

Sunday, May 16, 2010

PROGRAM SCHEDULE

Welcome to the ILASS-Americas 2010 22nd Annual Conference

Sunday - MAY 16, 2010

6:00 pm - 9:00 pm

Reception and Registration

Regency Ballroom B & C

Sponsored by Parker Hannifin Gas Turbine Fuel Systems Division

ILASS-2010 is the 22nd Annual Conference on Liquid Atomization and Spray Systems, North and South America. As an organization, we've grown and developed since our very first meeting in Madison, Wisconsin in 1987. Like previous ILASS conferences, ILASS-2010 will provide a venue for industrialists, researchers, academics, and students engaged in the scientific development and practice of atomization to meet and share recent developments in the field. There is no better opportunity to learn about the latest advancements in sprays and atomization and to network with other experts in the industry.

Please take advantage of the free networking time set aside to connect with old friends and make new ones. We at ILASS Americas extend you a warm welcome and wish you a great conference.

Monday, May 17, 2010

MONDAY - MAY 17, 2010

7:00 am

Breakfast

Regency Ballroom B & C

7:45 am

Welcome and Opening Remarks

Regency Ballroom E & F

8:00 am

Invited Lecture

Eulerian Quadrature-Based Moment Methods for Polydisperse Sprays

Rodney O. Fox, Iowa State University

Chair: R.D. Reitz (University of Wisconsin-Madison)

Regency Ballroom E & F

8:50 am

Transition to General Sessions

SESSION 1A

Automotive & Gasoline Sprays

Regency Ballroom E & F

Chairs: T. Fang (North Carolina State University),
J. McCarthy (Eaton Corporation)

SESSION 1B

Aerated & Supercritical Jets

Regency Ballroom G

Chairs: D. Talley (Air Force Research Laboratory),
M. F. Trujillo (University of Wisconsin)

9:00 am

***Direct Injection Multi-hole Spray and Mixing
Characterization of Ethanol Gasoline
Blends in Engine***

ILASS2010-138

A. Matsumoto, X. Xie, Y. Zheng, M.-C. Lai, Wayne
State University, W. Moore, Delphi Corporation

***Large Eddy Simulations of temporal mixing
layers under supercritical thermodynamic
conditions: O₂/H₂***

ILASS2010-179

E. S. Taskinoglu and J. Bellan
California Institute of Technology and Jet
Propulsion Laboratory

9:25 am

***Time-Resolved Measurements of In-
Cylinder Fuel Spray and Combustion
Characteristics using High-Speed
Visualization and Ionization Sensing***

ILASS2010-122

D. L. S. Hung, G. G. Zhu, and H. Schock
Michigan State University

***Exploration of Near-Field Structures of
Aerated-Liquid Jets in a Quiescent
Environment Using the X-Ray Technique***

ILASS2010-115

K.-C. Lin, Taitech Inc, C. Rajnec, J. McCall,
C. Carter, Air Force Research Laboratory, and
K. Fezzaa, Argonne National Laboratory

9:50 am

***Modeling Charge Preparation and
Combustion in Diesel Fuel, Ethanol, and
Dual-Fuel PCCI Engines***

ILASS2010-125

S. L. Kokjohn, D. A. Splitter, R. M. Hanson,
R. D. Reitz, University of Wisconsin-Madison
V. Manente and B. Johansson, Lund University

***Droplet Nucleation Processes Inside the
Injectors of Supercritical Ethylene Jets***

ILASS2010-116

K.-C. Lin, Taitech Inc., C. Carter, Air Force
Research Laboratory, A. Sandy, S. Narayanan,
J. Ilavsky, and J. Wang, Argonne National
Laboratory

Monday, May 17, 2010

10:15 am
Break, Exhibits, Posters

Regency Ballroom B & C & D

10:40 am
Panel Session

Regency Ballroom E & F

Spray Control for Maximizing Energy Efficiency and Reducing Emission of Pollutants in Combustion Engines

Moderator: Norman Chigier, Carnegie Mellon University

William Bachalo, Artium Technologies, Inc., Josette Bellan, California Institute of Technology and Jet Propulsion Laboratory, Marcus Herrmann, Arizona State University, Rolf D. Reitz, University of Wisconsin-Madison, Jin Wang, Argonne National Laboratory

11:50 pm
Lunch Break, Exhibits, Posters

Regency Ballroom B & C & D

SESSION 3A

Spray Modeling & Evaporation

Regency Ballroom E & F

Chairs: M. R. Archambault (Florida Institute of Technology), C. Bolszo (UC Irvine)

