

**Tuesday, August 27**

**SC5: Knock 3**

**Room B (Seminar Room 1+2), 2F East Bldg.**

**Chairpersons:**

Makoto Kaneko, Chiba University  
Qian Xiong, Harbin Engineering University

08:45 JSAE20199330 / SAE2019-01-2206

**Detection of Engine Knock Using Speed Oscillations in a Single-cylinder Spark-ignition Engine**

Kiran Bhaskar, Jubin V Jose, Mayank Mittal, A Ramesh, Indian Institute of Technology Madras

09:15 JSAE20199034 / SAE2019-01-2207

**An Analysis on Cycle-by-cycle Variation and Trace-knock Using a Turbulent Combustion Model Considering a Flame Propagation Mechanism**

Taizo Kitada, Takayuki Shirota, Shinji Hayashi, Dai Tanaka, Masato Kuchita, Mitsubishi Motors Corporation / Yasuyuki Sakai, University of Fukui / Yukihide Nagano, Toshiaki Kitagawa, Kyushu University

09:45 JSAE20199223 / SAE2019-01-2208

**Evaluation of Cycle Variation of SWACER-like Knocking Using 3D SI Combustion Simulation**

Tomonori Kuroki, Yuta Shima, Yasuhisa Ono, Takeshi Serizawa, Daihatsu Motor Co., Ltd.

**SC7: SI Engine Control**

**Room C (Seminar Room 3), 2F East Bldg.**

**Chairpersons:**

Kei Yoshimura, Suzuki Motor Corporation  
Madan Kumar, Chiba University

08:45 JSAE20199095 / SAE2019-01-2211

**Research of the High Altitude Control Strategy of the Piston Aero-engine Using Two-stage Turbocharger Coupled with Single Supercharging System**

Ye Yao, Lei Shi, Shanghai Jiao Tong University / Zhe Zhang, Maoyu Xiao, Mingwei Liu, Beijing Power Machinery Institute / Jianwei Tan, Beijing Institute of Technology

09:15 JSAE20199150 / SAE2019-01-2212

**A Reduced Order Turbocharging Process Model for Manifold Pressure Control with EGR**

Kazuhide Togai, Osaka Sangyo University / Naoto Fujinaga, Mitsubishi Motors Corporation

09:45 JSAE20199348 / SAE2019-01-2213

**Investigating the Impact of Gasoline Lubricity on the High Pressure Pumps Operation**

Thomas Dubois, Total Additifs & Carburants Spéciaux / Cyrille Callu, Total Marketing & Services / Ludovic Moisy, EMC France

**EP1: Hybrid System 1**

**Room D (Conference Room M), 2F East Bldg.**

**Chairpersons:**

Akira Iijima, Nihon University  
Minoru Iida, Yamaha Motor Co., Ltd.

08:45 JSAE20199172 / SAE2019-01-2216

**Development of Electric 4WD System For Compact Hybrid Car**

Yasuhiro Konishi, Masahito Taira, Hideaki Ootsuka, Tomohiro Ito, Kantaro Yoshimoto, Nissan Motor Co., Ltd.

09:15 JSAE20199314 / SAE2019-01-2217

**ICE Vehicle Challenge toward Zero Emissions: Future Technology Harmonization in Electrified Powertrain System**

Bungo Kawaguchi, Kazuhiro Umemoto, Seitaro Misawa, Shigemasa Hirooka, Takashi Kawai, Toyota Motor Corporation

**GF3: SI Gas Engine 1**

**Room E (Audio/Video Study Room), 2F East Bldg.**

**Chairpersons:**

Takuji Ishiyama, Kyoto University  
Takahiro Sako, Osaka Gas Co., Ltd.

08:45 JSAE20199096 / SAE2019-01-2220

**Methodology to Determine the Fast Burn Period Inside a Heavy-Duty Diesel Engine Converted to Natural Gas Lean-Burn Spark Ignition Operation**

Jinlong Liu, Cosmin Dumitrescu, West Virginia University

09:15 JSAE20199097 / SAE2019-01-2221

**Specifics of the Combustion Phenomenon Inside a Heavy-Duty Diesel Engine Converted to Natural Gas Lean-Burn Spark Ignition Operation**

Jinlong Liu, Cosmin E. Dumitrescu, Hemanth Bommesetty, West Virginia University

09:45 JSAE20199204 / SAE2019-01-2222

**Particle and Gaseous Emissions from a Heavy-duty SI Gas Engine over WHTC Driving Cycles**

Pierpaolo Napolitano, Chiara Guido, Carlo Beatrice, Valentina Fraioli, Salvatore Alfuso, CNR

**DC7: Diesel Model 1**

**Room F (Conference Room A+B), 3F East Bldg.**

**Chairperson:**

Hiroshi Kawanabe, Kyoto University  
Paul Miles, Sandia National Laboratories

08:45 JSAE20199244 / SAE2019-01-2225

**Proposal of Wall Heat Transfer Coefficient Applicable to Spray-wall Interaction Process in Diesel Engines (First Report: Identification of Wall Heat Transfer Coefficient Based on 'Similarity Theory of Spray Characteristics')**

Kazuhsa Inagaki, Junichi Mizuta, Yoshihiro Nomura, Takato Ikedo, Reiko Ueda, Toyota Central R&D Labs., Inc.

