Jeongwoo Lee

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Objective & Research Interests

1. **Energy conversion systems**
   - Combustion analysis on the Hydrogen-fueled internal combustion engine
   - Analysis on chemical reaction in Hydrogen, Ammonia combustion (Ansys Chemkin)
   - Analysis on the thermal characteristics of PMSM (Comsol Mutiphysics, Siemens Amesim)
2. **Energy storage mechanics**
   - Thermodynamic analysis on LIB (entropymetry) (Exp. & Comsol Multiphysics)
3. **General thermodynamic analysis based on the Entropy**
   - Exergy analysis
   - Statistical thermodynamics

Education

1. Mar. 2012 – Feb. 2016, College of Engineering, **Seoul National University** (Seoul, South Korea): *Ph.D. in Mechanical and Aerospace Engineering* (Supervisor: Prof. Kyoungdoug Min)

- Ph.D. Thesis: Experimental Study on the Characteristics of Dual-fuel Combustion Modes and Extension of Dual-fuel PCI Operating Range in a CI Engine
- Concentrations: Dual-fuel combustion in CI engine with emission reduction & high thermal efficiency

2. Mar. 2010 – Feb. 2012, College of Engineering, **Seoul National University** (Seoul, South Korea): *M.D. in Mechanical and Aerospace Engineering* (Supervisor: Prof. Kyoungdoug Min)

- M.D. Thesis: The Study of Emission Reduction using a Close Post Injection Strategy with a Modified Nozzle and Piston Bowl Geometry for a Heavy EGR Rate
- Concentrations: Advanced diesel combustion (LTC, PCCI) and Diesel injection strategy

3. Mar. 2006 – Feb. 2010, College of Engineering, **Seoul National University** (Seoul, South Korea): *Bachelor of engineering in Mechanical and Aerospace Engineering*

Professional Experience

1. Mar. 2020 – Now, *Assistant professor*, Department of Mechanical System Engineering, **Jeonbuk National University** (Jeonju, South Korea)
2. Sep. 2017 – Feb. 2020, *Senior Researcher*, Engine Research Department, Environmental System Research Division, **Korea Institute of Machinery and Materials** (Daejeon, South Korea)
3. Mar. 2016 – May. 2017, *Researcher*, Seoul National University IAMD & BK21+ (Seoul, South Korea)
4. Sep. 2014 – Dec. 2014, *Part-time lecturer in Department of Mechanical Engineering*, Chung-ang University (Seoul, South Korea)

On-going Project

1. **Investigation into hydrogen SPCCI engine development (Principle Investigator)**
   - Funded by NRF
   - 90,000,000 won (ROK)
   - 2021.03.~2024.02.
2. **Investigation into abnormal combustion of hydrogen-fueled ICE (Sub-Principle Investigator)**
   - Funded by MOTIE
   - 450,000,000 won (ROK)
   - 2022.04.~2025.12.
3. **Past projects**

- Research of E-fuel on ICE (in Jeonbuk National University w/UNIST)
- Heat energy balance and improving thermal efficiency in ICE (in Jeonbuk National University w/ Hyundai Motor Company)
- Development of the Dual-fuel Combustion (Diesel Gasoline) using a Light-duty Single-cylinder CI Engine (in Seoul National University w/ Hyundai Motor Company)
- Korean Auto-oil project (in Seoul National University from Korea Automotive Environmental Association)
- Development of the Dual-fuel Combustion (Diesel & Natural gas) using a Heavy-duty CI Engine (in Korea Institute of Machinery and Materials)
- Investigation into the high load extension of hydrogen(H_2) SI combustion using a Light-duty SI engine (in Korea Institute of Machinery and Materials w/ Korea Aerospace Research Institute)
- Small 2-stroke engine fueled with hydrogen for drone and UAV (in Korea Institute of Machinery and Materials)
- CNG SI engine for passenger vehicle (in Korea Institute of Machinery and Materials from MOTIE)
- SPCCI (Spark assisted premixed charge compression ignition) engine fueled with Naphtha (in Korea Institute of Machinery and Materials)

Students & Alumni

1. Junho Oh

- 2020.09.~2022.08.
- M.S.Degree
- Thesis: Experimental Study on the Characteristics of Combustion and Emission According to the Fuel Injection Strategies in Hydrogen-Fueled Spark Ignition Engine
- Current: Researcher, KETEP (SEOUL) from 2022.05~

2. Jun Ha

- 2022.03.~
- M.S.Candidate
- Major: Hydrogen ICE, Thermal characteristics of PMSM (COMSOL)

3. Yonghoon Jang

- 2022.03.~
- M.S.Candidate
- Major: Ammonia ICE, Chemical reaction analysis (Chemkin-pro)

