



**28<sup>TH</sup> EUROPEAN CONFERENCE on**  
**LIQUID ATOMIZATION and SPRAY SYSTEMS**

6<sup>TH</sup>-8<sup>TH</sup> SEPTEMBER 2017 **VALENCIA SPAIN**

# ilass 2017

The main title 'ilass 2017' is rendered in a large, stylized font. The '2017' is in a purple-to-pink gradient. The 'ilass' is in a large, bold, sans-serif font, filled with a golden-yellow, textured background that resembles a microscopic view of a spray nozzle or atomized liquid. The 'i' is partially cut off on the left edge of the page.

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UNIVERSITAT  
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DE VALÈNCIA



# Complete ILASS 2017 conference Programme

**WEDNESDAY**  
6<sup>TH</sup> SEPTEMBER

**2017**

08:30 h **PLENARY SESSION KEYNOTE LECTURE**

BLUE AUDITORIUM ●

**Toward a fully simulated injection: from the in injector flow to the final spray**

FRANÇOIS-XAVIER DEMOULIN · CORIA-Université de Rouen (France)

09:20 ~ **SESSION · 1B AUTOMOTIVE 1**

10:40 h **CHAIRPERSON:** G. BRACHO · Universitat Politècnica de València (Spain)

09:20 h **A study of the controlling parameters of fuel air mixture formation for ECN Spray A**

K. VOGIATZAKI, C. CRUA, R. MORGAN, M. HEIKAL University of Brighton (UK)

09:40 h **Evidence of vortex driven primary breakup in high pressure fuel injection**

J. SHI, P. AGUADO LOPEZ, E. GOMEZ SANTOS, N. GUERRASSI, G. DOBER Delphi (Luxemburg) ·  
W. BAUER ANSYS (Germany) · M.C. LAI Wayne State University (USA) ·  
J. WANG Argonne National Laboratory (USA)

10:00 h **CFD simulations of the diesel jet primary atomization from a multihole injector**

C. CHASOS Frederick University (Cyprus)

10:20 h **Large eddy simulations of atomisation and sprays:  
application to a high pressure multihole injector**

P. CHAUSSERIE-LAPRÉE, J. HÉLIE Continental Automotive (France) ·  
J. CHESNEL Altran, (France) · FX. DEMOULIN CORIA (France)

09:20 ~ **SESSION · 1R ATOMIZERS 1**

10:40 h **CHAIRPERSON:** L. ACHELIS · Universität Bremen (Germany)

09:20 h **Influence of liquid properties on ultrasonic atomization**

A. LOZANO, J.A. GARCÍA, J. ALCONCHEL, F. BARRERAS, E. CALVO Universidad de Zaragoza, CSIC (Spain) ·  
J.L. SANTOLAYA Universidad de Zaragoza (Spain)

09:40 h **Effect of excitation on gas centered swirl coaxial injectors**

G. PARK, S. OH, J. BAE, Y. YOON Seoul National University (Korea)

10:00 h **Effect of liquid viscosity on the aerodynamic breakup of non-spherical droplets**

K. BERGELES, G. CHARALAMPOUS, Y. HARDALUPAS, A. TAYLOR Imperial College London (UK)

10:20 h **Numerical Investigation of Droplet Impact on Smooth Surfaces with  
Different Wettability Characteristics: Implementation of a dynamic contact  
angle treatment in OpenFOAM**

K. VONTAS, M. ANDREDAKI, A. GEORGIOULAS, M. MARENGO University of Brighton (UK) ·  
K. NIKAS Piraeus University (Greece)

09:20 ~  
10:40 h

**SESSION · 1Y DROPLET 1**

**CHAIRPERSON:** S. SAZHIN · University of Brighton (UK)

09:20 h

**A model for mono- and multi-component droplet heating and evaporation and its implementation into ANSYS Fluent**

L. POULTON, O. RYBDYLOVA, S. SAZHIN, C. CRUA University of Brighton (UK) ·  
M. AL QUBEISSI Coventry University (UK) · A.E. ELWARDANY Alexandria University (Egypt)

09:40 h

**Modelling of spheroidal drop evaporation with non-uniform temperature conditions**

G. COSSALI, S. RAVASIO, S. TONINI University of Bergamo (Italy)

10:00 h

**Numerical studies of turbulent particle-laden jets using spatial approach of one-dimensional turbulence**

M. FISTLER Chalmers University of Technology (Sweden) · D. LIGNELL Brigham Young University (USA) ·  
A. KERSTEIN, M. OEVERMANN Chalmers University of Technology (Sweden)

10:20 h

**Energy Aspects in Spray Formation by Homogenous Flash Boiling Process**

Y. MOSHKOVICH, Y. LEVY, E. SHER Technion- Israel Institute of Technology (Israel) ·  
I. SHER Cranfield University (UK)

11:05 ~ 13:05 h **SESSION · 2B · AUTOMOTIVE 2**  
**CHAIRPERSON:** J. DOMNIK · Esslingen University of Applied Sciences (Germany)

11:05 h **Modelling and validation of near-field Diesel spray CFD simulations based on the  $\Sigma$ -Y model**  
J.M. DESANTES, J.M. GARCÍA-OLIVER, J.M. PASTOR Universitat Politècnica de València (Spain) ·  
A. PANDAL Universidad de Oviedo (Spain) · B. NAUD CIEMAT (Spain) ·  
K. MATUSIK, D. DUKE, A. KASTENGREN, C. POWELL Argonne National Laboratory (USA) ·  
D.P. SCHMIDT University of Massachusetts-Amherst (USA)

11:25 h **The liquid penetration of diesel substitutes**  
S. RIESS, L. WEISS, J. REZAEI, A. PETER, M. WENSING Universität Erlangen-Nürnberg (Germany)