09:15 JSAE20199064 / SAE2019-01-2226

**Proposal of Wall Heat Transfer Coefficient Applicable to Spray-wall Interaction Process in Diesel Engines (Second Report: Improvement of Diesel Combustion Simulator UniDES by the Proposed Wall Heat Transfer Coefficient)**

Takato Ikedo, Kazuhisa Inagaki, Yoshihiro Nomura, Reiko Ueda, Toyota Central R&D Labs., Inc. / Hiroshi Oyagi, Toyota Motor Corporation

### DC9: Marine Diesel

Room G (Conference Room C), 3F East Bldg.

#### Chairpersons:

Pavlos Dimitriou, National Institute of Advanced Industrial Science and Technology  
Go Asai, YANMAR Co., Ltd.

08:45 JSAE20199043 / SAE2019-01-2229

#### Research of Fuel Characteristic of Dimethyl ether / High Viscosity & Incombustible Matter Blend for Marine Diesel Engine

Yu Mihara, Daiki Kuro-oka, Tomoki Shirahama, Kenta Kuwaoka, Takashi Suzuki, Ichiro Asano, Tomohisa Dan, Kobe University

09:15 JSAE20199118 / SAE2019-01-2230

#### Effect of Alternative Fuels on Marine Engine Performance

Michal Wojcieszuk, Yuri Kroyan, Martti Larmi, Ossi Kaario, Kai Zenger, Aalto University

09:45 JSAE20199070 / SAE2019-01-2231

#### Study of Nozzle Fouling: Deposit Build-Up and Removal

Hanna Bernemyr, Botond Csontos, KTH Royal Institute of Technology / Henrik Hittig, Oscar Forsberg, Scania CV AB

### E3: SCR

Room H (Conference Room D), 3F East Bldg.

#### Chairpersons:

Masao Hori, Umicore Shokubai Japan Co., Ltd.  
Robert Henderson, Southwest Research Institute

08:45 JSAE20199288 / SAE2019-01-2234

#### Isocyanic Acid Hydrolysis and Ammonia-SCR Reaction over Hydrothermally Aged Cu-ZSM5

Masahiro Matsuoka, Ibaraki University and Japan Automotive Research Institute / Takaaki Kitamura, Japan Automotive Research Institute / Akira Obuchi, National Institute of Advanced Industrial Science and Technology / Jun Tsuchida, Satoshi Sakaida, Kotaro Tanaka, Mitsuru Konno, Ibaraki University

09:15 JSAE20199290 / SAE2019-01-2235

#### A Study on the Performance Deterioration of SCR for Heavy-Duty Diesel Vehicles

Manjae Kwon, Giyoung Park, Hyunjae Lim, Jungjun Kim, Seangwock Lee, Kookmin University / Kiho Kim, Hoyoung Song, Korea Petroleum Quality & Distribution Authority

09:45 JSAE20199299 / SAE2019-01-2236

#### Analysis of NH<sub>3</sub> Diffusion Phenomena in a Selective Catalytic Reduction Coated Diesel Particulate Filter Catalyst Using a Simple One-Dimensional Core Model

Ken Sahara, Yoshihisa Tsukamoto, Akihisa Ishimaru, Takao Fukuma, Jin Kusaka, Waseda University

### L3: Fuel Efficient Lubricants 1

Room I (Conference Room 2), 3F West Bldg.

#### Chairpersons:

Satoshi Hirano, Toyota Motor Corporation  
William B. Anderson, Afton Chemical Corporation

08:45 JSAE20199073 / SAE2019-01-2239

#### Lubricant Impact on Friction by Engine Component: A Motored Friction Tear Down Assessment of a Production 3.6L Engine

Enrique Lizarraga-Garcia, Sarah Remmert, Shell Global Solutions (US) Inc. / Tony Davenport, Shell Global Solutions (Deutschland) / Phil Carden, Andrew de Vries, Ricardo UK Ltd / Stephen Cakebread, Ricardo Inc. / Robert Mainwaring, Shell Global Solutions (UK)

09:15 JSAE20199160 / SAE2019-01-2240

#### Development of Low Viscosity 0W-16 Fuel-Saving Engine Oil Using a Synergistic Optimization of an Innovative Base Oil and Performant Additives while Maintaining Engine Durability in a ILSAC GF6-B Environment

Nicolas Champagne, Paula Ussa-Aldana, TOTAL Marketing & Services / Mathieu Consigny, Camille Herry, INFINEUM

09:45 JSAE20199071 / SAE2019-01-2241

#### Engine Oil Fuel Economy –Benefits and Potential Debts of Low Viscosity Engine Oil

William B. Anderson, Greg H. Guinther, Afton Chemical Corporation

### SC6: Lean Burn 1

Room B (Seminar Room 1+2), 2F East Bldg.

