

PROGRAM SCHEDULE

Welcome to the ILASS-Americas 2007 20th Annual Conference

TUESDAY - MAY 15, 2007

6:00 pm – 9:00 pm

Reception and Registration, *Grand Ballroom Pre-Function Area*
(Sponsored by ILASS Americas)

ILASS-2007 is the 20th 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-2007 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. In addition, this year's conference will include a retrospective of the last 20 years of our organization and activities and events to ensure we provide a solid technology base for spray researchers for the next 20 years. 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.

WEDNESDAY - MAY 16, 2007

7:00 am – Breakfast

Room: St. Clair Meeting Room Pre-Function Area
(Sponsored by Woodward Inc.)

7:45 am – Welcome and opening remarks, *Grand Ballroom* *Salon B & C*

8:00 am – Invited Lecture: **Chung (Ed) K. Law, Princeton University** ***Dynamics of Droplet Collision***

8:50 am – Transition to General Sessions

SESSION 1A

AUTOMOTIVE SPRAYS

(Room: Lakeshore East)

Chairpersons: Scott E. Parrish, General Motors R&D, and Chia-fon Lee, University of Illinois at Urbana-Champaign

Multi-Hole Injector Spray Characterization Utilizing White Light Volume Illumination and Schlieren Techniques

Adam Pawlowski, Aachen Reinhold Kneer, RWTH Aachen and Scott E. Parrish, General Motors R&D

SESSION 1B

SPRAY MODELING

(Room: Lakeshore West)

Chairpersons: Josette Bellan, Jet Propulsion Laboratory and California Institute of Technology, and Rolf D., Reitz, University of Wisconsin-Madison

9:00 am

Modeling requirements for Large Eddy Simulation of multicomponent fuel two-phase flows using Continuous Thermodynamics

Josette Bellan and Laurent Selle, Jet Propulsion Laboratory and California Institute of Technology

9:25 am

Experimental and Numerical Investigation of Common-Rail Ethanol Sprays at Diesel Engine-Like Conditions

Peter Spiekermann, Sven Jerzembeck, Stefan Vogel, Christian Felsch, Norbert Peters from RWTH Aachen, Germany

A Continuous Thermodynamics Formulation for the Vaporization of Liquid Mixtures

Way Lee Cheng, Chia-fon Lee, University of Illinois at Urbana-Champaign

9:50 am

Fuel film measurements of an impinging Diesel spray

Ben Steinhaus, Jaal Ghandhi, University of Wisconsin-Madison

A New Spray Model for Transient Diesel Sprays with Time-varying Injection Rates

Neerav Abani, Rolf D., Reitz, University of Wisconsin-Madison

10:15 am - Break, Exhibits, Posters

Breaks in Room: St. Clair Meeting Room, Pre-Function

Exhibition Room: St. Clair Salons 1, 2 & 3

(Sponsored by General Motors, R&D and Planning)

SESSION 2A

ATOMIZATION

(Room: Lakeshore East)

Chairpersons: Douglas G. Talley, Air Force Research Laboratory, and Stephen D. Heister, Purdue University

10:30 am

On the Contribution of Orifice Design to the Primary Atomization Process

James V. Canino, Stephen D. Heister, Purdue University

SESSION 2B

Panel Session

DENSE SPRAY DIAGNOSTICS

(Room: Lakeshore West)

Moderator: Greg Smallwood, NRC Canada

This session was organized by the Measurement and Instrumentation Technical Committee. A one page "mini-paper" that provides some details regarding the methods discussed is included in the book of abstracts.