11:45 h **Numerical and Experimental Investigations on rotary Bell Atomizers with predominant Air Flow Rates**  
N. GUETTLER, S. PAUSTIAN, Q. YE, O. TIEDJE Fraunhofer Institute (Germany)

12:05 h **Investigations on nano- and submicron-particle generation by spray painting processes**  
Q. YE, O. TIEDJE, S.R. SRINIVAS Fraunhofer Institute (Germany) ·  
T. NOEST, U. UHRNER Graz University of Technology (Austria)

12:25 h **Experimental and Numerical Investigation of Phase Separation due to Multi-Component Mixing at High-Pressure Conditions**  
C. TRAXINGER, H. MÜLLER, M. PFITZNER Bundeswehr University Munich (Germany) ·  
S. BAAB, G. LAMANNA, B. WEIGAND Universität Stuttgart (Germany) ·  
J. MATHEIS, C. STEMMER, N. ADAMS Technical University of Munich (Germany) ·  
S. HICKEL Delft University of Technology (Netherlands)

12:45 h **Spreading model for wall films generated by high-pressure sprays**  
Q. LAMIEL, N. LAMARQUE, J. HÉLIE Continental Automotive (France) ·  
D. LEGENDRE Institut de Mécanique des Fluides de Toulouse (France)



11:05 ~ 13:05 h	<b>SESSION · 2R ATOMIZERS 2</b>	
	<b>CHAIRPERSON:</b> U. FRITSCHING · Universität Bremen (Germany)	
11:05 h	<b>Application of dry-ice for transient spray cooling</b>	M. PANAÓ, J. COSTA, M. BERNARDO Universidade de Coimbra (Portugal)
11:25 h	<b>Effect of Prefilmer Edge Thickness on Breakup Phenomena of Liquid Film in Prefilming Airblast Atomizer</b>	T. OKABE, N. KATAGATA, T. SAKAKI, T. INAMURA, K. FUMOTO Hirosaki University (Japan)
11:45 h	<b>Spray Conditioning for the Preparation of Spray Dried Submicron Particles</b>	R. GORNY, G. SCHALDACH, P. WALZEL, M. THOMMES TU Dortmund (Germany)
12:05 h	<b>Multiple Impinging Jet Air-Assisted Atomization</b>	M. COSTA, B. PIZZIOL Universidade de Lisboa (Portugal) · M. PANAÓ Universidade de Coimbra (Portugal) · A. SILVA Universidade de Beira Interior (Portugal)
12:25 h	<b>Investigation on the role of atomization air mixing on the spray characteristics of air assisted atomizer</b>	N. KAWAHARADA, M. HÖLTERMANN, J. WICHMAR, F. DINKELACKER University of Hanover (Germany)
12:45 h	<b>Effects of Injection Nozzle Geometry on Spray Characteristics for Direct Injection Diesel Engines</b>	N. TAMAKI, T. HARADA Kindai University (Japan)
11:05 ~ 13:05 h	<b>CMT LAB VISIT</b>	MEETING POINT IN YELLOW ASSEMBLY ROOM ●

**WEDNESDAY**  
6<sup>TH</sup> SEPTEMBER

**2017**

14:25 ~  
16:05 h **SESSION - 3B AUTOMOTIVE 3**  
**CHAIRPERSON:** P. OLMEDA · Universitat Politècnica de València (Spain)

14:25 h **Fuel spray vapour distribution correlations for a high pressure diesel fuel spray cases for different injector nozzle geometries**  
D. NJERE, N. EMEKWURU Coventry University (UK)

14:45 h **Spray/wall interaction analysis on an ECN single-hole injector at diesel-like conditions through Schlieren visualization**  
R. PAYRI, J. GIMENO, J. PERAZA Universitat Politècnica de València (Spain) · T. BAZYN Caterpillar (USA)

15:05 h **An Experimental Study of Diesel Spray Impingement on a Flat Plate: Effects of Injection Conditions**  
X. ZHU, L. ZHAO, Z. ZHAO, N. AHUJA, J. NABER, S.Y. LEE Michigan Technological University (USA)

15:25 h **Quantification of diesel injector dribble using 3D reconstruction from x-ray and DBI imaging**  
V. SECHENYH, J. TURNER, D. SYKES, C. CRUA University of Brighton (UK) ·  
D. DUKE, A. SWANTEK, K. MATUSIK, A. KASTENGREN, C. POWELL Argonne National Laboratory (USA) ·  
A. VIERA, R. PAYRI Universitat Politècnica de València (Spain)

15:45 h **Zooming into primary breakup mechanisms of high-pressure automotive sprays**  
V. KIRSCH, M. REDDEMANN, J. PALMER, R. KNEER RWTH Aachen University (Germany)

14:25 ~  
16:05 h **SESSION - 3R ATOMIZERS 3**  
**CHAIRPERSON:** C. DUMOUCHEL · Université et INSA de Rouen (France)

14:25 h **Internal flow and air core dynamics in simplex and spill-return pressure-swirl atomizers**  
M. MALY, L. JANÁČKOVÁ, J. JEDELSKÝ Brno University of Technology (Czech Republic) ·  
J. SLÁMA Provyko S.R.O (Czech Republic) · M. SAPIK Brno University of Technology (Czech Republic) ·  
G. WIGLEY Loughborough University (UK)

14:45 h **Behaviour of free falling viscoelastic liquid jets**  
C. TIREL, M.C. RENOULT, C. DUMOUCHEL, J.B. BLAISOT CORIA (France)

15:05 h **Detailed simulation of air-assisted spray atomization: effect of numerical scheme at intermediate Weber number**  
G. TRETOLA, S. NAVARRO-MARTINEZ Imperial College London (UK) ·  
K. VOGIATZAKI University of Brighton (UK)