#### Chairpersons:

Makoto Kaneko, Chiba University  
Qian Xiong, Harbin Engineering University

10:30 JSAE20199063 / SAE2019-01-2209

#### Study of Ignition Processes of a Lean Burn Engine Using Large-Eddy Simulation

Olivier Bernard Benoit, Pawel Luszcz, Yann Drouvin, Toyota Motorsport GmbH / Taisuke Kayashima, Toyota Motor Corporation / Philipp Adomeit, André Brunn, FEV Europe GmbH / Stéphane Jay, Karine Truffin, Christian Angelberger, IFP Energies nouvelles

11:00 JSAE20199222 / SAE2019-01-2210

#### In-cylinder Flow Design based on the Representative Scales of Turbulence and Premixed Combustion

Yuko Mito, Taisuke Shiraishi, Atsushi Teraji, Nissan Motor Co., Ltd.

### SC8: SI Engine Emission

Room C (Seminar Room 3), 2F East Bldg.

#### Chairpersons:

Kei Yoshimura, Suzuki Motor Corporation  
Madan Kumar, Chiba University

10:30 JSAE20199256 / SAE2019-01-2214

#### Effects of Spark Timing with Other Engine Operating Parameters on the Particulate Emissions of a Dual-injection Gasoline Engine During Warm-up Conditions

Jie Tao, Chun Xia, Kerang Mao, Wenhao Chen, Junhua Fang, Zhen Huang, Shanghai Jiao Tong University

11:00 JSAE20199235 / SAE2019-01-2215

#### Emission Prediction with Detailed Chemistry

Tenghua Shieh, Oana Nitulescu, Toyota Motor North America / Kazuhiro Uehara, Yasushi Noguchi, Toyota Motor Corporation

## EP2: Hybrid System 2

Room D (Conference Room M), 2F East Bldg.

### Chairpersons:

Minoru Iida, Yamaha Motor Co., Ltd.  
Akira Iijima, Nihon University

10:30 JSAE20199019 / SAE2019-01-2218

### A Simulation Study for Hybrid Electric Vehicles with Gasoline Compression Ignition Technology

Hyun-Woo Won, Aramco Overseas Company B.V. (Aramco Fuel Research Center) / Ebin Thuruthel Chacko, AFRC and ISAT / Kamalnath Munusamy Ramachandran, AFRC and Evry Uni.

11:00 JSAE20199025 / SAE2019-01-2219

### Optimal Energy Management for Variable Fuel Quality in Hybrid Electric Vehicles

Bastian Beyfuss, Peter Hofmann, Bernhard Geringer, Vienna University of Technology

## GF4: SI Gas Engine 2

Room E (Audio/Video Study Room), 2F East Bldg.

### Chairpersons:

Takahiro Sako, Osaka Gas Co., Ltd.  
Takuji Ishiyama, Kyoto University

10:30 JSAE20199033 / SAE2019-01-2223

### Development of Pre-chamber with Less Combustion Variation with Use of LES

Tomohiro Koga, Shintaro Shuto, Daisuke Takemoto, Yuji Oda, Akihiro Yuki, Mitsubishi Heavy Industries, Ltd. / Yuta Furukawa, Mitsubishi Heavy Industries Engine & Turbocharger, Ltd.

11:00 JSAE20199074 / SAE2019-01-2224

### Experimental Investigation on the Influence of Brake Mean Effective Pressures up to 30 bar on the Behavior of a Large Bore Otto Gas Engine

Stefan Eicheldinger, Tomas Bartkowski, Alexander Schröder, Maximilian Prager, Georg Wachtmeister, Technical University of Munich

## DC8: Diesel Model 2

Room F (Conference Room A+B), 3F East Bldg.

### Chairperson:

Paul Miles, Sandia National Laboratories  
Hiroshi Kawanabe, Kyoto University

10:30 JSAE20199214 / SAE2019-01-2227

### Use of Predictive Engine and Emission Model for Diesel Engine Model Based Calibration

Yifan Wei, Lakshmidhar R. Uppalapati, Bruce Vernham, ISUZU Technical Center of America

11:00 JSAE20199179 / SAE2019-01-2228

### Heat Balance Analysis Using Cylinder Pressure Obtained by Engine Experiments Considering the Spatial Heterogeneity of Diesel Combustion

Yudai Kato, Sang-kyu Kim, Daisuke Fukuda, Daisuke Shimo, Mazda Motor Corporation

## DC10: Alcohol Diesel

Room G (Conference Room C), 3F East Bldg.

### Chairpersons:

Go Asai, YANMAR Co., Ltd.  
Pavlos Dimitriou, National Institute of Advanced Industrial Science and Technology

10:30 JSAE20199154 / SAE2019-01-2232

### CI Methanol and Ethanol Combustion Using Ignition Improver

Michael Saccullo, Timothy Benham, Ingemar Denbratt, Chalmers University of Technology / Bengt Johansson, King Abdullah University of Science and Technology

11:00 JSAE20199010 / SAE2019-01-2233

### Numerical Simulations of Methanol Engine Performance for High-altitude, Non-road Applications

Guang Yao, Lei Zhou, Zeyu Chen, Harbin Institute of Technology, Shenzhen / Li Weng, Ke Liu, Southern University of Science and Technology / Zan Zhu, Guangxi Yuchai Machinery Co. Ltd

## E4: DPF1

Room H (Conference Room D), 3F East Bldg.

