

Technical Sessions

Monday, August 26

SC1: Knock 1

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

Chairpersons:

Yasuhiro Urata, Honda R&D Co., Ltd.
Tie Li, Shanghai Jiao Tong University

13:30 JSAE20199084 / SAE2019-01-2150

On the Role of Nitric Oxide for the Knock-Mitigation Effectiveness of EGR in a DISI Engine Operated with Various Gasoline Fuels

Magnus Sjöberg, David Vuilleumier, Namho Kim, Sandia National Laboratories / Nozomi Yokoo, Terutoshi Tomoda, Koichi Nakata, Toyota Motor Corporation

14:00 JSAE20199006 / SAE2019-01-2151

Investigation on Knock Resistance with Turbulent Jet Ignition at Different Engine Load in an Optical Engine

Khalifa Bureshaid, Ray Shimura, Hua Zhao, Brunel University London / Dengquan Feng, Tianjin University / Mike Bunce, MAHLE Powertrain, LLC

14:30 JSAE20199202 / SAE2019-01-2152

Influence of Ethanol Blending on Knocking in a Lean Burn SI Engine

Kazuki Kaneko, Yuki Yasutake, Takeshi Yokomori, Norimasa Iida, Keio University

SC3: Ignition 1

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

Chairpersons:

Kimitoshi Tanoue, Oita University
Sayan Biswas, Sandia National Laboratories

13:30 JSAE20199088 / SAE2019-01-2157

A Framework for the Active Control of Corona Ignition Systems

Linyan Wang, Qingyuan Tan, Shui Yu, Xiao Yu, Xiang Chen, Ming Zheng, University of Windsor

14:00 JSAE20199125 / SAE2019-01-2158

Plasma Temperature of Spark Discharge in a Lean-burn Spark-ignition Engine Using a Time Series of Spectra Measurements

Nobuyuki Kawahara, Masanobu Watanabe, Eiji Tomita, Okayama University / Yukihide Nagano, Toshiaki Kitagawa, Kyushu University

14:30 JSAE20199126 / SAE2019-01-2159

Electrical Waveform Measurement of Spark Energy and Its Effect on Lean Burn SI Engine Combustion

Xiao Yu, Hua Zhu, Ming Zheng, University of Windsor / Liguang Li, Tongji University

15:00 JSAE20199308 / SAE2019-01-2160

Ignition Experiments by Nanosecond Repetitively Pulsed Discharges in Intense Turbulence for Super Lean Burn at Engine Condition

Kodai Uesugi, Youhi Morii, Taichi Mukoyama, Takuya Tezuka, Susumu Hasegawa, Hisashi Nakamura, Hidemasa Takana, Tohoku University / Kaoru Maruta, Tohoku University and Far Eastern Federal University / Takeshi Yokomori, Norimasa Iida, Keio University

DC1: HCCI and LTC1

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

Chairpersons:

Hiroyuki Yamashita, Mazda Motor Corporation
Jean-Marc Zaccardi, IFP Energies nouvelles

13:30 JSAE20199111 / SAE2019-01-2165

Evaluation of the Potential of Direct Water Injection in HCCI Combustion

Christian Wouters, Tamara Ottenwälder, Bastian Lehrheuer, Stefan Pischinger, Maximilian Wick, Jakob Andert, RWTH Aachen University / David Gordon, University of Alberta

14:00 JSAE20199164 / SAE2019-01-2166

A Study on the Control of HCCI Combustion under EGR Conditions by Pulsed Flame Jet Using Rapid Compression Expansion Machine

Shunichiro Hayashi, Yuya Ito, Kazuya Shimizu, Osamu Moriue, Kyushu University

14:30 JSAE20199248 / SAE2019-01-2167

Impact of Octane Number and Injection Timing on Autoignition Behaviour of Gasoline and PRF in PPC

Amir Aziz, Changle Li, Martin Tuner, Lund University / Leilei Xu, Lund University and Shanghai Jiao Tong University

15:00 JSAE20199182 / SAE2019-01-2168

Numerical Optimization of Compression Ratio for a PPC Engine Running on Methanol

Erik Svensson, Sebastian Verhelst, Lund University

GF1: DDF

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

Chairpersons:

Cosmin E. Dumitrescu, West Virginia University
Tadao Okazaki, Kubota Corporation

13:30 JSAE20199050 / SAE2019-01-2172

Investigation of the High-Pressure-Dual-Fuel (HPDF) Combustion Process of Natural Gas on a Fully Optically Accessible Research Engine

Stephan Gleis, Stephanie Frankl, Dominik Waligorski, Maximilian Prager, Georg Wachtmeister, Technical University of Munich

14:00 JSAE20199188 / SAE2019-01-2173

Effects of Piston Bowl Diameter on Combustion Characteristics of a Natural Gas/Diesel Dual Fuel Engine

Keigo Takizawa, Hidetake Tanaka, Naoto Horibe, Takuji Ishiyama, Kyoto University / Takahiro Sako, Osaka Gas Co., Ltd.