Yudaya Sivathanu, En'Urga
Visible Light Extinction Tomography

10:55 am

The primary breakup of a round liquid jet by a coaxial flow of gas

Dokyun Kim, Olivier Desjardins,
Marcus Herrmann, Parviz Moin,
Stanford University

Terry Parker, Colorado School of
Mines

Infrared Scattering

Jin Wang, Argonne National Laboratory
X-Ray Extinction

11:20 am

A Method to Predict Atomization Performance in Gas-Centered Swirl-Coaxial Injectors

Malissa D.A. Lightfoot, Stephen A.
Danczyk, Douglas G. Talley, Air Force
Research Laboratory

Mark Linne, Sandia National
Laboratory

Ballistic Imaging

Moderated Discussion
Panelists and Audience

11:45 am

Low pressure atomization and mixing to simulate cryogenic fluid behavior in a thermodynamic vent system for long storage duration

Philippe Konieczny, Jean-Paul
Thibault, Bruno Vieille, CNES, France

12:10 pm - Lunch Break, Exhibits, Posters

Lunch Room: Grand Ballroom B & C

Exhibition Room: St. Clair Salons 1, 2 & 3

(Sponsored by Parker Hannifin Corporation)

SESSION 3A

ELECTROSTATICS

(Room: Lakeshore East)

Chairpersons: Farzad Mashayek,
University of Illinois at Chicago, and

SESSION 3B

**DROPLET DEFORMATION AND
BREAKUP**

(Room: Lakeshore West)

Chairpersons: Chia-fon Lee,
University of Illinois at Urbana-

Dimitrios Kyritsis, University of Illinois
at Urbana-Champaign

Champaign, and Nasser Ashgriz,
University of Toronto

1:30 pm

Electrostatic Atomization of Vegetable Oils

G. Al-Ahmed, University of Illinois at Chicago, J. S. Shrimpton, Imperial College, London, and F. Mashayek, University of Illinois at Chicago

A model for deformation of liquid jets and droplets subjected to gaseous flows

Alireza Mashayek, University of California San Diego Ali Jafari and Nasser Ashgriz, University of Toronto

1:55 pm

Electrostatically Assisted Fuel Injection and Charged Droplet Combustion

Eric Anderson, University of Illinois at Urbana-Champaign Antonio, P. Carlucci and Arturo De Risi, University of Lecce, Italy and Dimitrios Kyritsis, University of Illinois at Urbana-Champaign

Modeling Droplet Breakup Processes in Biodiesel Engines under Micro-Explosion Conditions

Kuo-Ting Wang, Chia-fon Lee, University of Illinois at Urbana-Champaign

2:20 pm

POSTER SESSION

3:00 pm - Break, Exhibits, Posters

Breaks in Room: St. Clair Meeting Room Pre-Function

Exhibition Room: St. Clair Salons 1, 2 & 3

(Sponsored by Solar Turbines Inc.)

SESSION 4A

DIAGNOSTICS

(Room: Lakeshore East)

Chairpersons: James A. Drallmeier, University of Missouri – Rolla, and Mark Linne, Sandia National Lab

SESSION 4B

COMPUTATIONAL METHODS

(Room: Lakeshore West)

Chairpersons: Chris Edwards, Stanford University, and M.F. Trujillo, Penn State University

3:25 pm

Propagation of ultra-short laser light pulses in spray environments

Edouard Berrocal, Combustion Physics Lund University David L.

Beyond the Point Particle: LES-Style Filtering of Finite-Sized Particles.

Brooks Moses, Chris Edwards, Stanford University

Sedarsky, Megan E. Paciaroni, Igor V.
Meglinski, Mark A. Linne, Sandia
National Lab

3:50 pm

***Development of a Non-intrusive
Film Thickness Measurement
Technique for Dynamic Shear-
driven Thin Liquid Films***

Mark A. Friedrich, Hai Lan, James A.
Drallmeier, and Bassem F. Armaly,
University of Missouri – Rolla

***Accurate Spray Simulations using
the Lagrangian-Eulerian Method***

Rahul Garg, Shankar Subramaniam,
Iowa State University

4:15 pm

***Ballistic imaging of the near field for
jets in gaseous crossflow***

David Sedarsky, Lund University
Megan Paciaroni, International
Scientific Solutions Incorporated