### Chairpersons:

Kazuo Oosumi, Isuzu Advanced Engineering Center LTD.  
Cary Henry, Southwest Research Institute

10:30 JSAE20199201 / SAE2019-01-2237

### Research on a DPF Regeneration Burner System for Use when Engine is not in Operation

Tatsuki Igarashi, Yusuke Adachi, Ichiro Tsumagari, Shinya Sato, Hino Motors, Ltd. / Atsushi Yaeo, Akihiro Nakayama, SANGO Co., Ltd.

11:00 JSAE20199347 / SAE2019-01-2238

### Study on Diesel Atomization Characteristics for Hot Exhaust Gas Burner

Mengdi Li, Shipeng Li, Liguang Li, Jun Deng, Tongji University

## L4: Fuel Efficient Lubricants 2

Room I (Conference Room 2), 3F West Bldg.

### Chairpersons:

Kedar Shrestha, Valvoline Pte. Ltd.  
Tian Tian, Massachusetts Institute of Technology

10:30 JSAE20199249 / SAE2019-01-2242

### Art of Fuel Economy Lubricant Formulation: How Appropriate Fuel Economy Assessment Tools and New Technologies are Opening-up New Formulation Spaces for the Next Generation Fuel Economy Lubricants

Tsuyoshi Matsui, Infineum Japan Ltd. / Thomas Featherstone, Peter Wright, Infineum UK Ltd.

11:00 JSAE20199055 / SAE2019-01-2243

### Characteristics of Diesel Engine Oil for Heavy Duty Commercial Vehicles Achieving for Both Fuel Economy and Reliability

Yoichiro Nakamura, Ken Hashimoto, Hino Motors, Ltd. / Hideki Nakamura, Shinji Ejiri, Cosmo Oil Lubricants Co., Ltd.

## SC9: Spray Wall Interaction

Room B (Seminar Room 1+2), 2F East Bldg.

### Chairpersons:

Eriko Matsumura, Doshisha University  
Jean-Marc Zaccardi, IFP Energies nouvelles

13:00 JSAE20199053 / SAE2019-01-2244

### A Study of Particulate Emission Formation Mechanism from Injector Tip in Direct-injection Gasoline Engines

Yoshihiro Imaoka, Yutaka Hashizume, Takao Inoue, Taisuke Shiraishi, Nissan Motor Co., Ltd.

13:30 JSAE20199137 / SAE2019-01-2245

### Analysis of Fuel Wetting by Using Infrared Absorption

Shintaro Itoh, Shota Toda, Akihiro Ando, Yukihiko Takahashi, SOKEN, INC. / Naoki Ogawa, Masahiro Okuma, DENSO Corporation.

14:00 JSAE20199247 / SAE2019-01-2246

### Effects of Nozzle Hole Diameter and Injection Pressure on Fuel Adhesion of Flat-Wall Impinging Spray

Hongliang Luo, Shintaro Uchitomi, Tomohiro Watanabe, Keiya Nishida, Youichi Ogata, Hiroshima University / Wu Zhang, Ryosuke Hara, Tatsuya Fujikawa, Mazda Motor Corporation

14:30 JSAE20199155 / SAE2019-01-2247

### Vaporization and Turbulence Characteristics of High Pressure Gasoline Sprays Impinging on a Wall

Wu Zhang, Ryosuke Hara, Tatsuya Fujikawa, Masahisa Yamakawa, Mazda Motor Corporation / Tomohiro Watanabe, Yukihiko Ichikawa, Keiya Nishida, Yoichi Ogata, Hiroshima University

## SC11: SI Combustion

Room C (Seminar Room 3), 2F East Bldg.

### Chairpersons:

Akira Iijima, Nihon University  
Atsushi Teraji, Nissan Motor Co., Ltd.

13:00 JSAE20199047 / SAE2019-01-2252

### Expansion of External EGR Effective Region and Influence of Dilution on Boosted Operation of a Downsized Turbocharged GDI Engine

Ray Shimura, Hua Zhao, Xinyan Wang, Brunel University London

13:30 JSAE20199089 / SAE2019-01-2253

### Spark Assisted Compression Ignition Engine with Stratified Charge Combustion and Ozone Addition

Sayan Biswas, Isaac Ekoto, Sandia National Laboratories

14:00 JSAE20199158 / SAE2019-01-2254

### Measurements and Modeling of Ozone Enhanced Compression Ignition in a Rapid Compression Machine and Optically-accessible Engine

Nicolas Seignour, Fabrice Foucher, Bruno Moreau, Université d'Orléans / Isaac Ekoto, Sandia National Laboratories

## EP3: BEV and FC 1

Room D (Conference Room M), 2F East Bldg.

### Chairpersons:

Hitoshi Okuyama, Bosch Corporation  
Takeshi Kato, Honda R&D Co., Ltd.

13:00 JSAE20199079 / SAE2019-01-2259

### Innovative Fluid Allowing a New and Efficient Battery Thermal Management

Jonathan Raisin, Nicolas Champagne, TOTAL Marketing Services

13:30 JSAE20199273 / SAE2019-01-2260

### Novel Electrochemical Capacitors with High-energy Density Using Intercalated Metal-organic Framework Electrodes

Nobuhiro Ogihara, Toyota Central R&D Labs., Inc.

