

# 16<sup>th</sup> Annual Conference of *ILASS-Asia*

## **Conference venue**

Ryojun Auditorium, Nagasaki University

1-12-4 Sakamoto, Nagasaki, 852-8523 JAPAN

[http://www.ilass-japan.gr.jp/english/activity/venue\\_access-2.pdf](http://www.ilass-japan.gr.jp/english/activity/venue_access-2.pdf)

Room A: Bauduin Hall

Room B: Sensai Hall

## **Special Lecture** (Chair: Prof. K. NISHIDA, Hiroshima Univ.)

**December 18 (Wednesday) 13:10 - 14:10 Room A**

### **Importance of Injector Design related to Combustion Instability**

Professor Youngbin Yoon (School of Mechanical and Aerospace Engineering, Seoul National University)

## **Welcome party**

Date and Time: December 18 (Wednesday) 19:00 - 20:30

Venue: Cafeteria in Nagasaki University

Access: 5 minutes by walk from Ryojun Auditorium.

Admission: All participants of the 16th Annual Conference of ILASS-Asia are invited.

## **Banquet**

Date and Time: December 19 (Thursday) 19:00 - 21:00

Venue: BEST WESTERN PREMIER Hotel Nagasaki

2-26 Takaramachi, Nagasaki, 850-0045 Japan

Tel. +81-95-821-1111

<http://www.bestwestern.co.jp/english/nagasaki/index.html>

Access: 10 minutes' walk from Ryojun Auditorium to Hamaguchimachi tram stop, and another 10 minutes from Hamaguchimachi to Takaramachi by the tram.

Admission: A banquet fee is included in the registration fee for the participants from abroad. For the participants of domestic residents, banquet is optional with an extra fee.

Note: The 16th Annual Conference of ILASS-Asia shares the banquet with the 22nd Symposium of ILASS-Japan.

## **Participation in 22nd Symposium of ILASS-Japan**

Participants of the 16th Annual Conference of ILASS-Asia (ILASS-Asia 2013) are eligible to participate in the 22nd Symposium of ILASS-Japan held during December 19-20 in the same venue. Invited lecture of the 22nd Symposium of ILASS-Japan, which starts directly after the final sessions of ILASS-Asia 2013, is given in English. Other sessions of the 22nd Symposium of ILASS-Japan are given in Japanese.

## **Acknowledgement**

This conference was financially supported by Nagasaki University.

# 16<sup>th</sup> Annual Conference of *ILASS-Asia*

## December 18, 2013 (Wednesday)

	Room A	Room B
8:30 –	Registration	
9:00 – 9:10	Opening Ceremony (Room A)	
9:10 – 9:20	Break	
9:20 – 10:35	A11: Atomizers/Injectors I (A-111 ~ A-113)	B11: Alternative fuel/Other liquids (B-111 ~ B-113)
10:35 – 10:45	Break	
10:45 – 12:00	A12: Diesel Spray I (A-121 ~ A-123)	B12: Flashing Spray (B-121 ~ B-123)
12:00 – 13:10	Lunch	
13:10 – 14:10	Special Lecture (Room A) “Importance of Injector Design Related to Combustion Instability” Youngbin Yoon (Professor, School of Mechanical and Aerospace Engineering, Seoul National University)	
14:10 – 14:20	Break	
14:20 – 16:25	A13: Cavitation (A-131 ~ A-135)	B13: Gasoline Spray (B-131 ~ B-135)
16:25 – 16:35	Break	
16:35 – 18:15	A14: Diagnostics (A-141 ~ A-144)	B14: Atomization Characteristics I (B-141 ~ B-144)
19:00 – 20:30	Welcome Party of 16th Annual Conference of ILASS-Asia	

## December 19, 2013 (Thursday)

	Room A	Room B
8:30 -	Registration	
9:00 – 10:15	A21: Atomizers/Injectors II (A-211 ~ A-213)	B21: Atomization Characteristics II (B-211 ~ B-213)
10:15 – 10:25	Break	
10:25 – 12:05	A22: Diesel Spray II (A-221 ~ A-224)	B22: Impinging/Collisions Spray/Droplets (B-221 ~ B-224)
12:05 – 12:20	ILASS-Asia Annual General Meeting 2013 (Room A)	
12:20 – 13:10	Lunch	
13:10 – 14:50	A23: Industrial Application (A-231 ~ A-234)	B23: Combustion/Emission (B-231 ~ B-234)
19:00 – 21:00	Banquet of 16th Annual Conference of ILASS-Asia & 22nd Symposium of ILASS-Japan	

## 22<sup>nd</sup> Symposium of *ILASS-Japan*

### December 19, 2013 (Thursday)

	Room A	Room B
8:30 -	Registration	
15:00 – 16:00	Invited Lecture (Room A) “Sooting and Burning Behavior of Isolated n-heptane of Droplet” Assistant Professor Hyun Kyu Suh (Kongju National University)	
16:00 – 16:10	Break	
16:10 – 17:00	A24: Atomization Mechanism (A-241 ~ A-242)	B24: Mixture formation / Cavitation (B-241 ~ B-242)
17:00 – 18:00	ILASS-Japan General Meeting (Room A)	
19:00 – 21:00	Banquet of 16th Annual Conference of ILASS-Asia & 22nd Symposium of ILASS-Japan	

### December 20, 2013 (Friday)

	Room A	Room B
8:30 –	Registration	
9:00– 10:40	A31: Diesel Spray I (A-311 ~ A-314)	B31: Spray Behavior (B-311 ~ B-314)
10:40 – 10:50	Break	
10:50 – 12:05	A32: Diesel Spray II (A-321 ~ A-323)	B32: Spray Combustion I (B-321 ~ B-323)
12:05 – 13:10	Lunch	
13:10 – 14:50	A33: Gasoline Spray/Spray Combustion II (A-331 ~ A-334)	B33: Particle/Powder Production I (B-331 ~ B-334)
14:50 – 15:00	Break	
15:00 – 16:40	A34: Numerical Simulation (A-341 ~ A-344)	B34: Particle/Powder Production II (B-341 ~ B-344)
16:40 – 17:10	Award Ceremony of Best Presentation of ILASS-Japan (Room A)	

\* Invited lecture is given in English. Other sessions of the 22nd Symposium of ILASS-Japan are given in Japanese.