***Analytical Calculations of Spatial
Accuracy of Collision Rate***

Computations

Scott Post, Bradley University,
Foo-Chern Ting, Ford Motor Co., and
Song-Lin Yang, Michigan Technological
University

4:40 pm

Technical Meetings

Computational and Modeling (*Room: Lakeshore East*)

Diesel and Automotive (*Room: Lakeshore West*)

Industrial and Agricultural Sprays (*Room: Ontario Board Room*)

5:40 pm

Close 1st Day

THURSDAY - MAY 17, 2007

7:00 am – Breakfast

Room: St. Clair Meeting Room Pre-Function Area
(Sponsored by Nektar Therapeutics)

8:00 am – Invited Speaker:

Antonio Cavaliere, University Federico II, Naples

Liquid Jet in Gas Cross Flow

Room: Grand Ballroom Salon B & C

8:50 am – Transition to General Sessions

SESSION 1A

CROSSFLOW ATOMIZATION

(Room: Lakeshore East)

Chairpersons: Sachin Khosla, CFD Research Corporation, and May Corn, United Technologies Research Center

SESSION 1B

BIOLOGICAL SPRAYS

(Room: Lakeshore West)

Chairpersons: Corinne Lengsfeld, University of Denver, and Derek Dunn-Rankin, University of California, Irvine

9:00 am

Investigation of the Effect of Injector Internal Geometry on Penetration of a Plain Liquid Jet into a Subsonic Crossflow

Christopher T. Brown, Ulises M. Mondragon, Vincent G. McDonell, Energy Research

Cellular response of Human Lung Cells to EHDA

Michelle Zeles-Hahn, University of Denver Yvonne Lentz, Thomas Anchordoquy, University of Colorado School of Pharmacy, and Corinne Lengsfeld, University of Denver

9:25 am

Towards A Robust Phenomenological Turbulent Jet-in-Crossflow Atomization Model

Sachin Khosla, Alex Conley, Clifford E. Smith, CFD Research Corporation

Er,Cr:YSGG Laser Interaction with a Stream of Droplets

Peter Chueh, Ioana RizoIU, Biolase Technology, Derek Dunn-Rankin, University of California, Irvine

9:50 am

Modeling the effect of momentum flux ratio on the wake velocity characteristics of a liquid jet in crossflow

Ravi K. Madabhushi, Marco Arienti,
United Technologies Research Center

Understanding EHDA and Protein Stability

Michelle Zeles-Hahn, Elizabeth Nottingham, Corinne Lengsfeld,
University of Denver

10:15 am - Break, Exhibits, Posters

Breaks in Room: St. Clair Meeting Room Pre-Function

Exhibition Room: St. Clair Salons 1, 2 & 3

(Sponsored by Procter & Gamble)

SESSION 2A

INDUSTRIAL

(Room: Lakeshore East)

Chairpersons: Ravi K. Madabhushi,
United Technologies Research Center,
and Michael Benjamin, Parker Hannifin
Corporation

SESSION 2B

COMPUTATIONAL METHODS

(Room: Lakeshore West)

Chairpersons: Sourabh V. Apte,
Oregon State University, and Shankar
Subramaniam, Iowa State University

10:30 am

Numerical Simulation of Spray Pattern in a Liquid Flashing Column

R. J. Schick, Spraying Systems Co,
Heshmat Massah, Ansys Inc

A Refined Level Set Grid Method for Simulating Primary Atomization

Marcus Herrmann, Stanford University

10:55 am

Insights Into Flashing Spray Characteristics Using a Capillary Tube Expansion Model

Henry Vu, University of California,
Riverside Octavio Garca-Valladares,
Centro de Investigación en Energía de
la Universidad Nacional Autónoma de
México, Morelos, México, and
University of California, Irvine,
Guillermo Aguilar, University of
California, Riverside

A Hybrid Lagrangian-Eulerian Approach for Two-Phase Flows with Fully Resolved Interfaces

