via high-speed imaging** **Sequino Luigi**[1], Mancaruso Ezio[1], Marialto Renato[1], Vaglieco Bianca Maria[1] *[1]ISTITUTO MOTORI - CNR (Italy)*	247275

List of Posters

The **poster session** will be held on **Tuesday 2nd September** during **lunch break** on the **Jussieu floor** of patio 44-55.

Planar Jet Stripping of Liquid Coatings: Study of Transient Atomization of Liquid Zinc.

Aniszewski Wojciech[1], Zaleski Stéphane[1], Popinet Stéphane[1], Saade Youssef[2] – *[1]Institut Jean Le Rond dÁlembert (France), [2]University of Twente [Netherlands] (Netherlands)*

282124

Modelling the Primary Break-up due to Flash Boiling

Bhatia Bharat[1], **De Ashoke**[2, 3], **Gutheil Eva**[3] – *[1]Indian Institute of Technology Kanpur (India), [2]Indian Institute of Technology Kanpur (India), [3]Interdisciplinary Center for Scientific Computing (Germany)*

268594

A Comparative Study of the Spray Characteristics of Nanofluids and Spray Cooling Performance

Tokkan O[1], Marengo Marco[1], Begg Steven[1], **Emekwuru Nwabueze**[2] – *[1]School of Computing, Engineering and Mathematics (United Kingdom), [2]Faculty of Engineering, Environment and Computing (United Kingdom)*

282130

On the evaporation of nanofuel droplets

Emekwuru Nwabueze[1], Xia Yu[1], Pandey Khushboo[2], Basu Saptarshi[2] – *[1]Faculty of Engineering, Environment and Computing (United Kingdom), [2]Indian Institute of Science (India)*

282123

High-fidelity simulations of spray formation in flame spray pyrolysis

Fröde Fabian[1], Bieber Malte[2], Kneer Reinhold[2], Davidovic Marco[1], Bode Mathis[1], Pitsch Heinz[1] – *[1]Institute for Combustion Technology, RWTH Aachen University (Germany), [2]Institute of Heat- and Mass Transfer (Germany)*

247543

DNS of Flash Atomization in Cryogenic Rocket Propellants

Dias Loureiro Daniel[1], **Gaertner Jan Wilhelm**[1], Reutzsch Jonathan[2], Kronenburg Andreas[1], Weigand Bernhard[2], Vogiatzaki Konstantina[3] – *[1]Institut für Technische Verbrennung, Universität Stuttgart (Germany), [2]Institute of Aerospace Thermodynamics, University of Stuttgart (Germany), [3]School of Engineering and Mathematics, University of Brighton (United Kingdom)*

285853

Methods for experimental investigation of surface wave phenomena on free liquid films

Gyurkovich Alexander[1], Mehring Carsten[1] – *[1]Universität Stuttgart - Institut für Mechanische Verfahrenstechnik (Germany)*

243992

Characteristics of liquid sheet break up for spill-return swirl atomizers with different spill-line designs

Jedelsky Jan[1], Maly Milan[2], Alousque Lucas[3], Wigley Graham[4], Cejpek Ondrej[1], Lizal Frantisek[2] – *[1]Brno University of Technology (Czech Republic), [2]Brno University of Technology (Czech Republic), [3]Ecole Centrale Marseille (France), [4]Loughborough University (United Kingdom)*

281307

Investigation of pressure swirl sprays using Volumetric PIV

Cejpek Ondrej[1], **Jedelsky Jan**[1], Malý Milan[1], Sapík Marcel[1], Lízal František[1], Koched Amine[2] – *[1]Brno University of Technology (Czech Republic), [2]TSI France Inc. (France)*

247516

Estimation of fuel mass distributions from droplet characteristics in diesel sprays

Kawaharada Noritsune[1], Gröger Karsten[1], Ueki Hironobu[2], Dinkelacker Friedrich[1] – *[1]Institute of Technical Combustion, Leibniz University Hannover (Germany), [2]Nagasaki University (Japan)*

244848

Renewable diesel spray modelling

Kolodnytska Ruslana[1, 2], Kravchenko Oleksandr[3, 1] – *[1]Automotive department (Ukraine), [2]Zhytomyr State Technological University (Ukraine), [3]Zhytomyr State Technological University (Ukraine)*