14:00 JSAE 20199212 / SAE2019-01-2369

### System Level Vehicle Model Development of Light Heavy Duty Battery Electric Vehicle in GT-Suite

Santhosh Pasupathi, Aishwarya Shetty, Smruti Rathod, Gerald Bergsieker, Isuzu Technical Center of America Inc.

14:30 JSAE 20199009 / SAE2019-01-2371

### Cetrex Lite – Implementation on a Light Duty Truck

Rafel Pascual de la Cruz, ZF Japan Co., Ltd. / Frank-Detlef Speck, ZF Friedrichshafen AG

## NP1: Novel Powertrain

Room E (Audio/Video Study Room), 2F East Bldg.

### Chairpersons:

Toshihide Yamamoto, Mazda Motor Corporation  
Koichiro Nakatani, Toyota Motor Corporation

13:00 JSAE20199022 / SAE2019-01-2264

### Development of a Sheet Metal Turbine Housing for a Diesel Engine

Masaaki Ashida, Satoru Yokoshima, Shunichi Mitsuishi, Hiroyuki Okamoto, Calsonic Kansei Corporation

13:30 JSAE20199032 / SAE2019-01-2265

### A Gas Separation Membrane Highly Selective to CO<sub>2</sub> in the Exhaust of Internal Combustion Engines

Eric Randolph, Graham Conway, Jason Herrera, Terrence Alger, Nishant Thakral, Christopher Chadwell, Southwest Research Institute

14:00 JSAE20199083 / SAE2019-01-2266

### Performance Analysis of Volumetric Expanders in Heavy-Duty Truck Waste Heat Recovery

Sandhya Thantla, Jens Fridh, Anders Christiansen Erlandsson, KTH Royal Institute of Technology / Jonas Aspfors, Scania CV AB

14:30 JSAE20199124 / SAE2019-01-2267

### Injection Strategies for Isobaric Combustion

Rafiq Babayev, Moez Ben Houidi, VS Bhavani Shankar, Bassam Aljohani, Bengt Johansson, King Abdullah University of Science and Technology

## DC11: Diesel Soot 1

Room F (Conference Room A+B), 3F East Bldg.

### Chairpersons:

Noboru Uchida, New A.C.E Institute Co., Ltd.  
Öivind Andersson, Lund University

13:00 JSAE20199157 / SAE2019-01-2270

### Suppression of Soot Formation in Quasi-steady Diesel Spray Flame Produced by High-pressure Fuel Injection with Multi-orifice Nozzle

Takayuki Fuyuto, Yoshiyuki Mandokoro, Yoshiaki Hattori, Toyota Central R&D Labs., Inc. / Makoto Mashida, DENSO Corporation

13:30 JSAE20199143 / SAE2019-01-2271

### Influence of Combustion Chamber Shape and In-cylinder Density on Soot Formation in Diesel Combustion

Yoshihiro Funayama, Kazunori Yoshitomi, Mori Ishii, Hiroshi Nakajima, Hino Motors, Ltd. / Takayuki Fuyuto, Toyota Central R&D Labs., Inc.

14:00 JSAE20199139 / SAE2019-01-2272

**Analysis of Spray to Spray Interaction and Smoke Emission for Diesel Multiple Injections and Quick Rising Injection Rate**

Hayato Yamashita, Kenichi Tomomatsu, SOKEN, INC. / Naoki Toda, DENSO Corporation / Kazumasa Shimode, Masato Ikemoto, Kazuhiro Omae, Toyota Motor Corporation

14:30 JSAE20199170 / SAE2019-01-2273

**Investigation of a Novel Leaner Fuel Spray Formation for Reducing Soot in Diffusive Diesel Combustion -Homogenizing Equivalence Ratio Distribution in the Lift-off Region -**

Shiro Tanno, Jun Kawakami, Koji Kitano and Takeshi Hashizume, Toyota Motor Corporation

**DC13: Inner Nozzle Phenomena**

**Room G (Conference Room C), 3F East Bldg.**

**Chairpersons:**

Tetsuya Aizawa, Meiji University  
Julian Kashdan, IFP Energies nouvelles

13:00 JSAE20199054 / SAE2019-01-2278

**Prediction of Cavitation Erosion Intensity Using Large-Scale Diesel Nozzles**

Motoya Kambara, Takanobu Aochi, Fumiaki Arikawa, SOKEN, INC. / Toshiaki Hijima, Kazufumi Serizawa, DENSO Corporation

13:30 JSAE20199284 / SAE2019-01-2279

**Diesel Injector Elasticity Effects on Internal Nozzle Flow**

Koji Yasutomi, Sandia National Laboratories and Hino Motors Ltd. / Julien Manin, Sandia National Laboratories and Artium Technologies / Joonsik Hwang, Lyle Pickett, Marco Arienti, Scott Skeen, Sandia National Laboratories / Shane Daly, Oregon State University

14:00 JSAE20199285 / SAE2019-01-2280

**Effect of Pressure Cycling on Gas Exchange in a Transparent Fuel Injector**

Paul M. Abers, Emre Cenger, Joonsik Hwang, Lyle M. Pickett, Sandia National Laboratories / Koji Yasutomi, Sandia National Laboratories and Hino Motors Ltd.