Ehsan Shams, Sourabh V. Apte,
Oregon State University

11:20 am

***Modeling Sprays for Lean Premix
Prevaporized Fuel Injection in Gas
Turbines***

Gareth Oskam, SOLAR Turbines Inc

***An implicit implementation of
surface tension in finite volume
models for two-phase flows***

Mehdi Raessi, Javad Mostaghimi,
Markus Bussmann, University of Toronto

11:45 am

***Effect of Fan Air Flow Rate on the
Spray Distribution***

M. Choi - PCTS, Inc., R. J. Schick and
K. C. Crounce, Spraying Systems Co.

***Conservative Level Set/Ghost Fluid
Method for Simulating Primary
Atomization***

Olivier Desjardins, Marcus Herrmann,
and Heinz Pitsch Stanford University

12:10 pm – Annual Business Meeting, Exhibits, Posters

Lunch Room: Grand Ballroom B & C

Exhibition Room: St. Clair Salons 1, 2 & 3

(Sponsored by Goodrich Corporation)

SESSION 3A

SPRAY MODELING

(Room: Lakeshore East)

Chairpersons: Rolf D. Reitz,
University of Wisconsin-Madison, and
and M.F. Trujillo, Penn State
University

SESSION 3B

SIMULATIONS

(Room: Lakeshore West)

Chairpersons: Nasser Ashgriz,
University of Toronto, and Ravi K.
Madabhushi, United Technologies
Research Center

1:30 pm

***Development of a Next-Generation
Spray and Atomization Model Using
an Eulerian-Lagrangian
Methodology***

Wei Ning, Rolf D. Reitz, University of
Wisconsin-Madison, Andreas Lippert,
and Ramachandra Diwakar, General
Motor Corporation

***CFD Analysis for NO_x-Control in
Refinery***

K. Brown, R. Schick, K. and R. Gardner,
Spraying Systems Co

1:55 pm

***Lagrangian to Eulerian conversion
schemes for estimating deposition
probability rates***

M. Iftekher Rahman, Carlos F. Lange,

***Spray Characterization of a multi-
hole injector***

Yangbing Zeng, Andreas Lippert and
Ronald Grover, General Motors

2:20 pm

***Modelling of Water-Air Internal-Mix
nozzles***

J. Anthonis, L. Wulteputte, B. De
Ketelaere and K.U.Leuven,
Department BIOSYST, AutoJet
Technologies, Belgium

CFD Analysis Of Gas Cooling

Stefan Markus, Spraying Systems
Deutschland GmbH

2:45 pm - Break, Exhibits, Posters

Breaks in Room: St. Clair Meeting Room Pre-Function

Exhibition Room: St. Clair Salons 1, 2 & 3

(Sponsored by Simulent Inc.)

SESSION 4A

DIAGNOSTICS

(Room: Lakeshore East)

Chairpersons: Khaled Sallam,
Oklahoma State University, and
Yudaya Sivathanu, Purdue University

SESSION 4B

DROPLET IMPACT

(Room: Lakeshore West)

Chairpersons: Milind A. Jog,
University of Cincinnati, and Scott Post,
Bradley University

3:10 pm

***Velocity and Size Measurements of
Aerated Spray using Digital
Microscopic Holography***

Jaiho Lee, Oklahoma State University
Brian Miller and Khaled Sallam,
Oklahoma State University, Kuo-Cheng
Lin, Taitech Inc., Campbell Carter,
AFRL

***Experiments and Simulations of
Spreading, Impact, and Recoil of
Surfactant Solution Droplets on a
Hydrophobic Surface***

Arun Sanjeev, University of Cincinnati,
Kalpak Gatne, Cummins Inc., Raj M.
Manglik, and Milind A. Jog, University
of Cincinnati

3:35 pm

Measurement of Spatially Resolved

Experimental and Numerical Studies

***Mean Velocities in a Transient Spray
using Statistical Correlation
Velocimetry***

Jongmmok Lim, En'Urga Inc. Yudaya
Sivathanu and Paul Sojka, Purdue
University, Prabodh Varanasi, Nitin
Sharma and Yong Chen, S.C. Johnson
& Son Inc.