# Program of Technical Sessions

【General Report】 \*Speaker  
Presentation 15min / Question 10min

## **Special Lecture** (Chair: Prof. K. NISHIDA, Hiroshima Univ.)

**Dec. 18 13:10 - 14:10 Room A**

### **Importance of Injector Design Related to Combustion Instability**

Professor Youngbin Yoon (School of Mechanical and Aerospace Engineering, Seoul National University)

## **December 18 (Wednesday)**

### **A11: Atomizers/Injectors I** (Chair: Dr. N. IKI, AIST, Japan)

**9:20-10:35 Room A**

**【A-111】 An Experimental Study on the Atomization Characteristics of the Twin-fluid Atomizer for the Heavy Fuel Oil Boiler**

\*Hong Min PARK, Kun Woo KU, Choong Won LEE, Jung Goo HONG (Kyungpook National University)

**【A-112】 Effects of Geometric Design on the Spray Characteristics of an Internal-mixing Atomizer with Supersonic Configuration**

Muh-Rong WANG, \*Pin-Jen CHEN (National Cheng Kung University)

**【A-113】 The Development of a Pressure-Swirl Injector for GDI Reciprocating Engine**

Tony YUAN, \*Berlin HUANG, Hao-Yi CHIEN, Yu-Wen CHENG (National Cheng Kung University)

### **A12: Diesel Spray I** (Chair: Prof. D. SAKAGUCHI, Nagasaki Univ., Japan)

**10:45-12:00 Room A**

**【A-121】 Effects of Wall Impingement on Diesel Spray Characteristics**

\*Kuichun LI, Takeru MATSUO (Hiroshima University), Masaki IDO (Komatsu Ltd.), Keiya NISHIDA, Yoichi OGATA, Baolu SHI (Hiroshima University)

**【A-122】 Effect of Ambient Pressure on Adhered Fuel Mass of Diesel Spray Impinging on a Flat Wall**

\*Mohd Zaid AKOP, Yoshio ZAMA, Tomohiko FURUHATA, Masataka ARAI (Gunma University)

**【A-123】 Velocity Measurement of Diesel Spray Impinging on a Flat Wall**

\*Yoshio ZAMA, Kazuma SUGAWARA, Mohd Zaid AKOP, Tomohiko FURUHATA, Masataka ARAI (Gunma University)

**A13: Cavitation (Chair: Prof. N. TAMAKI, Kinki Univ., Japan)**

**14:20-16:25 Room A**

- 【A-131】 String Cavitation in Fuel Injector**  
\*Raditya Hendra PRATAMA, Akira SOU (Kobe University)
- 【A-132】 Effects of Inlet Edge Roundness on Cavitation in Injector Nozzles and Liquid Jet**  
\*Makoto MASHIDA (Denso Corporation), Aika UZAWA, Yusuke KIBAYASHI, Akira SOU (Kobe University)
- 【A-133】 Numerical Simulation of Cavitation Phenomena in Diesel Injector Nozzles**  
\*Baris BICER, Ayana TANAKA, Takumi FUKUDA, Akira SOU (Kobe University)
- 【A-134】 Study of Effect of Diesel Nozzle Geometries on Spray Characteristics with a Spray Model Coupled with Nozzle Cavitating Flow**  
\*Zhixia HE, Fen WANG, Juyan LIU, Qian WANG, Zhaochen JIANG (Jiangsu University)
- 【A-135】 Experimental Study of Injector Nozzle Sac Volume and Scale Effect on Nozzle Cavitating Flow and Spray Characteristics**  
\*Wenjun ZHONG, Zhixia HE, Qian WANG, Zhuang SHAO (Jiangsu University)

**A14: Diagnostics (Chair: Prof. N. KAWAHARA, Okayama Univ., Japan)**

**16:35-18:15 Room A**

- 【A-141】 Study on Simulation of Diesel Fuel Spray Based on L2F Measurement**  
\*Keisuke KOMADA (Nagasaki University), Hiroshi TAJIMA (Kyushu University), Daisaku SAKAGUCHI, Hironobu UEKI, Masahiro ISHIDA (Nagasaki University)
- 【A-142】 Reconstruction of Local Volume-Weighted Drop-Size Distributions of a Solid Cone Spray using Adaptive Tomographic Technique**  
\*Songrit TANCHATCHAWAN, Pomyos VALLIKUL, Pisit YONGYINGSAKTHAVORN (King Mongkut's University of Technology North Bangkok), Christophe DUMOUCHEL (Université et INSA de Rouen)
- 【A-143】 Temporal and Spatial Effects of Ablation Plume on Number Density Distribution of Droplets in an Aerosol Measured by Laser-induced Breakdown**  
\*Hidehiko YASHIRO, Masayuki KAKEHATA (National Institute of Advanced Industrial Science and Technology (AIST))
- 【A-144】 Simultaneous Velocity Field Measurements of Two-Phase Flows by Means of High-Speed Two-Color PIV**  
\*Ming ZHANG, Min XU (Shanghai Jiao Tong University)