15:25 h **Towards Resolving the Atomization Process of an Idealized Fire Sprinkler with VOF Modeling**  
K. MEREDITH, X. ZHOU, Y. WANG FM Global (USA)

15:45 h **Numerical Simulation of Like and Unlike Impinging Jets**  
H. DOLATKHAHI, G. OLIAEE, A. KEBRIAEE Sharif University of Technology (Iran)

14:25 ~  
16:05 h

**SESSION · 3Y DROPLET 2**

**CHAIRPERSON:** Q. YE · Fraunhofer Institut (Germany)

14:25 h

**Time resolved thermographic analysis of droplet impacts onto heated surfaces under extreme wetting scenarios**

P. PONTES, E. TEODORI, A. MOITA, A. MOREIRA Universidade de Lisboa (Portugal)

14:45 h

**Instantaneous heat transfers at the impact of a droplet onto a hot surface in the film boiling regime**

W. CHAZE, G. CASTANET, O. CABALLINA, D. MAILLET, J.F. PIERSON, F. LEMOINE  
Université de Lorraine (France)

15:05 h

**Experimental study on the effect of initial liquid droplet size on the evaporation in a heterogeneous droplet**

K.H. SUNG Chung-Ang University (Korea) · J.S. NAM Korea Fire Institute (Korea) ·  
G.B. HONG, H.S. RYOU Chung-Ang University (Korea)

15:25 h

**Selected Results of the Collaborative Research Center “Droplet Dynamics under Extreme Ambient Conditions” SFB/TRR 75**

C. TROPEA Technische Universität Darmstadt (Germany) ·  
B. WEIGAND, K. SCHULTE Universität Stuttgart (Germany)

15:45 h

**Experimental and numerical study on sensible heat transfer at droplet/wall interactions**

E. TEODORI, P. PONTES, A. MOITA, A. MOREIRA Universidade de Lisboa (Portugal) ·  
A. GEORGIOULAS, M. MARENGO University of Brighton (UK)



**WEDNESDAY**  
6<sup>TH</sup> SEPTEMBER

2017

16:30 ~  
18:10 h **SESSION · 4B AUTOMOTIVE 4**  
CHAIRPERSON: L. ARANEO · Politecnico di Milano (Italy)

16:30 h **A study on the relationship between internal nozzle geometry and injected mass distribution of eight ECN Spray G nozzles**  
K. MATUSIK, D. DUKE, N. SOVIS, A. SWANTEK, C. POWELL Argonne National Laboratory (USA) ·  
R. PAYRI, D. VAQUERIZO, S. GIRALDO-VALDERRAMA Universitat Politècnica de València (Spain) ·  
A. KASTENGREN Argonne National Laboratory (USA)

16:50 h **Flashboiling atomization in nozzles for GDI engines**  
S. BORNSCHLEGEL, C. CONRAD, L. EICHHORN, M. WENSING Universität Erlangen-Nürnberg (Germany)

17:10 h **Measurement of a Direct Water-Gasoline-Emulsion-Injection**  
T. WAGNER, H. ROTTENGRUBER, F. BEYRAU, P. DRAGOMIROV, M. SCHAUB  
Otto-Von-Guericke-University Magdeburg (Germany)

17:30 h **High speed visualization of gasoline pump injector (GPI)**  
N. BALASUBRAMANIAN, T. IWASZKIEWICZ, J. SETHURAMAN Stanadyne (India)

17:50 h **Oxygenated fuels properties and its relationship with engine performance in port fuel injection engines**  
U. GONZALEZ, I. SCHIFTER Instituto Mexicano del Petróleo (Mexico)

16:30 ~  
18:10 h **SESSION · 4R ATOMIZERS 4**  
CHAIRPERSON: M. MARENCO · University of Brighton (UK)

16:30 h **Primary breakup of liquids using a high-speed rotary bell atomizer for spray painting processes**  
B. SHEN, J. DOMNICK University of Applied Sciences Esslingen (Germany) ·  
Q. YE, O. TIEDJE Fraunhofer Institute (Germany)

16:50 h **Mechanisms of Liquid Stream Breakup: Vorticity and Time and Length Scales**  
A. ZANDIAN, W. SIRIGNANO University of California (USA) · F. HUSSAIN Texas Tech University (USA)

17:10 h **Direct numerical simulation of an atomizing biodiesel jet: Impact of fuel properties on atomization characteristics**  
Y. LING, G. LEGROS, S. POPINET, S. ZALESKI UPMC (France)

17:30 h **Experimental Characterization of Spray generated by a Rotary Atomizer Wheel**  
M. KUHNHENN, M. LUH Technische Universität Darmstadt (Germany) · T. JOENSEN GEA Process Engineering (Denmark) · I. ROISMAN, C. TROPEA Technische Universität Darmstadt (Germany)

17:50 h **Subgrid Liquid Flux and interface modelling for LES of Atomization**  
J. ANEZ, A. AHMED CORIA (France) · S. PUGGELLI University of Florence (Italy) ·  
J. RÉVEILLON, J.C. BRÄNDLE DE MOTTA, F.X. DEMOULIN CORIA (France)

16:30 ~  
18:10 h

**SESSION · 4Y DROPLET 3**

**CHAIRPERSON:** A. MOITA · Universidade de Lisboa (Portugal)

16:30 h

**Comparison between analytical, numerical, and experimental results of grouping effects in droplet streams**

N. ROTH, H. GOMAA, B. WEIGAND Universität Stuttgart (Germany) ·  
A. LIVNE, D. KATOSHEVSKI Ben-Gurion University (Israel)