***on Splashing of Mono-disperse
Spray Injected onto a Cylindrical
Rod of Various Surface Shapes***

S. S. Yoon, H. Y. Kim, D. J. Lee, N. S.
Kim, Department of Mechanical, Korea
University, R. A. Jepsen, Sandia
National Labs

4:00 pm

***Atomization of a common nasal
spray formulation as a function of
applied force and velocity***

H.G. Krarup, Malvern Instruments Inc.

***Heat Transfer Phenomena Due to
Impact of Multiple-Cryogen Droplets
onto Skin Phantom***

Jie Liu, Guillermo Aguila, University of
California, Riverside

4:25 pm

***Optical and Mechanical Patterning
of an High Flow Rate Industrial Gas
Turbine Nozzle***

Yudaya Sivathanu, En'Urga Inc.
Jongmook Lim, En'Urga Inc., Paul
Hicks, Woodward Governor Company

***Impact of Plasma-Sprayed Particles
on Textured Silicon Wafers***

Andre McDonald, University of Toronto,
Larry Rosenzweig, General Electric
Global Research, Sanjeev Chandra,
University of Toronto, Christian
Moreau, National Research Council
Canada

4:50 pm

Technical Meetings

Rocket and Airbreathing Power Fuel Atomization and Industrial
Combustion (*Room: Lakeshore West*)

Physics of Atomization (*Room: Lakeshore West*)

Spray Measurement and Instrumentation (*Room: Ontario Board Room*)

5:35 pm

Close 2nd Day

6:00 PM – ILASS Banquet

The Field Museum

(Sponsored by Spraying Systems Co.)

FRIDAY - MAY 18, 2007

7:15 am – Breakfast

Room: St. Clair Meeting Room Pre-Function Area

(Sponsored by Spray Analysis and Research Services)

SESSION 1A

DIESEL

(Room: Lakeshore East)

Chairpersons: Jin Wang, Argonne National Lab, and James E. McCarthy, Jr., Eaton Corporation

SESSION 1B

JET ATOMIZATION

(Room: Lakeshore West)

Chairpersons: Antonio Cavaliere, University Federico II

SESSION 1C

FIRE SUPPRESSION

(Room: Grand Ballroom A)

Chairpersons: Jerry Hagers, Spraying Systems Co.

8:00 am

Fuel Effects on the Spray and Combustion Processes Within an Optical HSDI Diesel Engine

Tiegang Fang, Chia-fon Lee, University of Illinois at Urbana-Champaign

Breakup of a laminar axisymmetric liquid jet

Sadegh Dabiri, William A. Sirignano, University of California, Irvine, Daniel D. Joseph, University of Minnesota

Extinguishment of Horizontal Wood Slabs Fire by a Water Spray

Tri Poespowati, The Institute of National Technology, Malang - Indonesia

8:25 am

Improved Method to Determine Spray Axial Velocity Using X-Ray Radiography

Alan Kastengren, F. Powell, Yujie Wang, Kyoung-Su Im, Xin Liu, Seong-Kyun Cheong and Jin Wang, Argonne National Laboratory, and Thomas Riedel, Robert Bosch, GmbH

On the Linear Stability of Compound Capillary Jets

Maksud (Max) Ismailov, Stephen D. Heister, Purdue University

Water Mist Simplification Effects on Fire Suppression Modeling: A Challenge to the Industry

Geoff Tanner, Keith Knasiak, Spraying Systems Co.