282143

Analysis of Droplet Transport from Agricultural Spray

Lund Ivar[1] – *[1]University of Southern Denmark, SDU Mechanical (Denmark)*

281739

Influence of liquid-gas density contrast on drop fragmentation regimes

Marcotte Florence[1, 2], Zaleski Stéphane[3] – *[1]Institut de Recherche sur les Phénomènes Hors Equilibre (France), [2]Institut Jean Le Rond dÁlembert (France), [3]Institut Jean Le Rond d'Alembert (France)*

250858

Modeling and Simulation of the Turbulent Mixing in Non-reacting and Reacting Spray Flows

Premkumar Antony[1], Gutheil Eva[1] – *[1]Heidelberg University (Germany)*

244107

Impact of Fuel Properties on Diesel Spray Phase Change

Rezaei Javad[1], Riess Sebastian[2, 1], Peter Andreas[1], Wensing Michael[2, 1] – *[1]Institute of Engineering Thermodynamics (LTT), Friedrich-Alexander-University Erlangen-Nuremberg (FAU), Germany (Germany), [2]Erlangen Graduate School in Advanced Optical Technologies (SAOT), Friedrich-Alexander-University Erlangen-Nuremberg (FAU), Germany (Germany)*

243566

Measurement techniques for highly dense aerosols: Comparison of LD, PDA and SLAS

Roudini Mehrzad[1, 2] – *[1]Leibniz Institute for Solid State and Materials Research (Germany), [2]Institut für Mechanik und Thermodynamik / Professur Strömungsmechanik, Technische Universität Chemnitz (Germany)*

286503

LES modeling of nano particles synthesis in the SpraySyn burner

Sellmann Johannes[1], Borukhovich Efim[1], Wlokas Irenäus[1], Kempf Andreas[1] – *[1]Department of Fluiddynamics, University Duisburg-Essen (Germany)*

247526

An experimental study of spray cooling using high-speed visualization and infrared thermometry

Surtaev Anton[1, 2], Nazarov Aleksandr[2], Miskiv Nikolay[2], Serdyukov Vladimir[1, 2], Serov Anatoliy[2] – *[1]Novosibirsk State University (Russia), [2]Kutateladze Institute of Thermophysics SB RAS (Russia)*

245991

Spray and Combustion Analysis of E-Fuels at Diesel Engine Conditions

Swiderski Erwin[1], **Pinkert Fabian**[1] – *[1]FVTR GmbH (Germany)*

281187

Direct Numerical Simulations of non-Newtonian jets: Understanding the physical mechanisms

Zinelis Konstantinos[1], **Constante Ricardo**[1], **Matar Omar**[1] – *[1]Department of Chemical Engineering, Imperial College London (United Kingdom)*

247598

Institutions

Sorbonne Université

Born from the merger of “Université Pierre et Marie Curie” and “Université Paris Sorbonne”, whose campuses are located in the heart of Paris, Sorbonne Université covers all major disciplinary fields and offers new transversal academic and research programs. Sorbonne Université has become fully multidisciplinary research-intensive university with three faculties: Humanities and Social Sciences, Medicine and Sciences & Engineering.

With more than 54 000 students (10 000 international students), 4700 doctoral students and 6300 researchers, Sorbonne Université is one of the leading French universities.

The university is involved in numerous European and International partnership agreements and has France’s largest scientific library and infrastructures bringing together the best talent in a wide array of these disciplines. With 8,500 publications per year (approx. 10% of all publications in France), Sorbonne Université is a major player in international knowledge and innovation economy, offering transversal academic and research programs.

Jean Le Rond d’Alembert Institute

The Jean Le Rond d’Alembert Institute (in short: ∂’Alembert) is devoted to Mechanics, Acoustics and Energetics. ∂’Alembert is an Institute of the Faculty of Science and Engineering of Sorbonne University and of CNRS. It is the largest research laboratory in its field in the Greater Paris area. It brings together about one hundred and seventy people, including about a hundred staff and about fifty PhD students.