16:50 h

**Comparison between numerical and experimental water-in-oil dispersion in a microchannel**

P. DESJONQUÈRES, T. MÉNARD CORIA (France) ·  
D. TARLET, J. BELLETTRE Université de Nantes (France)

17:10 h

**Simulation of droplet spreading on micro-CT reconstructed 3D real porous media using the volume-of-fluid method**

M. ABOUKHEDR, N. MITROGLOU City University of London (UK) ·  
A. GEORGOULAS, M. MARENCO, K. VOGIATZAKI University of Brighton (UK)

17:30 h

**Numerical analysis of sprays with an advanced collision model**

M. SOMMERFELD Otto-Von-Guericke-University Magdeburg (Germany) ·  
S. LAIN Universidad Autonoma de Occidente (Colombia)

17:50 h

**Microexplosion and Puffing of an Emulsion Fuel Droplet**

J. XIA Brunel University London (UK) · J. SHINJO Shimane University (Japan)

**THURSDAY**  
7<sup>TH</sup> SEPTEMBER

**2017**

08:30 h **PLENARY SESSION KEYNOTE LECTURE**

BLUE AUDITORIUM ●

**Spray Cooling**

CAMERON TROPEA · Technische Universität Darmstadt (Germany)

09:20 ~ **SESSION · 5B AUTOMOTIVE 5**

10:40 h **CHAIRPERSON:** J. M. PASTOR · Universitat Politècnica de València (Spain):

09:20 h **Influence of Stokes Number on Collisional Interfacial Area Production Terms within the  $\Sigma$ -Y Eulerian Spray Atomization Model**

D. EICHLER, P. PISCHKE, R. KNEER RWTH Aachen University (Germany)

09:40 h **A new approach to modelling the two way coupling for momentum transfer in a hollow-cone spray**

A. PAPOUTSAKIS, S. SAZHIN, S. BEGG University of Brighton (UK) ·  
I. DANAILA, F. LUDDENS Université de Rouen (France)

10:00 h **Mathematical models for turbulent round jets based on “ideal” and “lossy” conservation of mass and energy**

F. FRANCO Osaka University (Japan) · Y. FUKUMOTO Kyushu University (Japan)

10:20 h **Maximum entropy method for biodiesel spray droplet distribution**

R. KOLODNYTSKA, S. SKURATIVSKYI, P. MOSKVIN Zhytomyr State Technological University (Ukraine)

09:20 ~ **SESSION · 5R ATOMIZERS 5**

10:40 h **CHAIRPERSON:** M. GAVAISES · City University of London (UK)

09:20 h **Experimental Investigation on the Early Stage Spray Characteristics with Biodiesel and Diesel**

S. YU, B. YIN, S. WEN, X. LI, H. JIA Jiangsu University (China) ·  
J. YU Wuxi Fuel Injection Equipment Research Institute (China)

09:40 h **Properties of Fuel Spray Obtained by Electrohydrodynamic Atomization**

M. DAABOUL, N. SABA, J. RISHMANY University of Balamand (Lebanon) -  
C. LOUSTE University of Poitiers (France)

10:00 h **Characterization of Liquid Impinging Jet Injector Sprays for Bi-Propellant Space Propulsion: Comparison of PDI and High-Magnification Shadowgraphy**

B. BOUST, Q. MICHALSKI, A. CLAVERIE, C. INDIANA, M. BELLENOUE Pprime Institute (France)

10:20 h **Fundamental analysis of liquid breakup mechanism in a rotary atomizer with square discharge orifice**

M. GHORBANHOSEINI, S. REZAYAT, M. FARSHCHI Sharif University of Technology (Iran)



09:20 ~ 10:40 h	<b>SESSION · 5Y ATMOSPHERIC AND MEDICAL SPRAYS</b> <b>CHAIRPERSON:</b> J. JEDELSKÝ · Brno University of Technology (Czech Republic)
09:20 h	<b>Coupled study of film and spray on a basic annular prefiming airblast atomizer</b> V. GOSSELIN, B. FERRET, R. BAZILE Institut de Mécanique des Fluides de Toulouse (France)
09:40 h	<b>Influence of droplet clustering in sprays on liquid deposition rate on spherical targets</b> P. ANDRADE, G. CHARALAMPOUS, Y. HARDALUPAS Imperial College London (UK)
10:00 h	<b>Viability of coaxial atomization for disintegration of cell solutions in cell spray applications</b> M. BIEBER, S. MENZEL, A. THIEBES, C. CORNELISSEN, S. JOCKENHOEVEL, R. KNEER, M. REDDEMANN RWTH Aachen University (Germany)
10:20 h	<b>Numerical Simulation of the Dispersion and Deposition of a Spray Carried by a Pulsating Airflow in a Patient-Specific Human Nasal Cavity</b> A. FARNOUD Heidelberg University (Germany) · X.G. CUI Lawrence Berkeley National Laboratory (USA) · I. BAUMANN, E. GUTHEIL Heidelberg University (Germany)

**THURSDAY**  
7<sup>TH</sup> SEPTEMBER

**2017**

11:05 ~  
13:05 h **SESSION · 6B AUTOMOTIVE 6**  
**CHAIRPERSON:** A. GARCÍA MARTÍNEZ · Universitat Politècnica de València (Spain)

11:05 h **Analysis of PDA measurements in double injection GDI sprays**  
L. ARANEO Politecnico di Milano (Italy) · R. DONDÈ CNR-ICMATE (Italy) ·  
L. POSTRIOTI, A. CAVICCHI Università di Perugia (Italy)

11:25 h **Imaging of gasoline-like sprays with planar laser-induced exciplex fluorescence using a stereoscopic imaging system**  
M. ANDERSSON Chalmers University of Technology (Sweden) ·  
A. YAMAGUCHI Denso (Japan) · H. WANG Dantec Dynamics (Denmark)