A Vaporization Model for Realistic Multi-Component Fuels

ILASS2010-123

S. Yang, Y. Ra, and R. D. Reitz
University of Wisconsin-Madison

Effect of Grid Spacing in Large-Eddy Simulation of Evaporating Drops in a Mixing Layer

ILASS2010-178

S. Radhakrishnan and J. Bellan, California Institute of Technology and Jet Propulsion Laboratory

Droplet-ambient sub-grid interaction modeling in large eddy simulation of diesel sprays

ILASS2010-146

N. Bharadwaj and C. Rutland
University of Wisconsin-Madison

Computational Study of Effects of Drop Size Distribution in Fire Suppression Systems

ILASS2010-175

G. Tanner, W. Kalata, K. Brown, and R. J. Schick
Spraying Systems Co.

SESSION 3B

Spray Cooling / Sheet Atomization

Regency Ballroom G

Chairs: M. Lightfoot (AFRL), O. Desjardins (University of Colorado at Boulder)

1:15 pm
Droplet Impingement Heat Transfer

ILASS2010-133

E. Gehring and M. F. Trujillo
University of Wisconsin

1:40 pm
Fluid Dynamics of Thin Steel Slab Continuous Casting Secondary Cooling Zone Air Mists

ILASS2010-143

J. I. M. Minchaca, A. H. E. Castillejos, F. A. G. Acosta, Unidad Saltillo, S. Murphy, Oxford Lasers

2:05 pm
Empirical and theoretical analysis of the stability of an air-assisted atomising annular liquid sheet

ILASS2010-104

D. Duke, D. Honnery, and J. Soria
Monash University

2:30 pm
Characterization of liquid sheet breakup using numerical experiments

ILASS2010-145

J. Sinclair and S. Abanteriba, RMIT University

Monday, May 17, 2010

2:55 pm
Break, Exhibits, Posters
Regency Ballroom B & C & D

SESSION 4A
Spray Modeling & Evaporation
Household Sprays

Regency Ballroom E & F

Chairs: G. Aguilar (UC Riverside), B. Helenbrook
(Clarkson University)

SESSION 4B
Diagnostics

Regency Ballroom G

Chairs: M. Cloeter (The Dow Chemical Company),
J. Gao (University of Wisconsin-Madison)

3:20 pm

Stochastic Spray Flow Models: A Review

ILASS2010-111

M. R. Archambault
Florida Institute of Technology

***Measurement of Thin Liquid Film
Characteristics using Laser Focus
Displacement Instruments for Atomization
Applications***

ILASS2010-110

J. L. Wegener, University of California-Los Angeles
and J. A. Drallmeier, Missouri University of Science
and Technology

3:45 pm

Numerical Spray Calibration Process

ILASS2010-156

P. Mandloi and J. Mutyal
ANSYS Inc.

***Spray Diagnostics at the Advanced Photon
Source 7-BM Beamline***

ILASS2010-105

A. L. Kastengren, C. F. Powell, D. Arms,
E. Dufresne, and J. Wang, Argonne National
Laboratory

4:10 pm

***Novel External Atomizing Nozzle for
Domestic Household Aerosols***

ILASS2010-144

R. Sharief, Lionstar Corp. Ltd

***Mass Flux Measurement of Two Phase
Dense Spray Using a Coupled Impulse
Probe and PDPA Technique***

ILASS2010-182

M. A. Rahman, University of Alberta,
F. Vakili-Farahani, Ecole Polytechnique Federale de
Lausanne, T. Heidrick, and B. A. Fleck, University of
Alberta

4:45 pm

Technical Meetings

**Computational and
Modeling**

Regency Ballroom E & F

**Diesel and
Automotive**

Regency Ballroom G

**Industrial and
Agricultural Sprays**

Hoosier A & B

5:45 pm

Close 1st Day

Tuesday, May 18, 2010

TUESDAY - MAY 18, 2010

7:00 am

Breakfast

Regency Ballroom B & C

8:00 am

Invited Lecture

Liquid Fuel Injection for GE Low Emissions Gas Turbine Engines

A. Mancini, General Electric

Chair: W. Bachalo (Artium Technologies, Inc.)