**B11: Alternative fuel/other liquid (Chair: Prof. S. PARK, Hanyang Univ., Korea)**

**9:20-10:35 Room B**

- 【B-111】 Spray Characteristics of Iso-HVO and Biodiesel Blended Diesel Fuels in Diesel Engine-like Conditions**  
\*Duckhan KIM, Sehun OH, Seonghwan KIM (SK Innovation), Soo-Young NO (Chungbuk National University)
- 【B-112】 Experimental Investigation of Aerodynamic Effects on Jatropha Oil Spray Injected by the Air-assist Pressure-swirl Atomizer for a Laboratory-scale Burner**  
\*Yong FAN, Nozomu HASHIMOTO, Hiroyuki NISHIDA, Yasushi OZAWA (Central Research Institute of Electric Power Industry (CRIEPI))
- 【B-113】 Comparison of Injection, Spray and Combustion between Diesel from Direct Coal Liquefaction and Petrodiesel in a Common Rail Diesel Engine**  
Jinlong BAI, Yonglun LI, \*Xinqi QIAO, Zhen WANG, Jian ZHUANG, Zhen HUANG (Shanghai Jiao Tong University)

**B12: Flashing Spray (Chair: Prof. M. OSHIMA, Fukui Univ. of Tech., Japan)**

**10:45-12:00 Room B**

- 【B-121】 Internal Flow Pattern and Macroscopic Spray Characters of R134a Actuated through a Twin-Orifice Atomizer with Low Injection Pressure**  
\*Dehao JU, Jin XIAO, Xin ZHOU, Wei ZHOU, Zhen HUANG (Shanghai Jiao Tong University)
- 【B-122】 Effects of Upstream Temperature and Ambient Pressure on Spray Angle of CO<sub>2</sub> Flashing Spray**  
\*Tien-Chu LIN, Yi-Jun SHEN, Muh-Rong WANG, Yang-Sheng Huang (National Cheng Kung University)
- 【B-123】 Fuel Impingement Analysis of Flash-Boiling Spray in a Spark-Ignition Direct-Injection Engine**  
\*Hao CHEN, Min XU, David L.S. HUNG, Jie YANG, Hanyang ZHUANG (Shanghai Jiao Tong University)

**B13: Gasoline Spray (Chair: Prof. D. TSURU, Kyushu Univ., Japan)**

**14:20-16:25 Room B**

- 【B-131】 Numerical Study on Fuel/Air Mixture Formation in GDI Engine for Various Injection Strategies**  
\*Taehoon KIM, Sungwook PARK (Hanyang University)
- 【B-132】 Effect of Injection Strategy on Air-Fuel Mixing Process in a Gasoline Direct Injection (GDI) Optical Engine**  
\*Jingeun SONG (Hanyang University), Munsoo CHON (Korea National University of Transportation), Sungwook PARK (Hanyang University)

**[B-133] Study of Spray Evaporation of Gasoline and Alcohol Fuel using High Speed Schlieren and Mie Scattering Technique**

\*Tianyun LI, Min XU, Gaoming ZHANG (Shanghai Jiao Tong University)

**[B-134] Analysis of Spray Structure and Penetration Variations using Proper Orthogonal Decomposition**

\*Hanyang ZHUANG, David L.S. HUNG, Min XU, Hao CHEN (Shanghai Jiao Tong University)

**[B-135] Mixture Formation Process of Gasoline/Ethanol Blended Fuel Spray Injected by Hole-type Nozzle for D.I. Gasoline Engines**

\*Run CHEN (University of Hiroshima), Masaharu CHATO (Honda Motor Co., Ltd.), Keiya NISHIDA, Yoichi OGATA, Baolu SHI (University of Hiroshima)

**B14: Atomization Characteristics I (Chair: Prof. T. WAKIMOTO, Osaka City Univ., Japan)**

**16:35-18:15 Room B**

**[B-141] A Study of Breakup Process of a Jet Fuel Simulant Liquid at Low Pressure**

\*Tomoyuki KANDA, Takehiko SEO, Masato MIKAMI (Yamaguchi University)

**[B-142] Study of Ultrasonic Atomization**

\*Ajay M, Anand T. N. C. (Indian Institute of Technology-Madras)

**[B-143] Experimental Investigation of Primary Atomization of Liquid Jet in Crossflow using Dynamic Mode Decomposition and Proper Orthogonal Decomposition**

\*Gaurav SINGH, John ABRAHAM, RAMGOPAL, S. R. CHAKRAVARTHY (Indian Institute of Technology)

**[B-144] Spray Characteristics of a High Rotating Speed Slinger Fuel System**

\*Chih-Lung KE, Wei-Hsiang LAI (National Cheng Kung University), Chia-Hong HONG (Chung Shan Institute of Science and Technology)

**December 19 (Thursday)**

**A21: Atomizers/Injectors II (Chair: Prof. T. H. LIN, National Cheng Kung Univ., Taiwan)**

**9:00-10:15 Room A**

**[A-211] Investigation Novel Matched Valve-Actuator Atomizer Insert Design For Liquid**

\*Norzelawati ASMUIN, Azizan ISMAIL, Waluyo Adi SISWANTO (Universiti Tun Hussein Onn Malaysia (UTHM))

**[A-212] Experimental and Numerical Investigation of Hydraulic Flow and Spray Characteristics in CR Direct-Injection Diesel Engine with Indirect Acting Piezo Injector**

\*Myung Chul CHUNG, Gi Su SUNG, Sang Myeong KIM, Jin Wook LEE (Soongsil University)

**[A-213] Droplet Formation by Thin Coaxial Twin-Fluid Atomizer**

\*Norihiko IKI, Masato SUZUKI, Takashi OKADA (National Institute of Advanced Industrial Science and Technology (AIST))