14:30 JSAE20199192 / SAE2019-01-2281

**Eccentric Needle Motion Effect on Spray Dynamics of Multi-hole Diesel Nozzle**

Huifeng Gong, Weidi Huang, Raditya Hendra Pratama, National Institute of Advanced Industrial Science and Technology

**E5: DPF 2**

**Room H (Conference Room D), 3F East Bldg.**

**Chairpersons:**

Kazuo Oosumi, Isuzu Advanced Engineering Center LTD.  
Cary Henry, Southwest Research Institute

13:00 JSAE20199004 / SAE2019-01-2286

**Magnetic Resonance Imaging of the Internal and External Hydrodynamics in Wall-flow Particulate Filters**

Jonathan D. Cooper, Lynn F. Gladden, Andrew J. Sederman, University of Cambridge / Andrew P.E. York, Johnson Matthey Technology Centre

13:30 JSAE20199161 / SAE2019-01-2287

**Direct Visualization of Soot and Ash Transport in Diesel Particulate Filters during Active Regeneration Process**

Mayumi Matsuno, Takaaki Kitamura, Japan Automobile Research Institute

14:00 JSAE20199140 / SAE2019-01-2288

**Phenomena of PM Deposition and Oxidation in the Diesel Particulate Filter**

Maki Nakamura, Masakuni Ozawa, Nagoya University

14:30 JSAE20199092 / SAE2019-01-2289

**Arc generated Soot for a Comparison with Practical Diesel Soots Using Characterization Analyses with a Time-lapse Regeneration Study on a DPF**

Mek Srilomsak, Masanobu Inaba, Katsunori Hanamura, Tokyo Institute of Technology

**L5: Fuel Efficient Lubricants 3**

**Room I (Conference Room 2), 3F West Bldg.**

**Chairpersons:**

Akira Yaguchi, JXTG Nippon Oil & Energy Corporation  
Yuji Mihara, Tokyo City University

13:00 JSAE20199018 / SAE2019-01-2294

**A Real-world Fleet Test of the Effects of Engine Oil on Low Speed Pre-Ignition Occurrence in TGD<sub>i</sub> Engine**

Ruifeng Zhang, Keith Howard, Damien Browne, The Lubrizol Corporation

13:30 JSAE20199046 / SAE2019-01-2295

**MR20DD Motoring Fuel Economy Test for 0W-12 and 0W-8 Low Viscosity Engine Oil**

Takumaru Sagawa, Seiichi Nakano, Isao Shouganji, Sachiko Okuda, Nissan Motor Co., LTD. / Tomoya Nakajo, Japan Automobile Research Institute

14:00 JSAE20199114 / SAE2019-01-2296

**Development of Firing Fuel Economy Engine Dyno Test Procedure for JASO Ultra Low Viscosity Engine Oil Standard (JASO GLV-1)**

Hiroshi Jikuya, Shunsuke Mori, Kazuo Yamamori, Satoshi Hirano, Toyota Motor Corporation

14:30 JSAE20199115 / SAE2019-01-2297

**New Approach to JASO Standardization of New Fired Fuel Economy Engine Dyno Test for the New JASO Gasoline Engine Oil Standard for Low Viscosity Grades (JASO GLV-1)**

Yoshihiro Nakashima, Kazuo Yamamori, Satoshi Hirano, Toyota Motor Corporation

**SC10: Gasoline Spray**

**Room B (Seminar Room 1+2), 2F East Bldg.**

**Chairpersons:**

Eriko Matsumura, Doshisha University  
Run Chen, Chiba University

15:15 JSAE20199026 / SAE2019-01-2248

**Effect of a Split-injections Strategy on the Atomization Rate for Charge Stratification Using a High Pressure Gasoline Multi-hole Injector**

Meghnaa Dhanji, Hua Zhao, Brunel University London

15:45 JSAE20199031 / SAE2019-01-2249

**Characterizing Flash Boiling Sprays of E10 Gasoline from a High-pressure Gasoline Multi-hole Injector**

Jianguo Du, Balaji Mohan, William L Roberts, King Abdullah University of Science and Technology / Jaeheon Sim, Junseok Chang, Saudi Aramco / Tiegang Fang, North Carolina State University

16:15 JSAE20199191 / SAE2019-01-2250

**Influence of Component Proportion on Multi-Component Surrogate Fuel Spray Characteristics under Subcooled and Superheated Conditions**

Xiaowei Zhou, David L.S. Hung, Shangze Yang, Xuesong Li, Min Xu, Shanghai Jiao Tong University / Ryo Uchida, Taisuke Shiraiishi, Nissan Motor Co., Ltd.

16:45 JSAE20199030 / SAE2019-01-2251

**High-speed 3D Measurements of the Influence of Intake Pressure on the In-Cylinder Flow in a DISI Engine**

Marco Braun, Michael Klaas, Wolfgang Schröder, RWTH Aachen University

**SC12: SI Fuel 1**

**Room C (Seminar Room 3), 2F East Bldg.**

**Chairpersons:**

Akira Iijima, Nihon University  
Atsushi Teraji, Nissan Motor Co., Ltd.