Regency Ballroom E & F

8:50 am

Transition to General Sessions

SESSION 5A

Crossflow Atomization

Regency Ballroom E & F

Chairs: V. McDonell (UC Irvine), N. Trask
(University of Massachusetts)

SESSION 5B

Medical Sprays

Regency Ballroom G

Chairs: C. Lengsfeld (University of Denver),
D. K. Giles (UC Davis)

9:00 am

Three-Dimensional Penetration and Velocity Distribution of Liquid Jets Injected Transversely into a Swirling Crossflow

ILASS2010-119

S. B. Tambe and S.-M. Jeng
University of Cincinnati

Fine Spray Behaviour upon Impaction of Varied Material Surfaces

ILASS2010-101

J. A. Stewart, G. G. Nasr, M. Burby, and A. Nourian
University of Salford

9:25 am

Experimental and Computational Study of a Spray at Multiple Injection Angles

ILASS2010-160

K. M. Bade, W. Kalata, and R. Schick
Spraying Systems Co.

Micro-Particles Dispersion and Gas Dynamics in an Axi-Symmetric Supersonic Nozzle

ILASS2010-174

S. M. Soliman, S. Abdallah, E. J. Gutmark, and
M. Turner, University of Cincinnati

9:50 am

Break, Exhibits, Posters

Regency Ballroom B & C & D

Tuesday, May 18, 2010

SESSION 6A

Crossflow Atomization

Regency Ballroom E & F

Chairs: M. Benjamin (GE Aviation),
S. Tambe (University of Cincinnati)

10:15 am

Analysis of Liquid Column Instabilities of a Plain Liquid Jet in a Crossflow Using Image Processing Techniques

ILASS2010-159

Q. Wang, U. M. Mondragon, C. T. Brown, and
V. G. McDonell, Energy Research Consultants

10:40 am

A Prediction of Primary Atomization for a Subsonic Spray in Crossflow Using the Σ -Y Model

ILASS2010-129

N. Trask and D. P. Schmidt
University of Massachusetts

11:05 am

A KIVA-based Model for Liquid Jet in Cross Flow

ILASS2010-112

M. Behzad, A. Mashayek, and N. Ashgriz
University of Toronto

11:30 am

The Influence of Density Ratio on the Primary Atomization of a Turbulent Liquid Jet in Crossflow

ILASS2010-162

M. Herrmann, Arizona State University

SESSION 6B

Flashing

Regency Ballroom G

Chairs: A. Kastengren (Argonne National
Laboratory), R. Schick (Spraying Systems Co.)

The Effect of Flashing on Characteristics of Sprays of Splash-Plate Nozzles

ILASS2010-126

R. Karami, N. Ashgriz, and H. N. Tran
University of Toronto

High-Speed Shadowgraphy Investigations of Superheated Liquid Jet Atomisation

ILASS2010-109

H. Kamoun, G. Lamanna, B. Weigand,
Universitaet Stuttgart, and J. Steelant, ESTEC-
ESA

Estimating the Secondary Droplet Size Distribution after Micro-Explosion of Bio-Fuel Droplets

ILASS2010-165

C. Shen, W. L. Cheng, K. Wang, and C. F. Lee,
University of Illinois at Urbana-Champaign

Spray patternation of a multi-hole injector utilizing planar line-of-sight extinction tomography

ILASS2010-173

S. E. Parish, R. J. Zink, General Motors R&D,
Y. Sivathanu, and J. Lim, En'Urga Inc.

12:00 pm

Annual Business Meeting, Exhibits, Posters

Regency Ballroom B & C & D

Sponsored by Spraying Systems Co.

Tuesday, May 18, 2010

SESSION 7A
Drop/Spray Impact
Regency Ballroom E & F

Chairs: N. Ashgriz (University of Toronto),
D. Schmidt (University of Massachusetts)

***Droplet Lamella Lift Dynamics and
Surface Wettability***

ILASS2010-132

H. Vu and G. Aguilar
University of California, Riverside

***Effects of Interfacial and Viscous
Properties of Liquids on Drop Spread
Dynamics***

ILASS2010-142

V. Ravi, M. A. Jog, and R. M. Manglik
University of Cincinnati

***Experimental Investigation of Droplet
Dynamics and Spray Atomization inside
Thermostatic Expansion Valves***

ILASS2010-164

M. Huo and C. F. Lee
University of Illinois at Urbana-Champaign

***Impact Study of a Clean in Place Tank
Wash System***

ILASS2010-181

K. J. Brown, W. Kalata, R. J. Schick, Spraying
Systems Co., A. Maruszewski and A. Parihar,
Ansys Inc.

SESSION 7B
Computational Methods
Regency Ballroom G

Chairs: J. Bellan (Jet Propulsion Laboratory),
M. F. Trujillo (University of Wisconsin)