**A22: Diesel Spray II (Chair: Prof. T. FURUHATA, Gunma Univ., Japan)**

**10:25-12:05 Room A**

- [A-221] An Experimental Study on the Macroscopic Spray Characteristics using Marine Diesel Injector with Common-rail System**  
\*Junkyu PARK, Sungwook PARK (Hanyang University)
- [A-222] Experimental Study of Effect of Nozzle Diameter on Near-Field Spray Behavior of Diesel in Evaporating Conditions**  
\*Yanfei LI, Yizhou JIANG (Tsinghua University) , Xiao MA (The University of Birmingham), Liang ZHENG, Jianxin WANG (Tsinghua University) , Hongming XU (The University of Birmingham)
- [A-223] An Investigation on Spray Characteristics of Diesel - DME Used the Multi-Injection with Change of Injection Pressure**  
\*Yunho JEONG, Jiwoong YANG, Ockteak LIM (University of Ulsan)
- [A-224] Characteristics of Diesel Spray in Near Nozzle Region Visualized by Microscopic Experiment**  
WANG Zheng-hao, WANG Qian, HE Zhi-xia, LAI Xiao-yi, \*Li Jian-zhi, WU Yu-qiang, Zhang Jia-bin (Jiangsu University)

**A23: Industrial Applications (Chair: Prof. J. HAYASHI, Osaka Univ., Japan)**

**13:10-14:50 Room A**

- [A-231] Effects of Viscosity and Ion Concentration on Performance of Nebulization with Vibrating Mesh**  
Hua-Yang HUNG, \*Tien-Chu LIN, Pin-Jen CHEN, Muh-Rong WANG (National Cheng Kung University), Hung-Chia HSIEH (DELBio, INC)
- [A-232] Application of Spray Coating Technology on Thermal Solar Absorber Film**  
Pin-Jen CHEN, \*Yan-Lun LI, Hua-Yang HUNG, Tsung-Min HSIEH, Muh-Rong WANG, Keh-Chin CHANG, Tien-Chu LIN (National Cheng Kung University)
- [A-233] Experimental Studies on Carburetors**  
\*Saransh JAIN, Anand T. N. C. (Indian Institute of Technology-Madras)
- [A-234] Gaseous Fuel Injection Modeling for CNG Direct Injection**  
\*Mingi CHOI, Sungwook PARK (Hanyang University)



**B21: Atomization Characteristics II (Chair: Prof. M. ARAKI, Gunma Univ., Japan)**

**9:00-10:15 Room B**

- 【B-211】 Effects of Nozzle Configuration on Macroscopic Spray Characteristics of Multi-hole Injectors under Superheated Conditions**  
\*Gele AORI, Min XU, Ming ZHANG, Gaoming ZHANG, Tianyun LI (Shanghai Jiao Tong University)
- 【B-212】 Temporal Investigation of Spray Characteristics from a Multi-hole Injector Using Dimensionless Analysis**  
\*Gaoming ZHANG, Min XU (Shanghai Jiao Tong University)
- 【B-213】 The Break Up of Liquid Jet in Supersonic Cross Flow**  
Tony YUAN, \*Yo-Hsiang SU (National Cheng Kung University)

**B22: Impinging/collisions spray/droplet (Chair: Prof. C. INOUE, Univ. of Tokyo, Japan)**

**10:25-12:05 Room B**

- 【B-221】 Influences of Liquid Properties on Impact Behavior of High-Speed Micro-Droplet onto an Inclined Surface**  
\*Tetsuya ODA (Tottori University), Naoya ABE (Mitsubishi Electric Corp.), Ryosuke MATSUO (Tottori University), Yhuichi KITAGAWA (Tohoku University), Hiroshi MASUDA, Katsuyuki OHSAWA (Tottori University)
- 【B-222】 A Quantitative Look into a Water Droplet Impacting onto Hot-surface**  
\*Nejdet ERKAN, Koji OKAMOTO (University of Tokyo)
- 【B-223】 Merging Collisions of Two Aligned Drops in Flows**  
\*Po-Kai HSU, Chun-Kuei CHEN, Ta-Hui LIN (National Cheng Kung University)
- 【B-224】 Disintegration Degree of Liquid Fan Formed with Impingement of Two Liquid Jets**  
\*Shingo KARIKAWA, Jun HAYASHI (Osaka University), Yu DAIMON, Hideyo NEGISHI (JAXA), Fumiteru AKAMATSU (Osaka University)

**B23: Combustion/Emission (Chair: Prof. M. XU, Shanghai Jiao Tong Univ., China)**

**13:10-14:50 Room B**

- 【B-231】 Effect of GTL Fuel on Spray, Combustion and Emission Characteristics in a Compression Ignition Engine**  
\*Kibong Choi, Donggon LEE (Hanyang University), Hyun Gu ROH (Induk University), Chang Sik LEE (Hanyang University)
- 【B-232】 A Computational Study on DME HCCI Combustions Characteristics with Methanol Concentrations**  
\*Hyowon LEE, Ockteak LIM (University of Ulsan)

**【B-233】 A Numerical Investigation about the EGR Effect under the Condition of Intake-Boost Pressure on HCCI Autoignition**

\*Chunghwan OH, Narankhuu JAMSRAN, Ockteak LIM (University of Ulsan)

**【B-234】 A Numerical Study on the NO<sub>x</sub> Reduction Rate Depending on the Flow Uniformity Index of NH<sub>3</sub> in front of the Catalytic Converter**

\*Mi ji SONG, Young soo JEON, Seang wock LEE, Yeon sik KANG, Yong seok CHO (Kookmin University)

# 22<sup>nd</sup> Symposium of ILASS-Japan

[General Report] , (Prompt Report), \*Speaker

## Invited Lecture

Dec. 19 15:00-16:00 Room A

Chair: Prof. H. UEKI, Nagasaki Univ.