14:30 JSAE20199232 / SAE2019-01-2174

Improving the Low Load Operation of a Dual-Fuel Diesel/Natural Gas Engine by Premixing the Diesel Fuel

Darko Kozarac, Mario Sremec, Ante Vučetić, Mladen Božić, University of Zagreb

15:00 JSAE20199332 / SAE2019-01-2175

Analysis on Flow Motion and Combustion Process in Pre-chamber and Main Chamber for Low-speed Two-stroke Dual-fuel Engine

Long Liu, Yue Wu, Qian Xiong, Harbin Engineering University / Teng Liu, China Ship Power Institute Co. Ltd.

DC3: High Efficiency

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

Chairpersons:

Tatsuya Kuboyama, Chiba University
 Bengt Johansson, King Abdullah University of Science and Technology

13:30 JSAE20199059 / SAE2019-01-2179

TAIZAC -Tandem Injectors Zapping Activation- for Thermal Efficiency Improvement of Diesel Engine

Tetsuya Aizawa, Shinobu Akiyama, Taizo Shimada, Yoshiaki Toyama, Yuya Nishikawa, Soshu Saruwatari, Yoshiro Noguchi, Meiji University

14:00 JSAE20199239 / SAE2019-01-2180

Enhancing Peak Firing Pressure Limit for Achieving Better Brake Thermal Efficiency of a Diesel Engine

Kenji Enya, Noboru Uchida, New A.C.E. Institute Co., Ltd.

14:30 JSAE20199291 / SAE2019-01-2181

An Investigation of the Effects of Engine Size and Rotation Speed on Diesel Combustion based on Similarity Rules

Yoshimitsu Kobashi, Yuma Tanaka, Gen Shibata, Hideyuki Ogawa, Hokkaido University

15:00 JSAE20199101 / SAE2019-01-2182

Scaled Model Experiments for Marine Low-Speed Diesel Engines

Xinyi Zhou, Tie Li, Zheyuan Lai, Shanghai Jiao Tong University / Teng Liu, Bo Liu, Chaohui Wu, CSPI Co., Ltd.

DC5: Biodiesel

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

Chairpersons:

Yasunori Sogawa, JXTG Nippon Oil & Energy Corporation
 Svitlana Kroll, Southwest Research Institute

13:30 JSAE20199149 / SAE2019-01-2187

Control of the Distillation Curve of Biodiesel Fuel by Cross-Metathesis Reaction based on Fatty-Acid Composition

Kiyoshi Kawasaki, Koji Yamane, Ryohei Umeno, The University of Shiga Prefecture

14:00 JSAE20199028 / SAE2019-01-2188

The Precipitation of Biodiesel Impurities at Low Temperature and Its Effect on Fuel Filter

Sareewan Suwannamit, Jaratpong Ngammoh, DENSO International Asia Co., Ltd. / Minoru Funahashi, DENSO Corporation / Mamoru Tasaki, Kyosan Denki Co., Ltd. / Methira Krissanasaeranee, Suriya Porntangjitlikit, Supap Silapakampeerapap, Arunratt Wuttimongkolchai, PTT Public Company Limited / Nitiwat Chiampradit, Toyota Daihatsu Engineering & Manufacturing Co., Ltd.