1:05 pm

***Quadrature-free Discontinuous Galerkin
Level Set Scheme***

ILASS2010-158

M. Czajkowski and O. Desjardins
University of Colorado at Boulder

1:30 pm

***A level-set based methodology for
modeling interfacial flows characterized
by large density ratios***

ILASS2010-172

M. Raessi and H. Pitsch, Stanford University

1:55 pm

***A Numerical Method for Variable Surface
Tension Effects in Non-Isothermal
Atomization with Overset Grids***

ILASS2010-152

P. Brady, M. Herrmann, and J. Lopez
Arizona State University

2:20 pm

***Reduced Order Modeling of Steady and
Unsteady Flow over a Sphere***

ILASS2010-141

B. T. Helenbrook and D. R. Whitman
Clarkson University

2:45 pm

Break, Exhibits, Posters

Regency Ballroom B & C & D

Tuesday, May 18, 2010

SESSION 8A

Automotive/Gasoline Sprays

Regency Ballroom E & F

Chairs: M.-C. Lai (Wayne State University),
S. Parrish (General Motors R&D)

3:10 pm

Effect of Injection Pressures on GDI Spray and Atomization of Different Fuels

ILASS2010-136

J. Zhang, S. Yao, H. Patel, and T. Fang
North Carolina State University

SESSION 8B

Drops

Regency Ballroom G

Chairs: K. Bade (Spraying Systems Co.),
B. Helenbrook (Clarkson University)

Particle Transport Characteristics and the Stokes Number

ILASS2010-131

M. F. Trujillo, University of Wisconsin

3:35 pm

Exhaust Tailpipe Fuel Spray Optimization and Fuel Usage Rates for Operating an Exhaust Aftertreatment System on a Heavy- Duty Diesel Engine Powered Vehicle

ILASS2010-177

J. McCarthy, Jr., D. Bamber, and S. Ambrose
Eaton Corporation

A Computational Study of Viscoelastic Droplet Collisions

ILASS2010-117

K. Mooney, S. Menon, and D. P. Schmidt
University of Massachusetts Amherst

4:15 pm

Technical Meetings

Spray Measurement and Instrumentation

Regency Ballroom E & F

Physics of Atomization

Regency Ballroom G

Rocket & Airbreathing Power Fuel Atomization and Industrial Combustion

Hoosier A & B

5:15 pm

Close 2nd Day

5:45 pm

Buses leave for ILASS Banquet

Wednesday - MAY 19, 2010

7:00 am

Breakfast

Regency Ballroom B & C

SESSION 9A

Diesel/Biodiesel Sprays

Regency Ballroom E & F

Chairs: R. D. Reitz (University of Wisconsin-Madison), K.-C. Lin (Taitech Inc.)

SESSION 9B

Swirl Atomizers/Spray Drying

Regency Ballroom G

Chairs: W. Bachalo (Artium Technologies, Inc.), J. Drallmeier (Missouri University of Science & Technology)

8:00 am

Effects of Micro-Explosion on Butanol-Biodiesel-Diesel Spray and Combustion

ILASS2010-168

Y. Liu, Jilin University, W. L. Cheng, M. Huo, C. F. Lee, University of Illinois at Urbana-Champaign, and J. Li, Jilin University

Experimental Investigation of Aeration Effect on Spray Characteristics of Internally Mixed Swirl Co-Axial Atomizer

ILASS2010-155

D. P. Mishra and V. Joshi
Indian Institute of Technology, Kanpur

8:25 am

Axial Development of Diesel Sprays at Varying Ambient Density

ILASS2010-106

A. L. Kastengren, C. F. Powell, Z. Liu, S. Moon, J. Gao, X. Zhang, and J. Wang
Argonne National Laboratory

Effect of Viscosities on the Instability of Sprays from a Swirl Atomizer

ILASS2010-135

S. Yao, J. Zhang, and T. Fang
North Carolina State University

8:50 am

Ultra-Fast Phase-Contrast X-ray Imaging of Near-Nozzle Velocity Field of High-Speed Diesel Fuel Sprays

ILASS2010-169

Z. Liu, K.-S. Im, ANL, X. Xie, Wayne State University, Y. Wang, X. Zhang, S. Moon, J. Gao, K. Fezzaa, ANL, M.-C. Lai, Wayne State University, K. Harkay, V. Sajaev, L. Emery, and J. Wang, ANL