**Sooting and Burning Behavior of Isolated n-heptane of Droplet**

Assistant Professor Hyun Kyu Suh (Kongju National University)

## December 19(Thursday)

**A24: Atomization Mechanism Dec. 19 16:10-17:00 Room A**

Chair: Prof. H. TAJIMA, Kyushu Univ.

【A-241】 **Visualization of Atomization in Sparkling Fireworks**

\*Chihiro INOUE, Toshinori WATANABE, Takehiro HIMENO (Univ. of Tokyo),

Mitsuo KOSHI (Yokohama National Univ.), Hiroshi TERASHIMA (Univ. of Tokyo)

【A-242】 **Three-dimensional Deformation and Merging of Instability Waves Caused by Inflection Instability of a Liquid Sheet**

\*Tatsuro WAKIMOTO, Kenji KATOH (Osaka City Univ.)

**B24: Mixture formation / Cavitation Dec. 19 16:10-17:00 Room B**

Chair: Prof. N. KAWAHARA, Okayama Univ.

【B-241】 **Study on Mixture Formation Process of Diesel Spray with Two-Component Fuel**

\*Masashi AJIOKA, Yu KUWAHARA (Doshisha Univ.), Masanori OKADA (IHI Co.),

Yoshimitsu KOBASHI (Kanazawa Inst. of Tech.) Eriko MATSUMURA, Jiro SENDA (Doshisha Univ.)

【B-242】 **Effects of Cavitation Bubble in the Nozzle on a Liquid Jet**

\*Takayoshi YAMAZAKI (Doshisha Univ.), Teruaki HAIBARA,

Mutsumi KANDA (TOYOTA Motor Co.), Eriko MATSUMURA, Jiro SENDA (Doshisha Univ.)

## December 20(Friday)

**A31: Diesel Spray I Dec. 20 9:00-10:40 Room A**

Chair: Prof. N. TAMAKI, Kinki Univ.

【A-311】 **Effect of Needle Lift on Atomization Process in Diesel Fuel Spray**

\*Tatsuya ZAITSU, Keisuke KOMADA, Daisaku SAKAGUCHI, Hironobu UEKI,

Masahiro ISHIDA (Nagasaki Univ.)

【A-312】 **Experimental Study on Ambient Gas Entrainment into Diesel Spray**

\*Jingyu ZHU (Mazda Motor Co. Ltd.), Takumi UEMURA, Keiya NISHIDA (Univ. of Hiroshima)

【A-313】 **Analysis of Velocity and Turbulence Intensity Fields of High-Pressure Diesel Sprays in the Near-Field**

\*Seoksu MOON, Taku TSUJIMURA (AIST), Takatoshi SAITOU, Zhili CHEN (Tokai Univ.)

【A-314】 **Effects of Biofuel Properties on Response and Flow Performance of a High-Pressure Diesel Injector**

\*Tinkai KOU (Tokai Univ.), Seoksu MOON (AIST), Takatoshi SAITOU, Zhili CHEN (Tokai Univ.)

**A32: Diesel Spray II Dec. 20 10:50-12:05 Room A**

Chair: Prof. A. SOU, Kobe Univ.

- 【A-321】 Effects of Shapes and Measurement of Nozzle Hole of Atomization Enhancement Nozzle Applied for Direct Injection Diesel Engine on Spray and Flow Characteristics**  
\*Kazuma NISHIKAWA (Kinki Univ.), Shohei FUKAMICHI (Yamanaka Eng. Co.),  
Nobushige TAMAKI (Kinki Univ.)
- 【A-322】 Effects of Pitch Circle Diameter and Existence of Inclination of Nozzle Hole of Atomization Enhancement Nozzle for Direct Injection Diesel Engine on Atomization Characteristics**  
\*Shinya SAKAI, Kazuma NISHIKAWA (Kinki Univ.), Shohei FUKAMICHI (Yamanaka Eng. Co.),  
Nobushige TAMAKI (Kinki Univ.)
- 【A-323】 Time-Series Measurement of Pilot Diesel Spray with Two Wavelength Super High Spatial Resolution Photography**  
\*Tatsunori FUJII (Doshisha Univ.), Naohiro MARUBAYASHI (Nippon Steel & Sumikin Engineering Co.), Eriko MATSUMURA, Jiro SENDA (Doshisha Univ.)

**A33: Gasoline Spray / Spray Combustion II Dec. 20 13:10-14:50 Room A**

**Chair: Prof. D. TSURU, Kyushu Univ.**

- 【A-331】 Effect of Cross-flow on Behavior of Fuel Spray Injected by Hole-type Nozzle**  
\*Ryosuke KISHI, Min GUO, Baulo SHI, Youichi OGATA, Keiya NISHIDA (Hiroshima Univ.),  
Yoshitaka WADA (MAZDA Motor Co.)
- 【A-332】 Atomization Characteristics of Transient Spray near the Nozzle Exit of DISI Injector**  
Nobuyuki KAWAHARA, Eiji TOMITA, \*Ryo HASEGAWA (Okayama Univ.)
- 【A-333】 Effects of the Carbon Dioxide Atmosphere on Soot Formation in Spray Flame**  
\*Takuma YAMAGAKI, Jun HAYASHI, Noriaki NAKATSUKA, Fumiteru AKAMATSU  
(Osaka Univ.)
- (A-334) Simultaneous LIF Visualization of Spatial Distributions of OH Radicals and Fuel Concentrations both Inside and Outside of the Pre-mixing Duct of a Lean Staging Burner for an Aero Engine at High Temperature and High Pressure Burning Conditions**  
\*Sunao OHORI, Takahiro EGUCHI (Hosei Univ.), Kazuaki MATSUURA, Hideshi YAMADA,  
Yoji KUROSAWA, Takeshi YAMAMOTO, Kazuo SHIMODAIRA (JAXA),  
Shigeru HAYASHI (Hosei Univ.)

