

**SAE International Journal of Engines**  
 Volume 9, Issue 1 (April 2016)  
 Table of Contents



<b>A Study of the Behavior of In-Cylinder Pressure Waves under HCCI Knocking by using an Optically Accessible Engine</b> (2015-01-1795).....	1
Akira Iijima, Hideo Shoji, Yuki Yoshida, Chibin Rin, Masanori Yamada, Takashi Shimada, and Naoya Ito	
<b>An Experimental Investigation of Dual-Fuel Combustion in a Light Duty Diesel Engine by In-Cylinder Blending of Ethanol and Diesel</b> (2015-01-1801).....	11
Benedikt Heuser, Florian Kremer, Stefan Pischinger, Hans Rohs, Bastian Holderbaum, and Thomas Körfer	
<b>Detailed Characterization of Negative Valve Overlap Chemistry by Photoionization Mass Spectroscopy</b> (2015-01-1804).....	26
Isaac Ekoto, Scott Skeen, Richard R. Steeper, and Nils Hansen	
<b>Ignition Characteristics of 2,5-Dimethylfuran Compared with Gasoline and Ethanol</b> (2015-01-1806).....	39
Kotaro Tanaka, Naozumi Isobe, Kota Sato, Ryosuke Okada, Hiroya Okada, Yoshiki Fujisawa, and Mitsuru Konno	
<b>Influence of Injection Duration and Ambient Temperature on the Ignition Delay in a 2.34L Optical Diesel Engine</b> (2015-01-1830).....	47
Louis-Marie Malbec, W. Ethan Eagle, Mark P. B. Musculus, and Peter Schihl	
<b>Backward Flow of Hot Burned Gas Surrounding High-Pressure Diesel Spray Flame from Multi-hole Nozzle</b> (2015-01-1837).....	71
Takayuki Fuyuto, Yoshiaki Hattori, Hayato Yamashita, and Makoto Mashida	
<b>Prediction of the Nozzle Flow and Jet Characteristics at Start and End of Injection: Transient Behaviors</b> (2015-01-1850).....	84
Michele Battistoni, Claudio Poggiani, and Sibendu Som	
<b>A Study of Low Speed Preignition Mechanism in Highly Boosted SI Gasoline Engines</b> (2015-01-1865).....	98
Yasuo Moriyoshi, Tatsuya Kuboyama, Koji Morikawa, Toshio Yamada, Yasuo Imai, Koichi Hatamura, and Masatoshi Suzuki	
<b>A Literature Review of Abnormal Ignition by Fuel and Lubricant Derivatives</b> (2015-01-1869).....	107
Elana M. Chapman and Vincent S. Costanzo	
<b>Time-resolved X-ray Tomography of Gasoline Direct Injection Sprays</b> (2015-01-1873).....	143
Daniel J. Duke, Andrew B. Swantek, Nicolas M. Sovis, F. Zak Tilocco, Christopher F. Powell, Alan L. Kastengren, Doga Gürsoy, and Tekin Biçer	
<b>Thermodynamic and Optical Investigations on Particle Emissions in a DISI Engine at Boosted Operation</b> (2015-01-1888).....	154
Markus Bertsch, Thomas Koch, Amin Velji, and Heiko Kubach	
<b>The Effects of Ignition Environment and Discharge Waveform Characteristics on Spark Channel Formation and Relationship between the Discharge Parameters and the EGR Combustion Limit</b> (2015-01-1895).....	171
Taisuke Shiraishi, Atsushi Teraji, and Yasuo Moriyoshi	
<b>Engine Technologies for Achieving 45% Thermal Efficiency of S.I. Engine</b> (2015-01-1896).....	179
Koichi Nakata, Shinichiro Nogawa, Daishi Takahashi, Yasushi Yoshihara, Atsunori Kumagai, and Tetsushi Suzuki	
<b>Analyzing the Cycle-to-Cycle Variations of Vapor and Liquid Phases of Evaporating SIDI Sprays via Proper Orthogonal Decomposition Technique</b> (2015-01-1901).....	193
Shengqi Wu, Min Xu, David L.S. Hung, Tianyun Li, and Hujie Pan	
<b>A Study on Knocking Prediction Improvement Using Chemical Reaction Calculation</b> (2015-01-1905).....	201
Taizo Kitada, Masato Kuchita, Shinji Hayashi, Takayuki Shirota, Yasuyuki Sakai, and Hiromitsu Kawazoe	