14:30 JSAE20199320 / SAE2019-01-2189

An Effect of Utilization B30 from Various Blends of B0:FAME and HVO on Emissions, Fuel Consumption and Power of Euro4 Vehicle Technology

Hari Setiapraja, Siti Yubaidah, Mokhtar, Agency for Assessment and Application of Technology (BPPT) / Mutia Ekasari, Nita Haspriyanti, Wawan Rustyawan, Pertamina Research Technology Center / Abdul Rochim, Toyota Motor Manufacturing Indonesia

15:00 JSAE20199326 / SAE2019-01-2190

Precipitation Study of B30 Blended from FAME and/or HVO and Petro Diesel Fuel

Dieni Mansur, Muhammad Arifuddin Fitriady, Indonesian Institute of Sciences / Hari Setiapraja, Imam Paryanto, Agency for Assessment and Application of Technology / Nita Haspriyanti, Nurul Dela, Pertamina Research and Technology Center / Misri Gozan, University of Indonesia

E1: Gasoline PM and PN

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

Chairpersons:

Kazuhiro Akihama, Nihon University
 Kotaro Tanaka, Ibaraki University

13:30 JSAE20199289 / SAE2019-01-2194

Particle Number Emissions from Standard and Hybrid SI Passenger Cars

Daisy Thomas, Hu Li, Yan Kang, Karl Ropkins, The University of Leeds / Xin Wang, Yunshan Ge, Wenlin Yu, Bin Song, Beijing Institute of Technology

14:00 JSAE20199152 / SAE2019-01-2195

Measurement of Sub-23 nm Particles Emitted by Gasoline Direct Injection Engine with New Advanced Instrumentation

Stéphane Zinola, Mickaël Leblanc, Loïc Rouleau, Xavier Dunand, IFP Energies nouvelles / Penelope Baltzopoulou, Leonidas Chasapidis, Daniil Deloglou, Anastasios D. Melas, Athanasios G. Konstandopoulos, Aristotle University Thessaloniki / Tobias Rüggeberg, Martin Fierz, Heinz Burtscher, Fachhochschule Nordwestschweiz (FHNW) / Alberto Tejero, Mario Amo, Daoiz Zamora, Sociedad Europea de Analisis Diferencial de Movilidad SL (SEADM)

14:30 JSAE20199144 / SAE2019-01-2196

Influence to the PN Emissions in Calibration Procedure for Portable and Stationary Solid Particle Number Measurement Systems

Kenji Kondo, Kentaro Kojima, Takeshi Kusaka, HORIBA, Ltd. / Yoshinori Otsuki, HORIBA Europe GmbH

L1: VM for Engine Lubricants

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

Chairpersons:

Takumaru Sagawa, Nissan Motor Co., Ltd.
 Yasushi Naitoh

13:30 JSAE20199069 / SAE2019-01-2201

Functional Olefin Copolymers for Low Viscosity Energy Efficiency HDEO and PCMO

Arturo Carranza, Sheng Jiang, Mark T Devlin, Brian Sheldon, Karen Hux, Cuddy Walker, William Wyatt, Afton Chemical Corporation

14:00 JSAE20199052 / SAE2019-01-2202

Impact of Viscosity Index Improvers (VII) on the Formation of Piston Deposits in Fuel Economy Engine Oils

Kien-Wee Tan, Evonik Oil Additives Asia Pacific Pte. Ltd. / Boris Eisenberg, Philip A. Hutchinson, Frank Lauterwasser, Evonik Resource Efficiency GmbH

14:30 JSAE20199296 / SAE2019-01-2203

Fuel Economy Improvement by Engine Oil with Ultra-High Viscosity Index

Ko Onodera, Honami Watanabe, Takehisa Sato, EMG Lubricants Godo Kaisha / Gordon H. Lee, ExxonMobil Research & Engineering Company / Toyoharu Kaneko, Kazuo Yamamori, Itsuki Miyata, Toyota Motor Corporation

SC2: Knock 2

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

Chairpersons:

Yasuhiro Urata, Honda R&D Co., Ltd.
Tie Li, Shanghai Jiao Tong University

15:45 JSAE20199216 / SAE2019-01-2153

Alternative Engine Oil Formulating Solutions to Reduce Low Speed Pre-Ignition

Ian Elliott, Richard Cherpeck, Chevron Oronite Company LLC / Amir Maria, Theresa Gunawan, Chevron Energy Technology Company

16:15 JSAE20199162 / SAE2019-01-2154

Effects of Engine Operating Condition and Fuel Property on Pre-Ignition Phenomenon in a Highly Boosted Premixed Natural Gas Engine

Run Chen, Tatsuya Kuboyama, Yasuo Moriyoshi, Chiba University / Shinji Yasueda, GDEC Inc. / Valerie Doyen, Jean-Baptiste Martin, Total S.A.