**A34: Numerical Simulation Dec. 20 15:00-16:40 Room A**

**Chair: Prof. C. INOUE, The Univ. of Tokyo**

- (A-341) Effect of The Evaporation Characteristics on The Hydrocarbon Fuel Ignition Characteristics**  
\*Motohiro OSHIMA (Fukui Univ. of Tech.), Yasuyuki SAKAI (Fukui Univ.)
- 【A-342】 Numerical Simulation on Mixture Process of Urea-Water in Urea SCR**  
\*Masayoshi HAYASHI, Akira SOU (Kobe Univ.)
- 【A-343】 Numerical Simulation of Fuel Film Deformation**  
\*Ippei OSHIMA, Akira SOU (Kobe Univ.)
- 【A-344】 Modeling of Droplet Collision Behavior between Two Merging Sprays**  
\*Hiroshi TASHIMA, Daisuke TSURU, Kota HIDAKA (Kyushu Univ.)

**B31: Spray Behavior Dec. 20 9:00-10:40 Room B**

**Chair: Prof. J. HAYASHI, Osaka Univ.**

- 【B-311】 Droplet Diameter and Atomization Process of Airblast Atomizer in a High Pressure Environment**  
\*Kodai KATO, Soichiro SUZUKI, Taku KUDO (Tohoku Univ.), Soichiro KATO,  
Mitsunori ITOH (IHI Co.), Akihiro HAYAKAWA, Hideaki KOBAYASHI (Tohoku Univ.)
- 【B-312】 Effect of Air Flow on Liquid Film Formation in a Prefilming Type Air-blast Atomizer**  
\*Mitsunori ITOH, Shinsuke MATSUNO (IHI Co.)

- [B-313] Temperature History of an Evaporating Droplet of Palm Methyl Ester at High Temperatures and Pressures**  
 \*Kentarō KANEKO, Hiroshi NOMURA (Nihon Univ.),  
 Nozomu HASHIMOTO (Central Research Institute of Electric Power Industry)
- [B-314] Atomization Characteristics and its Modeling of Impinging Jet Atomization in high Reynolds number regime**  
 \*Takao INAMURA, Minori SHIROTA, Yuki SAITO, Ryota SAKABE, Koji FUMOTO (Hirosaki Univ.)

**B32: Spray Combustion I Dec. 20 10:50-12:05 Room B**

**Chair: Prof. O. MORIUE, Kyushu Univ.**

- [B-321] Experimental Study on Fuel Atomization and Combustion Characteristics of Airblast Fuel Injectors**  
 \*Takeshi MASUDA, Hidemi TOH (Kanazawa Inst. of Tech.)
- [B-322] Study of Spray Flame Structure in Aircraft Gas Turbine Combustor**  
 \*Ryuhei KAWANO, Jun HAYASHI (Osaka Univ.), Hideki MORIAI,  
 Noriaki NAKATSUKA (MHI, Ltd.), Noriaki NAKATSUKA, Fumiteru AKAMATSU (Osaka Univ.)
- [B-323] The Effect of Ethanol Spray Concentration on Laser-induced Breakdown Ignition**  
 \*Yuki ISHIMURA, Takehiko SEO, Masato MIKAMI (Yamaguchi Univ.)

**B33: Particle / Powder Production I Dec. 20 13:10-14:50 Room B**

**Chair: Prof. M. Oshima, Fukui Univ. of Tech.**

- [B-331] Analysis of Mutual Diffusion Behavior Affecting on Cluster Formation at Droplet Interfaces**  
 \*Kazuki GONDA, Taiki WAKE, Atsuko SHIMOSAKA, Yoshiyuki SHIRAKAWA,  
 Jusuke HIDAHA (Doshisha Univ.)
- [B-332] Synthesis of Composite Particle by using Atomization Process in Micro Reactors**  
 \*Yuya HATTORI, Yoshiyuki SHIRAKAWA, Atsuko SHIMOSAKA,  
 Jusuke HIDAHA (Doshisha Univ.)
- [B-333] Development of Particle Morphology Control Technique in an Atomization Process of Solutions**  
 \*Hikaru TAMURA, Yoshiyuki SHIRAKAWA, Atsuko SHIMOSAKA,  
 Jusuke HIDAHA (Doshisha Univ.)
- [B-334] Adaptation of Electrostatic Spray Deposition to Thin-Electrolyte-Film Fabrication of a Tubular Solid Oxide Fuel Cell**  
 \*Takahiro AOKI, Takashi AOKI, Hiroshi NOMURA (Nihon Univ.)

**B34: Particle / Powder Production II Dec. 20 15:00-16:40 Room B**

**Chair: Prof. Y. ZAMA, Gunma Univ.**

- [B-341] Influence of Solute Materials and Organic Solvents on Interfacial Tension in a Liquid-liquid Interface Crystallization Process**  
 \*Yurie MATSUO, Yoshiyuki SHIRAKAWA, Atsuko SHIMOSAKA,  
 Jusuke HIDAHA (Doshisha Univ.)
- [B-342] Electrostatic Spray Deposition of Electrolyte Material onto a Porosity-Increased Fuel Electrode of Solid Oxide Fuel Cell and the Performance Test Results**  
 \*Takashi AOKI, Hiroshi NOMURA (Nihon Univ.), Hitoshi HARA, Tomonori ASANO (Noritz Co.)
- [B-343] Radical Formation of Amino Acid Particles by using Mechanochemical Processes**  
 \*Atsushi YAMAMOTO, Yoshiyuki SHIRAKAWA, Atsuko SHIMOSAKA,  
 Jusuke HIDAHA (Doshisha Univ.)
- [B-344] Study of Flame Synthesis Method for Nanoparticles by Flash Boiling Spray**  
 \*Anna YONEDA (Doshisha Univ.) Motohiro OSHIMA (Fukui Univ. of Tech.)  
 Kozo ISHIDA (HORIBA, Ltd.), Eriko MATSUMURA, Jiro SENDA (Doshisha Univ.)