11:45 h **Transcritical mixing of sprays for multi-component fuel mixtures**  
J. MANIN, L.M. PICKETT Sandia National Laboratories (USA) · C. CRUA University of Brighton (UK)

12:05 h **Influence of the Fuel Properties on the Injection Process and Spray Development in a large ship diesel Engine**  
I. NAJAR, B. BUCHHOLZ, B. STENDEL, C. FINK, E. HASSEL University of Rostock (Germany)

12:25 h **Characteristics of Control Piston Motion and Pressure Inside of a Common Rail Diesel Injector**  
S. SCHUCKERT, G. WACHTMEISTER Technical University of Munich (Germany)

12:45 h **LIF/Mie Droplet Sizing of Water Sprays from SCR System Injector using Structured Illumination**  
Ł. KAPUSTA Warsaw University of Technology (Poland)



11:05 ~  
13:05 h

**SESSION · 6R ATOMIZERS 6**

**CHAIRPERSON:** M. CARRERES · Universitat Politècnica de València (Spain)

11:05 h

**Numerical simulation of superheated jets using an Eulerian method**

K. LYRAS, S. DEMBELE Kingston University London (UK) ·  
C. MADHAV RAO VENDRA, J. WEN University of Warwick (UK)

11:25 h

**Supercritical and transcritical real-fluid mixing using the PC-SAFT EOS**

C. RODRIGUEZ, A. VIDAL, P. KOUKOUVINIS, M. GAVAISES City University of London (UK)

11:45 h

**Where does the drop size distribution come from?**

R. CANU, C. DUMOUCHEL, B. DURET, J. REVEILLON, F.X. DEMOULIN, T. MÉNARD CORIA (France) ·  
M. ESSADKI IFP Energies nouvelles (France) · M. MASSOT Ecole Centrale Paris (France) ·  
S. PUGGELLI University of Florence (Italy)

12:05 h

**Weakly nonlinear instability of a viscous liquid jet**

I. MUTABAZI Université du Havre (France) · G. BRENN Graz University of Technology (Austria) ·  
M.C. RENOULT CORIA (France)

12:25 h

**Flexible Piezoelectric Drop-On-Demand Droplet Generation**

N. RIEFLER, T. WRIEDT, U. FRITSCHING University of Bremen (Germany)

12:45 h

**A Comprehensive Predictive Model to Predict Droplets Size Distribution in Pressure Swirl Atomizer**

S. JAFARI, A. KEBRIAEE Sharif University of Technology (Iran) ·  
S. SOHRABI Universitat Politècnica de Catalunya (Spain)

11:05 ~  
13:05 h

**CMT LAB VISIT**

MEETING POINT IN YELLOW ASSEMBLY ROOM ●

**THURSDAY**  
7<sup>TH</sup> SEPTEMBER

**2017**

14:25 ~ 16:05 h **SESSION · 7B EXPERIMENTAL TECHNIQUES 1**  
**CHAIRPERSON:** J.M. GARCÍA-OLIVER · Universitat Politècnica de València (Spain)

14:25 h **Determination of Heat and Flow Characteristics in Spray Cooling with Rectangular Finned Heat Sink**  
A. KARABEY Yuzuncu Yil University (Turkey) · K. YAKUT Atatürk University (Turkey)

14:45 h **Liquid-Liquid Secondary Fragmentation with Solidification**  
M. HADJ-ACHOUR, N. RIMBERT, M. GRADECK Université de Lorraine (France)

15:05 h **Planar droplet sizing: Application to a spray of Jet A1 kerosene**  
P. DOUBLET, C. LEMPEREUR, V. BODOC, M. ORAIN, P. GAJAN ONERA (France)

15:25 h **Development steps of 2-color laser-induced fluorescence with MDR-enhanced energy transfer for instantaneous planar temperature measurement of micro-droplets and sprays**  
J. PALMER, M. REDDEMANN, V. KIRSCH, R. KNEER RWTH Aachen University (Germany)

15:45 h **High Speed X-Ray Imaging for Nozzle Exit Velocity and Density Distribution Measurements of GDI Nozzles**  
R. DISTLER, C. HAMANN, M. KRÄMER, E. KULL Continental Automotive (Germany) ·  
M. WENSING Universität Erlangen-Nürnberg (Germany) ·  
Z. LI, Y. GAO, J. WANG Argonne National Laboratory (USA)

14:25 ~  
15:45 h

**SESSION · 7R COMBUSTION 1**

**CHAIRPERSON:** E. GUTHEIL · Universität Heidelberg (Germany)

14:25 h

**Influence of the chemical mechanism in the frame of diesel-like CFD reacting spray simulations using a presumed PDF flamelet-based combustion model**

F. PAYRI, J.M. GARCÍA-OLIVER, R. NOVELLA, E.J. PÉREZ-SÁNCHEZ  
Universitat Politècnica de València (Spain)

14:45 h

**Analytical / Computational Approach to Liquid Spray Heating and Vaporization at Supercritical Pressures**

A. JORDA JUANOS, W. SIRIGNANO University of California (USA)

15:05 h

**Theory of Stagnation-Point Spray Flame Ignition**

G. KATS, J.B. GREENBERG Technion- Israel Institute of Technology (Israel)

15:25 h

**Polydisperse spray flames in vortex flows**

Y. DAGAN, J.B. GREENBERG Technion- Israel Institute of Technology (Israel) ·  
D. KATOSHEVSKI Ben-Gurion University (Israel)