<b>High-Speed Observation and Modeling of Dimethyl Ether Spray Combustion at Engine-Like Conditions</b> (2015-01-1927) .....	<b>210</b>
Yuta Mitsugi, Daiki Wakabayashi, Kotaro Tanaka, and Mitsuru Konno	
<b>The Oxidation Potential Number: An Index to Evaluate Inherent Soot Reduction in D.I. Diesel Spray Plumes</b> (2015-01-1934) .....	<b>222</b>
Barbara Graziano, Benedikt Heuser, Florian Kremer, Stefan Pischinger, and Hans Rohs	
<b>Effects of LPG Fuel Formulations on Knock and Pre-Ignition Behavior of a DI SI Engine</b> (2015-01-1947).....	<b>237</b>
Martin Krieck, Marco Günther, Stefan Pischinger, Ulrich Kramer, and Matthias Thewes	
<b>Development of New Toyota D-Series Turbocharger for GD Diesel Engine</b> (2015-01-1969) .....	<b>252</b>
Takashi Tsukiyama, Koichi Yonezawa, Hiromu Iwata, and Manabu Ishikawa	
<b>Experimental Investigations of a DISI Engine in Transient Operation with Regard to Particle and Gaseous Engine-out Emissions</b> (2015-01-1990).....	<b>262</b>
Christian Disch, Jürgen Pfeil, Heiko Kubach, Thomas Koch, Ulrich Spicher, and Olaf Thiele	
<b>Automated Detection of Primary Particles from Transmission Electron Microscope (TEM) Images of Soot Aggregates in Diesel Engine Environments</b> (2015-01-1991) .....	<b>279</b>
Sanghoon Kook, Renlin Zhang, Qing Nian Chan, Tetsuya Aizawa, Katsufumi Kondo, Lyle M. Pickett, Emre Cenkler, Gilles Bruneaux, Oivind Andersson, Joakim Pagels, and Erik Z. Nordin	
<b>Investigation of Soot Oxidation Carried out on Membrane Filters Composed of SiC Nanoparticles</b> (2015-01-2015) .....	<b>297</b>
Keisuke Nakamura, Hiroshi Oki, Ryoko Sanui, Yutaro Kinoshita, Nobuhiro Hidaka, Masamichi Tanaka, Hiroaki Matsumoto, and Katsunori Hanamura	
<b>Reformate Exhaust Gas Recirculation (REGR) Effect on Particulate Matter (PM), Soot Oxidation and Three Way Catalyst (TWC) Performance in Gasoline Direct Injection (GDI) Engines</b> (2015-01-2019).....	<b>305</b>
Maria Bogarra-Macias, Jose M Martin Herreros-Arellano, Athanasios Tsolakis, Andrew P.E. York, and Paul Millington	
<b>Characteristics of PM Exhausted from Pool Diffusion Flame with Gasoline and Surrogate Gasoline Fuels</b> (2015-01-2024) .....	<b>315</b>
Yoshihiro Kobayashi and Masataka Arai	
<b>Development and Validation of a Real-Time Model for the Simulation of the Heat Release Rate, In-Cylinder Pressure and Pollutant Emissions in Diesel Engines</b> (2015-01-9044) .....	<b>322</b>
Roberto Finesso, Ezio Spessa, and Yixin Yang	
<b>Evaluation of PM Measurement Precision and the Quivalency of the Single and Three Filter Sampling Methods for LEV III FTP Standards</b> (2015-01-9045).....	<b>342</b>
Satya Sardar, Sherry zhang, Larry Larsen, Bruce Frodin, Wayne McMahon, Shiou-Mei Huang, and M.-C. Oliver Chang	
<b>CFD Modelling of a Two Stroke Engine to Predict and Reduce Short Circuit Losses</b> (2015-32-0702).....	<b>355</b>
Manish Garg, Davinder Kumar, Madani Syed, and Siva Nageswara	
<b>Experimental Investigation and Analysis of Homogeneous Charge Compression Ignition in a Two-Stroke Free-Piston Engine</b> (2015-32-0706).....	<b>365</b>
Stephan Schneider and Horst E. Friedrich	
<b>Unique Needs of Motorcycle and Scooter Lubricants and Proposed Solutions for More Effective Performance Evaluation</b> (2015-32-0708) .....	<b>374</b>