## 第 22 回 微粒化シンポジウム プログラム

2013 年 12 月 19 日 (木)

時刻	A 室	B 室
8:30 –	受 付	
15:00 – 16:00	招待講演 Invited Lecture (Room A) “Sooting and Burning Behavior of Isolated n-heptane of Droplet” Assistant Professor Hyun Kyu Suh (Kongju National University)	
16:00 – 16:10	休 憩	
16:10 – 17:00	A24 : 微粒化機構 (A-241~A-242, 2 件)	B24 : 混合気形成・キャビテーション (B-241~B-242, 2 件)
17:00 – 18:00	日本液体微粒化学会 総会 (A 室)	
19:00 – 21:00	技術懇談会	

2013 年 12 月 20 日 (金)

時刻	A 室	B 室
8:30 –	受 付	
9:00 – 10:40	A31 : ディーゼル噴霧 I (A-311~A-314, 4 件)	B31 : 噴霧挙動 (B-311~B-314, 4 件)
10:40 – 10:50	休 憩	
10:50 – 12:05	A32 : ディーゼル噴霧 II (A-321~A-323, 3 件)	B32 : 噴霧燃焼 I (B-321~B-323, 3 件)
12:05 – 13:10	昼 食	
13:10 – 14:50	A33 : ガソリン噴霧・噴霧燃焼 II (A-331~A-334, 4 件)	B33 : 微粒子・粉体・造粒 I (B-331~B-334, 4 件)
14:50 – 15:00	休 憩	
15:00 – 16:40	A34 : 数値解析 (A-341~A-344, 4 件)	B34 : 微粒子・粉体・造粒 II (B-341~B-344, 4 件)
16:40 – 17:10	優秀講演賞表彰式 (A 室)	

## オーガナイズドセッションおよび一般講演 プログラム

※は講演者。  
講演1件当り発表15分，質疑10分とする。  
速報講演は（講演番号）で表示，それ以外は【講演番号】で表示。

### 招待講演

2013年12月19日（木） 15:00-16:00（A室）

座長： 植木 弘信（長崎大）

**Sooting and Burning Behavior of Isolated n-heptane of Droplet**

Assistant Professor Hyun Kyu Suh (Kongju National University)

### 12月19日（木）

**A24：微粒化機構 12月19日 16:10-17:00 A室**

座長： 田島 博士（九州大）

【A-241】 線香花火における微粒化現象の可視化

※井上 智博，渡辺 紀徳，姫野 武洋（東京大），越 光男（横浜国立大），  
寺島 洋史（東京大）

【A-242】 変曲点不安定に起因する自由液膜流の不安定波動の3次元化と合体

※脇本 辰郎，加藤 健司（大阪市立大）

**B24：混合気形成・キャビテーション 12月19日 16:10-17:00 B室**

座長： 河原 伸幸（岡山大）

【B-241】 二成分混合燃料噴霧における混合気形成過程に関する研究

※味岡 将士，桑原 悠（同志社大），岡田 理典（IHI），小橋 好充（金沢工大），  
松村 恵理子，千田 二郎（同志社大）

【B-242】 ノズル内キャビテーション気泡群が液体噴流に及ぼす影響

※山崎 貴義（同志社大），羽原 輝晃，神田 睦美（トヨタ自動車），松村 恵理子，  
千田 二郎（同志社大）

### 12月20日（金）

**A31：ディーゼル噴霧 12月20日 9:00-10:40 A室**

座長： 玉木 伸茂（近畿大）

【A-311】 ディーゼル噴霧の微粒化に及ぼす針弁リフトの影響

※財津 達也，駒田 佳介，坂口 大作，植木 弘信，石田 正弘（長崎大）

【A-312】 ディーゼル噴霧への雰囲気取り込みに関する実験的研究（自由噴霧と平板衝突噴霧）

※朱 晶宇（マツダ），上村 匠，西田 恵哉（広島大）

【A-313】 高圧ディーゼル噴霧上流の速度及び乱流エネルギー分布解析

※文 石洙，辻村 拓（産総研），斉藤 孝季，陳 之立（東海大）

【A-314】 バイオ燃料の物性が高圧ディーゼル噴射弁の噴射応答性および流量性能に及ぼす影響

※黄 鎮海（東海大），文 石洙（産総研），斉藤 孝季，陳 之立（東海大）

**A32：ディーゼル噴霧Ⅱ 12月20日 10:50-12:05 A室**

座長： 宋 明良（神戸大）

【A-321】 直噴式ディーゼル機関に適用する微粒化促進ノズルの噴孔形状・寸法が噴霧特性と流量特性に及ぼす影響

※西河 和麻（近畿大），深道 翔平（ヤマナカゴーキン），玉木 伸茂（近畿大）

- 【A-322】 直噴式ディーゼル機関用微粒化促進ノズルの噴孔ピッチ円直径と噴孔傾斜の有無が微粒化特性に及ぼす影響  
※坂井 慎也, 西河 和麻 (近畿大), 深道 翔平 (ヤマナカゴーキン), 玉木 伸茂 (近畿大)
- 【A-323】 2 波長分光型超高解像度計測手法を用いたパイロット噴霧の時系列計測  
※藤井 辰則 (同志社大), 丸林 直広 (新日鉄住金エンジニアリング), 松村 恵理子, 千田 二郎 (同志社大)