8:50 am

Soot Formation within Conventional and Low Temperature Diesel Combustion

Yi Xu, Chia-fon Lee,
University of Illinois at
Urbana-Champaign

Dissipative particle dynamics simulations of liquid nanocylinder and nanojet breakup

Anupam Tiwari, John
Abraham, Purdue
University

Large Scale Rain Simulator Preliminary Design and Validation

Keith F. Knasiak, Spray
Analysis and Research
Services

SESSION 2A

SESSION 2B

SESSION 2C

SPRAY CONTROL

(Room: Lakeshore East)

Chairpersons: Will
Bachalo, Artium
Corporation

SIMULATIONS

(Room: Lakeshore West)

Chairpersons: A. J. H.
McGaughey, Carnegie
Mellon University, and
John Abraham, Purdue
University

INDUSTRIAL

(Room: Grand Ballroom A)

Chairpersons: Chuck
Lipp, Dow Chemical
Company

9:15 am

Predicting breakup characteristics of liquid jets disturbed by practical piezoelectric devices

Mina Rohani, Derek
Dunn-Rankin, and
Faryar Jabbari,
University of California,
Irvine

Subcritical and supercritical nanodroplet evaporation: A molecular dynamics investigation

E. S. Landry, S.
Mikkilineni, and A. J. H.
McGaughey, Carnegie
Mellon University

Atomization of Detergent Slurries: Effects of Bubbles and Solids Particles

John Hecht,
Jason Stamper,
Procter & Gamble
Ken Giles, University of
California, Davis

9:40 am

Independent control of flow rates and droplet size spectra from fan nozzles using a single actuator

D. Ken Giles, Duane
Needham, University of
California, Davis

Discrete Phase Based Method (DPM) of Modeling Splash Plate Atomizers

Araz Sarchami, Nasser
Ashgriz, University of
Toronto

Scale Up of Two-Fluid Nozzles for Chemical Processing

Douglas Greminger,
Chuck Lipp,
Dow Chemical Company

10:05 am - Break, Exhibits, Posters

Breaks in Room: St. Clair Meeting Room Pre-Function

Exhibition Room: St. Clair Salons 1, 2 & 3

(Sponsored by Dow Chemical Company)

SESSION 3A

INDUSTRIAL

(Room: Lakeshore East)

Chairpersons: Vincent G. McDonell, Energy Research Consultants and University of California, Irvine

SESSION 3B

FILM AND SHEET ATOMIZATION

(Room: Lakeshore West)

Chairpersons: Malissa D.A. Lightfoot, Air Force Research Laboratory

SESSION 3C

DIESEL

(Room: Grand Ballroom A)

Chairpersons:

10:20 am

Producing small molten tin droplets by using a pneumatic droplet generator

Afsoon Amirzadeh Goghari, Sanjeev Chandra, University of Toronto

Experimental investigation of liquid film stripping at a sharp corner

Ben Steinhaus, Tim Shedd and Jaal Ghandhi, University of Wisconsin-Madison

Modeling Low-Pressure Injections in Diesel HCCI Engines

Yong Sun, Rolf D. Reitz, Engine Research Center, University of Wisconsin-Madison

10:45 am

A Preliminary Investigation of Flow Scaling for Injector Characterization

P. Andrew Corber, National Research Council of Canada

Computational Study of Breakup Time of Liquid Sheets

Mohammad Movassat, Ali Dolatabadi, Concordia University

Method to Specify Fuel Injection Profiles for Diesel Engine

Exhaust Aftertreatment Simulations Using Fuel Spray Measurements

James E. McCarthy, Jr., Eaton Corporation

11:10 am

Design and Validation of a Fuel-Air Mixer for a Portable Reformer

May Corn, Lou Chiappetta, Walter Borst, John Costello, and Sean Emerson, United Technologies Research Center

Disintegration of a radially spreading liquid sheet

Rajeev Dhiman, Sanjeev Chandra, University of Toronto

Modeling Biodiesel Spray Breakup with Well-Defined Fuel Properties

Jonathon McCrady, Valerie Stringer, Alan Hansen, and Chia-fon Lee, University of Illinois