14:25 ~  
16:05 h

**SESSION · 7Y DROPLET 4**

**CHAIRPERSON:** P. WALZEL · TU Dortmund (Germany)

14:25 h

**Experimental investigation of size effects in colliding droplet**

L. PASTERNAK, M. SOMMERFELD Otto-Von-Guericke-University Magdeburg (Germany)

14:45 h

**Splashing of a very viscous liquid drop impacting onto a solid wall wetted by another liquid**

H. KITTEL, I. ROISMAN, C. TROPEA Technische Universität Darmstadt (Germany)

15:05 h

**Drop Stream - Immiscible Jet Collisions: Regimes and Fragmentation Mechanisms**

C. PLANCHETTE, H. HINTERBICHLER, G. BRENN Graz University of Technology (Austria)

15:25 h

**Generalized analysis of the deposition/splashing limit for one- and two-component droplet impacts upon thin films**

R. BERNARD, P. FOLTYN, A. GEPPERT, G. LAMANNA, B. WEIGAND Universität Stuttgart (Germany)

15:45 h

**Experimental study of liquid-vapor mass transfer in non-reacting and reacting droplet chains**

M. STÖHR, S. WERNER, W. MEIER German Aerospace Center, DLR (Germany)



**THURSDAY**  
7<sup>TH</sup> SEPTEMBER

**2017**

16:30 ~  
17:50 h **SESSION · 8B EXPERIMENTAL TECHNIQUES 2**  
**CHAIRPERSON:** G. BRENN · Graz University of Technology (Austria)

16:30 h **Vapor phase penetration measurements with both single and double-pass Schlieren for the same injection event**

R. PAYRI, F. SALVADOR, G. BRACHO, A. VIERA Universitat Politècnica de València (Spain)

16:50 h **X-ray diagnostics of dodecane jet in spray A conditions using the new one shot engine (NOSE)**

I. CHIBOUB, H. AJROUCHE, O. NILAPHAI, S. DOZIAS, B. MOREAU, C. HESPEL, F. FOUCHER, C. MOUNAÏM-ROUSSELLE, J.M. POUVELSE, E. ROBERT Université d'Orléans (France)

17:10 h **A quantitative analysis of nozzle surface bound fuel for diesel injectors**

J. TURNER, D. SYKES, G. DE SERCEY, V. STETSYUK, C. CRUA University of Brighton (UK) · M. GOLD, R. PEARSON British Petroleum (UK)

17:30 h **Design and experiments to investigate spray and impingement characteristics of a common rail type lubrication system**

M. STARK, S. DIGGELMANN WINGD (Switzerland) · A. DE RISI, M. GIANGRECO University of Salento (Italy)

16:30 ~  
17:50 h **SESSION · 8R COMBUSTION 2**  
**CHAIRPERSON:** R. RAGUCCI · Istituto di Ricerche sulla Combustione, CNR (Italy)

16:30 h **Multi-scale Eulerian-Lagrangian simulation of a liquid jet in cross-flow under acoustic perturbations**

S. THUILLET, D. ZUZIO, O. ROUZAUD, P. GAJAN ONERA (France)

16:50 h **Investigation of the Influence of Microexplosions on a Laminar Premixed Water-in-Fuel Emulsion Spray Flame**

N. YOKEV, J.B. GREENBERG Technion- Israel Institute of Technology (Israel)

17:10 h **Spray and Combustion Characterizations of Acetone-Butanol-Ethanol (ABE) blend at High-Pressure and High-Temperature Conditions**

O. NILAPHAI, H. AJROUCHE, C. HESPEL, B. MOREAU, F. FOUCHER, C. MOUNAÏM-ROUSSELLE Université d'Orléans (France) · C. SOMCHAI King Mongkut's University of Technology Thonburi (Thailand)

17:30 h **Computational Prediction of Primary Breakup in Fuel Spray Nozzles for Aero-Engine Combustors**

T. DAUCH, S. BRAUN, L. WIETH, G. CHAUSSONNET, M. KELLER, R. KOCH, H.J. BAUER Karlsruher Institut für Technologie (Germany)

16:30 ~ 17:50 h	<b>SESSION · 8Y DROPLET 5</b> <b>CHAIRPERSON:</b> G. LAMANNA · Universität Stuttgart (Germany)	
16:30 h	<b>Experimental and Computational Investigation of binary drop collisions under elevated pressure</b> L. REITTER, M. LIU, J. BREITENBACH, D. BOTHE, I. ROISMAN, C. TROPEA Technische Universität Darmstadt (Germany) · K.L. HUANG, K.L. PAN National Taiwan University (Taiwan) · G. BRENN Graz University of Technology (Austria)	
16:50 h	<b>Experimental investigation on puffing and micro-explosion occurrence of water in rapeseed oil emulsions droplets. Effect of the surfactant concentration</b> E.A. MELO-ESPINOSA, R. PILOTO-RODRIGUEZ Cujae (Cuba) · J. BELLETTRE, D. TARLET Université de Nantes (France) · S. VERHELST Ghent University (Belgium)	
17:10 h	<b>Experimental Investigation of Droplet Injections in the Vicinity of the Critical Point: A comparison of different model approaches</b> C. STEINHAUSEN, G. LAMANNA, B. WEIGAND, R. STIERLE, J. GROSS Universität Stuttgart (Germany) · A. PREUSCHKE, A. DREIZLER Technische Universität Darmstadt (Germany)	
17:30 h	<b>Break up length on Urea Water Solution jet in hot cross flow</b> P. SENTHILKUMAR, B. SHAMIT, T.N.C. ANAND Indian Institute of Technology Madras (India)	
17:55 ~ 18:45 h	<b>ILASS GENERAL ASSEMBLY</b> <b>CHAIRPERSON:</b> A. LOZANO · Universidad de Zaragoza (Spain)	<b>BLUE AUDITORIUM</b> ●



FRIDAY

8<sup>TH</sup> SEPTEMBER

2017

08:30 h PLENARY SESSION KEYNOTE LECTURE

BLUE AUDITORIUM ●

**Edges, Moving Surfaces, Thin Films.... Unusual Drop Impact Conditions**

ALIDAD AMIRFAZLI · York University (Canada)