Breakup of Water-in-Oil Emulsions in Liquid Jets and Conical Sheets

ILASS2010-150

C. D. Bolszo, M. Rohani, A. A. Narvaez, D. Dunn-Rankin, V. G. McDonell, and W. A. Sirignano,
University of California, Irvine

9:15 am

Morphology of Diesel Sprays from Single-Orifice Micronozzles

ILASS2010-163

J. Gao, University of Wisconsin-Madison, Z. Liu, S. Moon, ANL, X. Xie, Wayne State University, E. Dufresne, K. Fezzaa, ANL, M.-C. Lai, Wayne State University, J. Wang, ANL, and R. D. Reitz, University of Wisconsin-Madison

Pressure Swirl Atomization of Water-in-Oil Emulsions

ILASS2010-151

C. D. Bolszo, A. A. Narvaez, D. Dunn-Rankin, V. G. McDonell, and W. A. Sirignano, University of California, Irvine

9:40 am

Ultrafast X-ray Phase-Contrast Imaging of High-Speed Fuel Sprays from a Two-Hole Diesel Nozzle

ILASS2010-154

S. Moon, Z. Liu, J. Gao, E. Dufresne, K. Fezzaa, J. Wang, Argonne National Laboratory, X. Xie and M.-C. Lai, Wayne State University

Attrition Resistant Fluid Catalytic Cracking Catalyst: Formulation and Spray Drying

ILASS2010-176

Y. Chang, Sigma Innova LLC, L. Du and G. Su,
Tianjin Sigma Innova Co.

Wednesday, May 19, 2010

10:05 am
Break, Exhibits, Posters
Regency Ballroom B & C & D

SESSION 10A
Agricultural Sprays

Regency Ballroom E & F

Chairs: C. Lipp (Lake Innovation LLC), K. Brown
(Spraying Systems Co.)

SESSION 10B
Electro Sprays

Regency Ballroom G

Chairs: M. Raessi (Stanford University),
M. Herrmann (Arizona State University)

10:30 am

***Evaporation Time and Spread Area of
Adjuvant-amended Droplets on Waxy and
Hairy Leaves***

ILASS2010-140

H. Zhu, USDA/ARS Application Technology
Research Unit, Y. Yu, Yunnan Agricultural
University, L. Xu, Nanjing Forestry University,
H. E. Ozkan, The Ohio State University, and
C. R. Krause, USDA/ARS Application Technology
Research Unit

***Simulating Electrohydrodynamic
Atomization for Fuel Injection***

ILASS2010-108

B. Van Poppel, O. Desjardins, and J. W. Daily
University of Colorado at Boulder

10:55 am

***Planar Laser Induced Fluorescence (PLIF)
Flow Visualization applied to Agricultural
Spray Nozzles with Sheet Disintegration;
Influence of an Oil-in-Water Emulsion***

ILASS2010-161

M. D. Cloeter, K. Qin, P. Patil, and B. Smith
The Dow Chemical Company

***Multicompartmental Microstructured
Materials via Electrohydrodynamic Co-
Jetting: A Diagnostic and Biosensing
Platform***

ILASS2010-127

S. Bhaskar, K. M. Pollock, J. Hitt, H. Nandivada,
X. Deng, and J. Lahann
University of Michigan Ann Arbor

11:20 am
End of Conference

POSTER SESSION

Regency Ballroom D

Carbon nanotube assisted electrostatic atomization of fuel

N. Jiang, N. Shao, R. L. Fink, L. H. Thuesen, Applied Nanotech, Inc, and S.-M. Jeng, University of Cincinnati

Film Profile Variation in Injectors with Swirling Flow

M. D. A. Lightfoot, S. A. Schumaker, and S. A. Danczyk, Air Force Research Laboratory

Effects of Liquid Film on Single Droplet Heat Transfer

D. Banks, H. Vu, and G. Aguilar, University of California, Riverside

Numerical study on diesel spray in a constant volume vessel with high temperature and high pressure

Y. Ren, Q. So, and X. Li, University of Waterloo

High-Fidelity Simulation of Impinging Jet Sprays

M. Arienti, United Technologies Research Center, and R. J. Jensen Pratt & Whitney Rocketdyne

Multicompartmental Biodegradable Microparticle and Microfibers via Electrohydrodynamic co-jetting for Biomedical Applications

S. Bhaskar, K. M. Pollock, J. Hitt, S.-W. L. Chang, and J. Lahann, University of Michigan

Extensional Viscosity Limits in Spray Drying Processes

J. Stamper, J. Hecht, and L. Zanooni, Procter & Gamble