Mike Marcella and Alex Michlberger	
<b>Experiments and Simulations of a Lean-Boost Spark Ignition Engine for Thermal Efficiency Improvement</b> (2015-32-0711) .....	<b>379</b>
Sok Ratnak, Jin Kusaka, Yasuhiro Daisho, Kei Yoshimura, and Kenjiro Nakama	

<b>Research on Method for Classifying Injury Severity Using Motorcycle Accident Data for ISO 26262</b> (2015-32-0714).....	<b>397</b>
Yuji Arai, Makoto Hasegawa, and Takeshi Harigae	
<b>Detailed Diesel Combustion and Soot Formation Analysis with Improved Wall Model Using Large Eddy Simulation</b> (2015-32-0715).....	<b>405</b>
Beini Zhou, Masahiro Horikoshi, Akira Kikusato, Jin Kusaka, Yasuhiro Daisho, Kiyotaka Sato, and Hidefumi Fujimoto	
<b>Acceleration Performance Analysis for Rubber V-Belt CVT with Belt Tension Clutching</b> (2015-32-0731).....	<b>417</b>
Yusuke Okimura, Moriyuki Sakamoto, Seiji Ito, and Akiyuki Yamasaki	
<b>Prediction of Fatigue Strength of Motorcycle Exhaust System Considering Vibrating and Thermal Stresses</b> (2015-32-0739).....	<b>423</b>
Hiroshi Kuribara, Hiroshi Horikawa, Takashi Teraguchi, Takanori Nagata, and Daisuke Kitamura	
<b>Development of Black Surface Treatment Applicable to Bolts for Motorcycles</b> (2015-32-0743).....	<b>436</b>
Hiroyuki Yoshida, Hiroshi Hirayama, Shinsuke Mochizuki, Manabu Inoue, Yasuhiro Kato, and Toshiki Inomata	
<b>Low Temperature Premixed Diesel Combustion with Blends of Ordinary Diesel Fuel and Normal Heptane</b> (2015-32-0754).....	<b>445</b>
Hideyuki Ogawa, Yuhei Sakane, Tatsunori Obe, Tatsuaki Arisawa, and Gen Shibata	
<b>Influence of Ca-, Mg- and Na-Based Engine Oil Additives on Abnormal Combustion in a Spark-Ignition Engine</b> (2015-32-0771).....	<b>452</b>
Kenta Miura, Kento Shimizu, Norikuni Hayakawa, Tomomi Miyasaka, Akira Iijima, Hideo Shoji, Toshimasa Utaka, Kazushi Tamura, and Hideki Kamano	
<b>Application of Adaptive Idle Speed Control on V2 Engine</b> (2015-32-0788).....	<b>458</b>
Jie Yin, Yong Fu Syu, Bo-Chiuan Chen, Yuh-Yih Wu, Yao Chung Liang, and Hsien-Chi Tsai	
<b>Examination of the Validity of Connections between MSILs and ASILs in the Functional Safety Standard for Motor Vehicles</b> (2015-32-0794).....	<b>466</b>
Sei Takahashi, Hideo Nakamura, and Makoto Hasegawa	
<b>Study on Airbag Concept for Motorcycles Using Opposing Vehicle as Reaction Structure</b> (2015-32-0813).....	<b>473</b>
Yutaka Aikyo, Yuki Kobayashi, Takashi Sato, Tomohiko Akashi, and Makoto Ishiwatari	
<b>Development of Fracture-Split Connecting Rods Made of Titanium Alloy for Use on Supersport Motorcycles</b> (2015-32-0830).....	<b>483</b>
Tsuyoshi Kubota, Kosuke Doi, Takeshi Murakami, Yuuki Kojima, and Tetsu Miura	
<b>Motorcycle Stability Control - The Next Generation of Motorcycle Safety and Riding Dynamics</b> (2015-32-0834).....	<b>491</b>
Thomas Lich, Wilko Gordon Block, S N Prashanth, and Brad Heiler	
<b>High Performance Powder-Forged Connecting Rods for Direct Injection Turbocharged Engines</b> (2015-32-0850).....	<b>499</b>
Edmond Ilija, Giorgio Lanni, Kevin Tutton, Doug Sinclair, and Michinari Suemasu	
<b>Development of a Phenomenological Turbulence Model through a Hierarchical 1D/3D Approach Applied to a VVA Turbocharged Engine</b> (2016-01-0545).....	<b>506</b>
Vincenzo De Bellis, Fabio Bozza, Stefano Fontanesi, Elena Severi, and Fabio Berni	