09:20 ~ 3SESSION · 9B COMBUSTION 3

10:40 h CHAIRPERSON: R. NOVELLA · Universitat Politècnica de València (Spain)

09:20 h **Spray ignition and local flow properties in a swirled confined spray-jet burner: experimental analysis**

J. MARRERO SANTIAGO, A. VERDIER, A. VANDEL, G. GODARD, G. CABOT, B. RENOU CORIA (France)

09:40 h **Visualization of pilot flame of an optically-accessible coaxially-staged aero-engine lean-burn fuel injector**

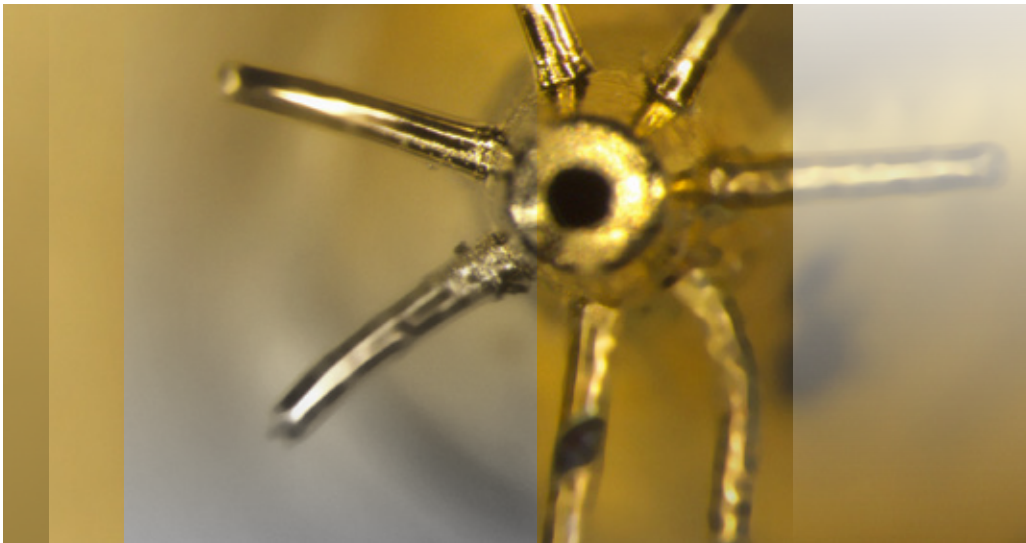
K. MATSUURA, Y. KUROSAWA, H. YAMADA, T. YAMAMOTO Japan Aerospace Exploration Agency (Japan) · S. UESAKA, T. IWASAKI, S. HAYASHI Hosei University (Japan)

10:00 h **Spray Combustion Chamber: History and Future of a Unique Test Facility**

A. SCHMID, N. YAMADA WINGD (Switzerland)

10:20 h **Study of the soot quantification for two-stage injection of hydrogenated catalytic biodiesel in a constant-volume combustion chamber**

J. CAO, Z. HE, B. LI, W. ZHONG, M. WANG Jiangsu University (China)



09:20 ~  
10:40 h

**SESSION · 9R INTERNAL FLOW**

**CHAIRPERSON:** J. DE LA MORENA · Universitat Politècnica de València (Spain)

09:20 h

**Towards design optimization of high-pressure gasoline injectors using Genetic Algorithm coupled with Computational Fluid Dynamics (CFD)**

R. HELLMANN, P. JOCHMANN, K.G. STAPF, E. SCHUENEMANN Robert Bosch (Germany) ·  
L. DARÓCZY, D. THÉVENIN Otto-von-Guericke-University Magdeburg (Germany)

09:40 h

**Investigation of the effects of fluid properties representation and boundary condition selection in numerical simulations of micro scale flows with phase change**

D. PEARCE, A. TAYLOR, Y. HARDALUPAS Imperial College London (UK) ·  
K. VOGIATZAKI University of Brighton (UK)

10:00 h

**Numerical simulation of compressible cavitating two-phase flows with a pressure-based solver**

M. CRISTOFARO, W. EDELBAUER AVL (Austria) ·  
M. GAVAISES, P. KOUKOUVINIS City University of London (UK)

10:20 h

**Numerical investigation of the role of heat transfer in bubble dynamics**

S.R. FOSTIROPOULOS, I. MALGARINOS, P. KOUKOUVINIS, M. GAVAISES City University of London (UK) ·  
G. STROTOS Piraeus University (Greece) ·  
N. NIKOLOPOULOS, E. KAKARAS Centre for Research and Technology Hellas (Greece)

09:20 ~  
10:40 h

**SESSION · 9Y DROPLET 6**

**CHAIRPERSON:** P. MARTÍ-ALDARAVÍ · Universitat Politècnica de València (Spain):

09:20 h

**Evaluation of the combustion characteristics of isolated droplets of Jet A blended with ethanol and butanol**

Á. MUELAS, P. REMACHA, J. BALLESTER Universidad de Zaragoza / CSIC (Spain)

09:40 h

**Experimental and Numerical Investigation of Dispersed and Continuous Liquid Film under Boiling conditions**

C. HABCHI, S. JAY IFP Energies nouvelles (France) ·  
N. LAMARQUE, J. HÉLIE Continental Automotive (France)

10:00 h

**Development of an evaporation model for the dense spray region in Eulerian-Eulerian multiphase flow simulations**

S. PUGGELLI, L. PALANTI, A. ANDREINI University of Florence (Italy) · F.X. DEMOULIN CORIA (France)

10:20 h

**Drop Impact onto a Metallic Porous Layer: Effect of Liquid Viscosity and Air Entrapment**

C. BOSCARIOL, D. SARKER, B. KANG, C. CRUA, M. MARENGO University of Brighton (UK)

**FRIDAY**

**8<sup>TH</sup> SEPTEMBER**

**2017**

11:05 ~  
13:05 h **SESSION · 10B EXPERIMENTAL TECHNIQUES 3**  
CHAIRPERSON: J. MONSALVE · Universitat Politècnica de València (Spain)