16:45 JSAE20199020 / SAE2019-01-2155

Using RON Synergistic Effects to Formulate Fuels for Better Fuel Economy and Lower CO₂ Emissions

Roland Dauphin, Jerome Obiols, TOTAL Marketing & Services / David Serrano, Laurie Starck, IFP Energies nouvelles / Yann Fenard, Guillaume Vanhove, Université de Lille / Andrea Comandini, Nabih Chaumeix, ICARE-CNRS, INSIS

17:15 JSAE20199221 / SAE2019-01-2156

Comparing Knock between the CFR Engine and a Single Cylinder Research Engine

Andre Swarts, Garrett L. Anderson, Julian M. Wallace, Southwest Research Institute

SC4: Ignition 2

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

Chairpersons:

Kimitoshi Tanoue, Oita University
Sayan Biswas, Sandia National Laboratories

15:45 JSAE20199309 / SAE2019-01-2161

Influences of Multi Spark Discharge on Lean Ignition for Premixed Propane/Air Mixtures under Turbulent Environment

Taichi Kobayashi, Yuya Yamaki, Shinji Nakaya, Mitsuhiro Tsue, The University of Tokyo

16:15 JSAE20199110 / SAE2019-01-2162

Ignition of Individual Droplets in a Reactive Fuel/Air Mixture behind Reflected Shock Waves

Philipp Niegemann, Mustapha Firki, Sebastian Kaiser, Christof Schulz, University of Duisburg-Essen

16:45 JSAE20199342 / SAE2019-01-2163

Investigations on Pre-chamber Ignition Device Using Experimental and Numerical Approaches

Olivier Benoît Laget, Stéphane Chevillard, Guillaume Pilla, Xavier Gautrot, Thierry Colliou, IFP Energies nouvelles

17:15 JSAE20199014 / SAE2019-01-2164

Evaluation of Water Injection Strategies for NO_x Reduction and Charge Cooling in SI Engines

Malte Kauf, Maike Gern, Technische Universität Berlin / Stefan Seefeldt, LaVision GmbH

DC2: HCCI and LTC2

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

Chairpersons:

Jean-Marc Zaccardi, IFP Energies nouvelles
Hiroyuki Yamashita, Mazda Motor Corporation

15:45 JSAE20199107 / SAE2019-01-2169

Study on Characteristics of Combined PCCI and Conventional Diesel Combustion

Zhichao Bao, Weikang Pan, Takuji Yokoyama, Kazuki Hirayama, Naoto Horibe, Hiroshi Kawanabe, Takuji Ishiyama, Kyoto University

16:15 JSAE20199156 / SAE2019-01-2170

Thermal Efficiency Improvements with Split Primary Fuel Injections in Semi-Premixed Diesel Combustion with Multi-Peak Shaped Heat Release

Kazuki Inaba, Yosuke Masuko, Yanhe Zhang, Yoshimitsu Kobashi, Gen Shibata, Hideyuki Ogawa, Hokkaido University

16:45 JSAE20199262 / SAE2019-01-2171

Optimisation of Low Temperature Combustion Technology, for Future Drive Cycles, Using a Factorial Design of Experiments

Adriaan Smuts Van Niekerk, Peter John Kay, Benjamin Drew, Neil Larsen, University of the West of England

GF2: DDF and CI

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

Chairpersons:

Tadao Okazaki, Kubota Corporation
Cosmin E. Dumitrescu, West Virginia University

15:45 JSAE20199151 / SAE2019-01-2176

A Study on PCCI Combustion Control in Medium Speed Dual-Fuel Engine

Kazuteru Toshinaga, Masaki Kuribayashi, YANMAR Co., Ltd.

16:15 JSAE20199266 / SAE2019-01-2177

A Study of a Lean Homogeneous Combustion Engine System with a Fuel Reformer Cylinder

Go Asai, Yuki Tokuoka, Thomas Bayer, YANMAR Co., Ltd. / Shuntaro Ishiguro, Gen Shibata, Hideyuki Ogawa, Yoshimitsu Kobashi, Yusuke Watanabe, Hokkaido University

16:45 JSAE20199287 / SAE2019-01-2178

H₂-Engine Operation with EGR Achieving High Power and High Efficiency Emission-Free Combustion

Daniel Thomas Koch, Alvaro Sousa, Dominik Bertram, KEYOU GmbH

DC4: Heat Transfer

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

Chairpersons:

Bengt Johansson, King Abdullah University of Science and Technology
Tatsuya Kuboyama, Chiba University

15:45 JSAE20199255 / SAE2019-01-2183

Characteristics of Flat-Wall Impinging Spray Flame and Its Heat Transfer under Diesel Engine-Like Condition: Effects of Injection Pressure, Nozzle Hole Diameter and Impingement Distance

Rizal Mahmud, Toru Kurisu, Onur Akgol, Keiya Nishida, Yoichi Ogata, Hiroshima University

16:15 JSAE20199103 / SAE2019-01-2184

OH, Soot and Temperature Distributions of Wall-impinging Diesel Fuel Spray under Different Wall Temperatures

Lei Feng, Yu Wang, Beiling Chen, Chao Geng, Wentao Yi, Yanqing Cui, Haifeng Liu, Zunqing Zheng, Hu Wang, Mingfa Yao, Tianjin University

16:45 JSAE20199175 / SAE2019-01-2185

Comparison of Heat Losses at the Impingement Point and in between Two Impingement Points in a Diesel Engine Using Phosphor Thermometry

Christian Binder, Daniel Norling, Scania CV AB / Alexios Matamis, Mattias Richter, Lund University

17:15 JSAE20199165 / SAE2019-01-2186

Three-dimensional Simulations of Oil Dilution in DI Diesel Engines under Motoring Conditions with Varying Injection Timing

Tsukasa Hori, Kohei Yamaji, Fumiteru Akamatsu, Osaka University

DC6: Flex Fuel

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

Chairpersons:

Svitlana Kroll, Southwest Research Institute
Yasunori Sogawa, JXTG Nippon Oil & Energy Corporation

15:45 JSAE20199072 / SAE2019-01-2191

Development of Refinery Additive Response Models to Optimise Fuel Production for New Internal Combustion Engine Technology

Dhanesh Goberdhan, Infineum UK

16:15 JSAE20199023 / SAE2019-01-2192

CFD-Driven Preliminary Investigation of Ethanol-Diesel Diffusive Combustion in Heavy-Duty Engines

Nicola Giramondi, Mihai Mihaescu, Anders Christiansen Erlandsson, KTH Royal Institute of Technology / Anders Jäger, Scania CV AB

16:45 JSAE20199168 / SAE2019-01-2193

Fuel Flexibility Study of a Compression Ignition Engine at High Loads

Abdullah S. AlRamadan, Moez Ben Houidi, Gustav Nyrenstedt, Bengt Johansson, King Abdullah University of Science and Technology

E2: Testing

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

Chairpersons:

Hu Li, University of Leeds
Norifumi Mizushima, National Institute of Advanced Industrial Science and Technology

15:45 JSAE20199133 / SAE2019-01-2197

Scavenging Phenomena Based Post-oxidation in Exhaust Manifold of a Turbocharged Spark Ignition Engine

Madan Kumar, Tatsuya Kuboyama, Naohiro Hasegawa, Yasuo Moriyoshi, Chiba University

16:15 JSAE20199282 / SAE2019-01-2199

Investigating the Engine Behavior of a Hybrid Vehicle and Its Impact on Regulated Emissions during On-road Testing

Daisy Thomas, Hu Li, Karl Ropkins, University of Leeds / Xin Wang, Yunshan Ge, Beijing Institute of Technology

16:45 JSAE20199075 / SAE2019-01-2200

Improvement in PEMS Performance for RDE Testing at High and Varying Altitudes

Shun Fukami, Haruhisa Mohara, HORIBA, Ltd.

L2: FM for Engine Lubricants

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

Chairpersons:

Ko Onodera, EMG Lubricants Godo Kaisha
Takumaru Sagawa, Nissan Motor Co., Ltd.

15:45 JSAE20199098 / SAE2019-01-2204

The Performance and Mechanisms of Organic Polymeric Friction Modifiers in Low Viscosity Engine Oils

Gareth Moody, John Eastwood, Croda Europe Ltd / Keiko Ueno, Croda Japan

16:15 JSAE20199185 / SAE2019-01-2205

The Study of Friction Modifiers to Improve Fuel Economy for WLTP with Low and Ultra-Low Viscosity Engine Oil

Kenji Yamamoto, Tsuyoshi Hiramatsu, Ryo Hanamura, Yukiya Moriizumi, ADEKA Corporation / Sascha Heiden, ADEKA Europe GmbH