SESSION 4A

SPRAY MODELING

(Room: Lakeshore East)

Chairpersons: Shankar Subramaniam, Iowa State University

Intra-Parcel Collision Model

Scott Post,
Bradley University

Droplet Collision Modeling in Multi-Dimensional Spray Computations

Achuth Munnannur,
Prof. Rolf D. Reitz,
University of Wisconsin-Madison

SESSION 4B

INDUSTRIAL

(Room: Lakeshore West)

Chairpersons: John Hecht, Procter and Gamble

11:35 am

Spray Velocity and Drop Size Measurements in Vacuum Conditions

Renaud Lecourt, ONERA
Johan Steelant,
ESA-ESTEC

12:00 noon

In-line nozzle monitoring system based on recursive least squares

De Ketelaere,
Biostatistics and Sensors (MeBioS), Wulteputte, L.,
AutoJet Technologies
B.V.B.A. Anthonis, J.,
Biostatistics and Sensors (MeBioS)

SESSION 4C

BIODIESEL

(Room: Grand Ballroom A)

Chairpersons: Yangbing Zeng, General Motors Corporation

Spray Characteristics of an Airblast Atomizer on Biodiesel Blends

C. R. Krishna and
Thomas Butcher, Energy Resources Division,
Brookhaven National Laboratory

Optimization of Airblast Atomization for Reducing Pollutant Emissions from a Recuperated Gas Turbine Engine Operated on Biodiesel

Consultants Chris Bolszo, Vincent McDonell,
UC Irvine

12:25 pm

End of Conference

POSTER SESSION

Equilibrium Condition for Lagrangian Bubble and Droplet Motion

A.E. Parkhill, Applied Research Laboratory, Penn State University M.F. Trujillo, Applied Research Laboratory, Penn State University, B.A. Edge, Applied Research Laboratory, Penn State University

Vaporization of a nHeptane Droplet using Molecular Dynamics

B.A. Petrilla, Department of Aerospace Engineering, Penn State University M. F. Trujillo, Applied Research Laboratory, Penn State University, M. M. Micci, Department of Aerospace Engineering, Penn State University

Towards an Efficient Nonlinear Atomization Model for Thin Liquid Films

Carsten Mehring, Division of Engineering, Colorado School of Mines

CFD Methodology for High-Speed Liquid Jet Venting and Breakup Predictions

K.W. Brinckman, A. Hosangadi, and G.M. Feldman
Combustion Research & Flow Technology, Inc. (CRAFT Tech)

Impact Dynamics and Cooling of Water Droplets Impinging on Hydrophobic and Hydrophilic Surfaces

A. Sanjeev, O. Huzzayin, K. P. Gatne, R. M. Manglik, and M. A. Jog, Department of Mechanical, Industrial, and Nuclear Engineering, University of Cincinnati

Film Separation Criterion with Experimental Validation for Dynamic Shear-driven Thin Liquid Films in Separated Gas Flows

M.A. Friedrich, H. Lan, J.A. Drallmeier, and B.F. Armaly, Department of Mechanical and Aerospace Engineering, University of Missouri-Rolla

Effects of an Induced Perturbation on the Interaction of Separated Gas Flow and Shear-driven Thin Liquid Films

M.A. Friedrich, J.A. Drallmeier, and B.F. Armaly, Department of Mechanical and Aerospace Engineering, University of Missouri-Rolla

A Numerical Study of In-cylinder Mixture Formation in a Low Pressure Direct Injection Gasoline Engine

Yuxin Zhang and Harold Schock, Department of Mechanical Engineering, Michigan State University, David L.S. Hung, Visteon Corporation

Dynamics of the Shock Waves Generated by High-Speed Liquid Jets

Kyoung-Su Im, Seong-Kyun Cheong, X. Liu, and Jin Wang, Argonne National Laboratory, M.-C. Lai, Wayne State University, Detroit, MI, 48

ABSTRACTS