11:05 h **Visualisation and quantitative analysis of the near nozzle formation and structure of a high pressure water jet in air and water**  
S. JASPER Bochum University of Applied Sciences (Germany) · J. HUSSONG Ruhr-University Bochum (Germany) · R. LINDKEN Bochum University of Applied Sciences (Germany)

11:25 h **Experimental investigation of Ethane and Propane injection under sub- and super-critical conditions**  
N. VALLEE, G. RIBERT, J.B. BLAISOT, D. LISIECKI CORIA (France)

11:45 h **An improved image processing method for particle characterization by shadowgraphy**  
H. WANG Dantec Dynamics (Denmark) · F. FELIS, S. TOMAS IRSTEA (France) · F. ANSELMET, M. AMIELH IRPHE (France)

12:05 h **Measurement of polymeric time scales from linear drop oscillations**  
G. PLOHL, G. BRENN Graz University of Technology (Austria)

12:25 h **Visualization of water droplet deformation and breakup in a continuously accelerating flow field**  
A. GARCIA-MAGARIÑO ISDEFE (Spain) · S. SOR INTA (Spain) · A. VELÁZQUEZ Universidad Politécnica de Madrid (Spain)

12:45 h **Analysis of Heat and Flow Characteristics on Spray Cooling Heat Transfer with an Optimized Hexagonal Finned Heat Sink**  
F. YESILDAL Agri Ibrahim Cecen University (Turkey) · K. YAKUT Atatürk University (Turkey)

11:05 ~  
13:05 h **SESSION · 10R INTERNAL FLOW**  
CHAIRPERSON: C. HABCHI · IFP Energies nouvelles (France)

11:05 h **Statistical methods of images analysis as an essential tool in the assessment process of computer methods intended for numerical simulations of cavitating flows**  
A. NIEDŹWIEDZKA, S. LIPIŃSKI University of Warmia and Mazury in Olsztyn (Poland)

11:25 h **Effect of geometry of real-size transparent nozzles on cavitation and on the atomizing jet in the near field**  
Y. CAO, S. IDLAHCEN, J.B. BLAISOT, C. ROZÉ CORIA (France) · L. MÉÉS École Centrale de Lyon (France) · D. MALIGNE Delphi (FRANCE)

11:45 h **VOF Simulation of The Cavitating Flow in High Pressure GDI Injectors**  
F. GIUSSANI, A. MONTORFANO, F. PISCAGLIA, A. ONORATI Politecnico di Milano (Italy) · J. HÉLIE Continental Automotive (France)



12:05 h	<p><b>High-speed X-Ray Phase Contrast Imaging of String Cavitation in a Diesel Injector Orifice</b></p> <p>I. KARATHANASSIS, P. KOUKOUVINIS, M. LORRENZI, E. KONTOLATIS, N. MITROGLOU, M. GAVAISES City University of London (UK) · Z. LI, J. WANG Argonne National Laboratory (USA)</p>
12:25 h	<p><b>High Speed Shadowgraphy of Transparent Nozzles as an Evaluation Tool for In-Nozzle Cavitation Behavior of GDI Injectors</b></p> <p>D. MAMAIKIN, T. KNORSCH, P. ROGLER, P. LEICK Robert Bosch (Germany) · M. WENSING Universität Erlangen-Nürnberg (Germany)</p>
12:45 h	<p><b>Binary cavitation in a transparent three hole GDI nozzle</b></p> <p>H. CHAVES, S. DONATH Technical University of Freiberg (Germany)</p>
11:05 ~ 13:05 h	<p><b>SESSION - 10Y DROPLET 7</b></p> <p>CHAIRPERSON: F. J. SALVADOR · Universitat Politècnica de València (Spain)</p>
11:05 h	<p><b>Models for automotive fuel droplets heating and evaporation</b></p> <p>M. AL QUBEISSI Coventry University (UK) · S. SAZHIN University of Brighton (UK) · N. AL-ESAWI Coventry University (UK)</p>
11:25 h	<p><b>Numerical investigation of the aerodynamic breakup of diesel droplets under various gas pressures</b></p> <p>D. STEFANITSIS, I. MALGARINOS, M. GAVAISES City University of London (UK) · G. STROTOS Piraeus University (Greece) · N. NIKOLOPOULOS, E. KAKARAS Centre for Research and Technology Hellas (Greece)</p>
11:45 h	<p><b>Droplets heating and evaporation: an application to diesel-biodiesel fuel mixtures</b></p> <p>M. AL QUBEISSI, N. AL-ESAWI Coventry University (UK) · S. SAZHIN University of Brighton (UK)</p>
12:05 h	<p><b>Expansion rates of bubble clusters in superheated liquids</b></p> <p>D. DIETZEL, T. HITZ, C.D. MUNZ, A. KRONENBURG Universität Stuttgart (Germany)</p>
12:25 h	<p><b>Kinetic and MD modelling of automotive fuel droplets heating and evaporation: recent results</b></p> <p>S. SAZHIN University of Brighton (UK) · I. SHISHKOVA Moscow Power Engineering Institute (Russia)</p>
12:45 h	<p><b>Dilute polymer solution drops impacting on heated surfaces: New impact morphologies and impact regime maps</b></p> <p>C. LAKHANPAL, V. BERTOLA University of Liverpool (UK)</p>