**A33 : ガソリン噴霧・噴霧燃焼Ⅱ 12月20日 13:10-14:50 A室**

**座長： 鶴 大輔 (九州大)**

- 【A-331】 ホールノズルから噴射した燃料噴霧の挙動に及ぼす横風の影響  
※岸 諒輔, 郭 敏, 石 保禄, 尾形 陽一, 西田 恵哉 (広島大), 和田 好隆 (マツダ)
- 【A-332】 DISI 用インジェクタ近傍における非定常噴霧の微粒化特性  
河原 伸幸, 富田 栄二, ※長谷川 僚 (岡山大)
- 【A-333】 噴霧火炎中のすす生成に及ぼす二酸化炭素雰囲気の影響  
※山垣 拓馬, 林 潤, 中塚 記章, 赤松 史光 (大阪大)
- (A-334) 高温高压燃焼場における航空用希薄ステージングバーナの OH ラジカル分布及び予混合管内外燃料濃度分布の LIF 法による同時可視化  
※大堀 直, 江口 貴広 (法政大), 松浦 一哲, 山田 秀志, 黒澤 要治, 山本 武, 下平 一雄 (宇宙航空研究開発機構), 林 茂 (法政大)

**A34 : 数値解析 12月20日 15:00-16:40 A室**

**座長： 井上 智博 (東京大)**

- (A-341) 炭化水素燃料の自着火特性に及ぼす蒸発特性の影響  
※大嶋 元啓 (福井工大), 酒井 康行 (福井大)
- 【A-342】 尿素 SCR における尿素水混合過程の数値計算  
※林 将義, 宋 明良 (神戸大)
- 【A-343】 燃料液膜流の変形過程に関する数値シミュレーション  
※大島 逸平, 宋 明良 (神戸大)
- 【A-344】 重合噴霧間の液滴衝突挙動を模擬するための衝突モデルの構築  
※田島 博士, 鶴 大輔, 日高 光太 (九州大)

**B31 : 噴霧挙動 12月20日 9:00-10:40 B室**

**座長： 林 潤 (大阪大)**

- 【B-311】 高压環境における気流噴射弁の噴霧粒径および噴霧形成過程に関する研究  
※加藤 昂大, 鈴木 聡一郎, (東北大) 工藤 琢, 加藤 壮一郎, 伊藤 光紀 (IHI), 早川 晃弘, 小林 秀昭 (東北大)
- 【B-312】 気流噴射弁内の液膜形成に空気が及ぼす影響  
※伊藤 光紀, 松野 伸介 (IHI)
- 【B-313】 高温・圧力環境におけるパームメチルエステル液滴の蒸発温度履歴  
※金子 堅太郎, 野村 浩司 (日本大), 橋本 望 (電中研)
- 【B-314】 液噴流衝突微粒化の高レイノルズ数域における微粒化特性およびそのモデリング  
稲村 隆夫, 城田 農, 斎藤 裕樹, 坂部 良太, 麓 耕二 (弘前大)

**B32 : 噴霧燃焼Ⅰ 12月20日 10:50-12:05 B室**

**座長： 森上 修 (九州大)**

- 【B-321】 気流微粒化方式燃料噴射弁の微粒化特性と燃焼特性に関する実験的研究  
※増田 健, 藤 秀実 (金沢工大)
- 【B-322】 航空用ガスタービンエンジンのサブスケール燃焼器内における噴霧火炎詳細構造に関する研究  
※河野 龍平, 林 潤 (大阪大), 森合 秀樹 (三菱重工), 中塚 記章, 赤松 史光 (大阪大)



- 【B-323】 エタノール噴霧濃度がレーザー着火に及ぼす影響  
※石村 祐宜, 瀬尾 健彦, 三上 真人 (山口大)

**B33 : 微粒子, 粉体, 造粒 I 12月20日 13:10-14:50 B室**

**座長: 大嶋 元啓 (福井工大)**

- 【B-331】 液滴界面でのクラスター形成に影響を与える相互拡散挙動の解析  
※権田 和樹, 和氣 大樹, 下坂 厚子, 白川 善幸, 日高 重助 (同志社大)
- 【B-332】 マイクロリアクタを利用した微粒化技術による複合粒子の合成  
※服部 祐也, 白川 善幸, 下坂 厚子, 日高 重助 (同志社大)
- 【B-333】 溶液微粒化プロセスにおける粒子形態制御技術の開発  
※田村 光, 白川 善幸, 下坂 厚子, 日高 重助 (同志社大)
- 【B-334】 円筒型固体酸化物形燃料電池薄膜電解質製作への静電噴霧堆積法の応用  
※青木 貴裕, 青木 貴志, 野村 浩司 (日本大)

**B34 : 微粒子, 粉体, 造粒 II 12月20日 15:00-16:40 B室**

**座長: 座間 淑夫 (群馬大)**

- 【B-341】 液-液界面晶析プロセスにおける結晶化物質および有機溶媒が及ぼす界面張力への影響  
※松尾 友里絵, 白川 善幸, 下坂 厚子, 日高 重助 (同志社大)
- 【B-342】 気孔率を増大させた固体酸化物形燃料電池燃料極上への電解質材料の静電噴霧堆積およびその性能試験結果  
※青木 貴志, 野村 浩司 (日本大), 原 人志, 浅野 友徳 (ノーリツ)
- 【B-343】 メカノケミカルプロセスを用いたアミノ酸微粒化にともなうラジカル形成機構の解明  
※山本 篤史, 白川 善幸, 下坂 厚子, 日高 重助 (同志社大)
- 【B-344】 減圧沸騰噴霧を用いたナノ粒子燃焼合成に関する研究  
※米田 安那 (同志社大), 大嶋 元啓 (福井工大), 石田 耕三 (堀場製作所), 松村 恵理子, 千田 二郎 (同志社大)