15:15 JSAE20199270 / SAE2019-01-2255

**Research of Fuel Components to Enhance Engine Thermal Efficiency**

**Part I: Concepts for Fuel Molecule Candidate**

Ken Obata, Taketora Naiki, Manabu Watanabe, JXTG Nippon Oil & Energy Corporation / Nozomi Yokoo, Yoshinori Miyamoto, Koichi Nakata, Toyota Motor Corporation

15:45 JSAE20199062 / SAE2019-01-2256

**Research of Fuel Components to Enhance Engine Thermal Efficiency**

**Part II: Consideration of Engine Combustion Characteristics**

Nozomi Yokoo, Yoshinori Miyamoto, Koichi Nakata, Toyota Motor Corporation / Ken Obata, Taketora Naiki, Manabu Watanabe, JXTG Nippon Oil & Energy Corporation

16:15 JSAE20199306 / SAE2019-01-2257

**Research of Fuel Components to Expand Lean-limit in Super Lean-burn Condition**

Taketora Naiki, Ken Obata, Manabu Watanabe, JXTG Nippon Oil & Energy Corporation / Takeshi Yokomori, Norimasa Iida, Keio University

16:45 JSAE20199067 / SAE2019-01-2258

**Hydrogen as a Combustion Enhancer for Highly Efficient Ultra-lean Spark-ignition Engines**

Jean-Marc Zaccardi, Guillaume Pilla, IFP Energies nouvelles

**EP4: BEV and FC 2**

**Room D (Conference Room M), 2F East Bldg.**

**Chairpersons:**

Takeshi Kato, Honda R&D Co., Ltd.  
Hitoshi Okuyama, Bosch Corporation

15:15 JSAE20199119 / SAE2019-01-2261

**Effect of Tab Cooling on Large-Format Lithium-Ion Pouch Cells**

Kanchai Theinglim, Poowanart Poramapojana, Kasetsart University

15:45 JSAE20199104 / SAE2019-01-2262

**Unsteady High-Speed Flow in the Tank for Fuel Cell Vehicle on Filling the Gas**

Shinji Miyoshi, Yasushi Mitsushi, Tetsuya Shimomura, SOKEN, INC. / Masayuki Anyoji, Toshiyuki Aoki, Kyushu University

16:15 JSAE20199106 / SAE2019-01-2263

**Fuel Cell Vehicles: An Opportunity for China's Greenhouse Gas Reduction**

Zhexuan Mu, Han Hao, Zongwei Liu, Fuquan Zhao, Tsinghua University

16:45 JSAE 20199316 / SAE2019-01-2370

**Study on Thermal Degradation Characteristics of Ion Exchange Resins of Fuel Cell Vehicles**

Kaoru Kamo, Motohisa Miyashita, ROKI Co., Ltd.

**NP2: Novel Transmission**

**Room E (Audio/Video Study Room), 2F East Bldg.**

**Chairpersons:**

Toshihide Yamamoto, Mazda Motor Corporation  
Masayuki Yasuoka, MARELLI / Calsonic Kansei Corporation

15:15 JSAE20199211 / SAE2019-01-2268

**Harness Model Development by Co-simulation of the Transmission Black Box Model and Vehicle Model for a Medium Heavy Duty Internal Combustion based Powertrain**

Aishwarya Shetty, Santhosh Pasupathi, Bruce Vernham, Gerald Bergsieker, Isuzu Technical Center of America

15:45 JSAE20199319 / SAE2019-01-2269

**A Proposal for Semi-analytical Model of Teeth Contact with Application to Gear Dynamics**

Carlo Rosso, Fabio Bruzzone, Tommaso Maggi, Claudio Marcellini, Politecnico di Torino

**DC12: Diesel Soot 2**

**Room F (Conference Room A+B), 3F East Bldg.**

**Chairpersons:**

Oivind Andersson, Lund University  
Noboru Uchida, New A.C.E Institute Co., Ltd.

15:15 JSAE20199128 / SAE2019-01-2274

**Improvement of Combustion Characteristics and Emissions by Applying CO<sub>2</sub> Gas Dissolved Fuel in Diesel Engine**

Tomoyuki Mukayama, Jumpei Yamamoto, Doshisha University / Masaki Kuribayashi, Go Asai, YANMAR Co., Ltd. / Eriko Matsumura, Jiro Senda, Doshisha University

15:45 JSAE20199329 / SAE2019-01-2275

**Study on PAHs and PM Formed by Benzene Pyrolysis**

Koki Kashiwa, Masataka Arai, Yoshihiro Kobayashi, Tokyo Denki University

16:15 JSAE20199056 / SAE2019-01-2276

**Investigation of Particulate Matter Formation in a Diesel Engine Using In-Cylinder Total Sampling and Thermal Desorption-GCMS/Carbon Analysis**

Shinya Furukawa, Hirotaka Suzuki, Keiko Shibata, Hiroaki Saito, Kazuya Miyashita, Yoshinori Ishii, Naoki Shimazaki, Isuzu Advanced Engineering Center, Ltd.