∂’Alembert has unique expertise in two areas, fine theory and modelling in fluid and solids mechanics and the study of musical objects in a multidisciplinary approach, through the physical sciences and the humanities. D’Alembert’s researchers are prominent in the field of fracture mechanics, direct numerical simulation of two-phase flows, the study of slender structures, and the simulation of acoustic propagation. Aeroacoustics (sound generation by turbulence) or dynamic elastocapillarity (winding elastic slender solid structures around or inside liquid droplets) are recent developments. Finally, ∂’Alembert boasts state-of-the-art experimental facilities, supported by major industrial and public partnerships in the field of combustion and acoustic imaging.

IFP Energies nouvelles

IFP Energies nouvelles (IFPEN) is a major research and training player in the fields of energy, transport and the environment. From research to industry, technological innovation is central to all its activities, structured around three strategic priorities: sustainable mobility, new energies and responsible oil and gas.

As part of the public-interest mission with which it has been tasked by the public authorities, IFPEN focuses on:

- providing solutions to take up the challenges facing society in terms of energy and the climate, promoting the transition towards sustainable mobility and the emergence of a more diversified energy mix;
- creating wealth and jobs by supporting French and European economic activity, and the competitiveness of related industrial sectors.

An integral part of IFPEN, its graduate engineering school – IFP School – prepares future generations to take up these challenges.

Sponsors

A2 Photonic Sensors

A2 Photonic Sensors is an expert manufacturer of optical sensors and systems dedicated to fluid mechanics and geosciences. For spray applications, A2 Photonic Sensors commercializes M2, a very unique and innovative instrument based on a mono-fiber optical probe for the measurement of liquid fraction, droplet velocities and sizes. The system has been successfully used in various operating conditions (high pressure, dense flows…) and is known for providing unambiguous and accurate results.

Dantec Dynamics

Dantec Dynamics develops and manufactures measurement systems that determine physical properties in fluids and in solid structures. We deliver turnkey as well as customized solutions with user-friendly software. Furthermore, our clients benefit from superior technical application support worldwide.
You gain accurate measurement results easily and quickly which help you accelerate the pace of discovery, innovation, quality control or NDT. Our distinct competence and experience in integrating measurement methods and technologies into the right solution for you, is unique.
Partnering with Dantec Dynamics helps you gain crucial knowledge from any test or measurement campaign.

LaVision

As a supplier of innovative (laser) imaging systems and optical sensors LaVision has established a strong reputation as a solution provider among its customers from various industrial and academic research fields. Very often our systems are used in automotive, aerospace or power generation, e. g. for the development of more efficient and cleaner combustion processes. Multi-dimensional velocity fields in wind tunnels, flame temperature and composition, particle concentrations and diameters are measured in-situ separately or simultaneously with high temporal and spatial resolution. In process engineering our in-situ measurement methods are applied to analyze mixing processes in multiphase flows. Material testing benefits from our highly accurate non-contact measurement systems for deformation and strain measurements.

TSI

TSI offers a complete line of products for spray diagnostics. Products include Phase Doppler Particle Analysis (PDPA) systems, Time-Resolved Particle Image Velocimetry (TR-PIV) systems, Global Patternation Systems, Global Sizing Velocimetry (GSV) systems, and Quantitative Flow Visualization systems. These systems are used to characterize various aspects of a spray; from measuring droplet velocity and size at a specific location, to obtaining global information of the ligament formation, to identifying the breakup in a spray. Many of these systems are complementary to one other, helping the user to obtain the complete diagnostics of a spray.

Oxford Lasers Ltd.

As one of the most successful spin offs from Oxford University in 1977, Oxford Lasers have been at the forefront of laser technology for almost 40 years.
Oxford Lasers Imaging Division offer laser systems, contract services, system rental, R&D and technical support for: High speed imaging, using high speed cameras, lasers and software to offer complete imaging solutions.
Oxford Lasers have significant experience within the field of spray characterisation, providing information on droplet size, droplet velocity and droplet shape. The VisiSize instrument range provides a range of capability to suit the different measurement challenges present in the field.

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ILASS 2020

TEL AVIV Israel

30th European Conference on
Liquid Atomization & Spray Systems

7th - 9th September **2020**
Conference Chair: **Eran Sher**

ICLASS 2021

EDINBURGH Scotland

15th International Conference on
Liquid Atomization & Spray Systems

30th August - 2nd September **2021**
Conference Chair: **Mark Linne**

Notes