16:45 JSAE20199041 / SAE2019-01-2277

**Numerical Simulation of In-Cylinder Particulate Matter Formation in Diesel Combustion by CFD Coupled with Chemical Kinetics Model**

Hiroaki Saito, Shinya Furukawa, Yoshinori Ishii, Naoki Shimazaki, Isuzu Advanced Engineering Center, Ltd. / Kazuhiro Ishii, Yokohama National University

**DC14: Diesel Spray 1**

Room G (Conference Room C), 3F East Bldg.

**Chairpersons:**Julian Kashdan, IFP Energies nouvelles  
Tetsuya Aizawa, Meiji University

15:15 JSAE20199198 / SAE2019-01-2282

**Study on Multicomponent Fuel Spray with High Injection Pressure**

Daisuke Kawano, Kentaro Tsukiji, Osaka Sangyo University / Jiro Senda, Eriko Matsumura, Kohsuke Nishiura, Doshisha University

15:45 JSAE20199163 / SAE2019-01-2283

**A Study on Higher Thermal Efficiency and Lower Cooling Loss in Diesel Engine**

Shoya Fujikawa, Naoyuki Arai, Seiya Iwamoto, Kohsuke Nishiura, Eriko Matsumura, Jiro Senda, Doshisha University

16:15 JSAE20199272 / SAE2019-01-2284

**Effect of Injection Amount on Diesel Spray Characteristics of Multi-Hole Nozzle**

Keisuke Komada, Fukuoka Institute of Technology / Manabu Saito, IRS Corporation / Hironobu Ueki, Nagasaki University

16:45 JSAE20199044 / SAE2019-01-2285

**Experimental Investigation on Behavior of Diesel Spray after Interference with a Circular Cylinder**

Yoshio Zama, Toshiya Tajima, Wataru Yatabe, Tomohiko Furutaha, Gunma University / Tomoyuki Hayakawa, Manabu Okinaka, NGK Spark Plug Co.,LTD

**E6: CI Emission**

Room H (Conference Room D), 3F East Bldg.

**Chairpersons:**Kotaro Tanaka, Ibaraki University  
Carlo Beatrice, CNR

15:15 JSAE20199027 / SAE2019-01-2290

**Study for Effectsof Bio-Diesel Fuel and After-Treatment Systems on Formation and Reduction of Particles from Diesel Engines**

Kazutoshi Mori, Teikyo University / Jun Kawase, Ryuichi Suzuki, Tokyo Dylec Corp. and Pollars Laboratory Co., Ltd

15:45 JSAE20199246 / SAE2019-01-2291

**Regulated Emissions and Detailed Particle Characterisation for Diesel and RME Biodiesel Fuel Combustion with Varying EGR in a Heavy-Duty Engine**

Maja Novakovic, Sam Shamun, Vilhelm B. Malmborg, Per Tunestal, Joakim Pagels, Martin Tuner, Lund University /Kirsten I. Kling, Jens Kling, DTU Nanolab / Ulla B. Vogel, National Research Centre for the Working Environment

16:15 JSAE20199189 / SAE2019-01-2292

**Hybrid Plant Modelling of Diesel Engine and after Treatment Systems Using Artificial Neural Networks**

Sandeep Kumar, Sudip Gope, Aishwarya Vijapur, Daimler Trucks / Shinji Nakayama, Mitsubishi Fuso Truck and Bus Corporation

16:45 JSAE20199203 / SAE2019-01-2293

**Advanced Analytical Methods for the Study of Lubricant-Derived Ash and Associated Impacts on Engine Aftertreatment Components**

Carl Justin Kamp, Massachusetts Institute of Technology and Kymanetics, Inc. / Sujay Dilip Bagi, Massachusetts Institute of Technology

**L6: Deterioration of Lubricants**

Room I (Conference Room 2), 3F West Bldg.

**Chairpersons:**Kazuo Tagawa, JXTG Nippon Oil & Energy Corporation  
Akemi Ito, Tokyo City University

15:15 JSAE20199196 / SAE2019-01-2367

**New CO<sub>2</sub> / Fuel Consumption Certification Cycles and Design Implications for Fuel Efficient Lubricants**

Gautier Burette, Khalid Ait Hammou, Mickaël Debord, Loïc Marlière, TOTAL Marketing &amp; Services / Takumaru Sagawa, Sachiko Okuda, Nissan Motor Co., Ltd.

15:45 JSAE20199066 / SAE2019-01-2298

**Verification of Deterioration Properties of Engine Oil under Water-rich Condition**

Hiroshi Oki, Lubricants Research Laboratory, Idemitsu Kosan Co, Ltd. / Shiro Takakura, Honda R&amp;D Co., Ltd.

16:15 JSAE20199016 / SAE2019-01-2299

**Development of an Oil Degradation Sensor Based on Detection of Free Radicals**

Fan Cheng, Takayuki Shibata, DENSO Corporation / Yoshifumi Aoki, Hiroshi Hirata, Toyota Central R&amp;D Labs., Inc. and Hokkaido University

16:45 JSAE20199210 / SAE2019-01-2300

**Influence of Cutting Fluid on Reliability of Threaded Fastener Joints**

Mayank Kumar, KTH Royal Institute of Technology and Atlas Copco Industrial Technique AB / Erik Persson, Atlas Copco Industrial Technique AB / Sergei Glavatskih, KTH Royal Institute of Technology and Ghent University