4. Kiyeon Kim

- 2023.03.~
- Intern & M.S.Candidate
- Major: Thermodynamic analysis in H2ICE

5. Ilpoom Jang

- 2023.03.~
- Intern & M.S.Candidate
- Major: TBD

Current co-workers

1. Korea Institute of Machinery and Materials, Mobility Research Division

- Boosted H_2 DI ICE
- Natural gas/Diesel dual-fueled combustion engine for power generation
- Ammonia-fueled ICE

2. Seoul National University, Automotive Laboratory (prof. Kyoungdoug Min)

- H_2 DI ICE toward high thermal efficiency
- Natural gas/Diesel dual-fueled combustion engine for HD engine
- Heat energy balance and improving thermal efficiency in IC engine

Professional activities

- *Center director*, Automotive Hi-technology research center, Jeonbuk National University
- *Business director* in a Gwangju/Honam branch, Korean Society of Automotive Engineering
- *Advisor*, Defense Acquisition Program Administration (ICE technologies in Panzer)
- *Evaluator*, Small and Medium Business Administration (Mechanical engineering)

Scholarly activities

- Korean Society of Automotive Engineering (KSAE) (**A life member)**
- Korean Society of Mechanical Engineers (KSME)
- Korean Society of Combustion (KOSCO)
- Korean Society of Propulsion Engineers (KSPE)
- Society of Automotive Engineering (SAE World Congress)
- Reviewer of International Journal of Automotive Technology (IJAT)
- Reviewer of Journal of Mechanical Science and Technology (JMST)

Teaching (Subjects)

1. Thermo-chemical engineering (under-graduated, current)
2. Energy conversion engineering (under-graduated, current)
3. Thermodynamic engineering (under-graduated, current)
4. Automotive engineering (under-graduated, current)
5. Computer programming (Labview) (under-graduated, current)
6. Exergy analysis on ICE (graduated, current)

Awards

1. May. 2012 Outstanding Thesis Award in Thermal Engineering Field (Master Thesis), *The Korean Society of Mechanical Engineers*

2. Feb. 2016 Outstanding Doctoral Dissertation Award,

Department of Mechanical Engineering, Seoul National University

3. May. 2016 IAMD Best Young Investigator Award, *Institute of Advanced Machines and Design, Seoul National University*
4. May. 2018 Outstanding Thesis Award in Energy and Power Engineering Field (Ph.D. Thesis), *The Korean Society of Mechanical Engineers*
5. Nov. 2019 Outstanding Korean Paper Award (Seoyoun-eh), *Korean Society of Automotive Technology*
6. Dec. 2019 The Best Young Researcher from KIMM*, Korea Institute of Machinery and Materials*
7. Nov. 2021 The Best Research Paper, *Korea Institute of GAS*

Patents

1. Hyunsung Jung, Yohan Chi, Kyoungdoug Min, **Jeongwoo Lee**, Sanghyun Chu, "Device for controlling valve of complex combustion engine and method for controlling valve using the same", Patent No. 1017656300000, 2017.08.
2. Hyunsung Jung, Yohan Chi, Kyoungdoug Min, **Jeongwoo Lee**, Sanghyun Chu, "APPARATUS OF CONTROLLING OF GASOLINE-DIESEL COMPLEX COMBUSTION ENGINE AND METHOD THEREOF", Patent No. 1018070420000, 2017.12.
3. Hyunsung Jung, Yohan Chi, Kyoungdoug Min, **Jeongwoo Lee**, Sanghyun Chu, "APPARATUS FOR CONTROLLING GASOLINE-DIESEL COMPLEX COMBUSTION ENGINE AND METHOD USING THE SAME", Patent No. 1018265620000, 2018.02.
4. Hyunsung Jung, Yohan Chi, Kyoungdoug Min, **Jeongwoo Lee**, Sanghyun Chu, "Apparatus for controlling gasoline-diesel complex combustion engine and method for controlling gasoline-diesel complex combustion engine", US patent 10458345 B2, 2019.11.
5. Sechul Oh, **Jeongwoo Lee** et al., "Multi-hole nozzle Injector", pending. 2021.10.

Publications

* means main author including the first and corresponding.

Peer-Reviewed Journals [SCI]

[2022]

- Yongrae Kim, Cheolwoong Park, Junho Oh, Sechul Oh, Young Choi, **Jeongwoo Lee***, "Effect of excessive air ratio on hydrogen-fueled spark ignition engine with high compression ratio using direct injection system toward higher brake power and thermal efficiency", International Journal of Automotive Technology, (Accept), 2022.
- Sechul Oh, Junho Oh, Junghwan Kim, Sunyoup Lee, Changgi Kim, Seokhwan Lee**, Jeongwoo Lee***, "Study of the turbocharging effects on emissions reduction and thermal efficiency under diesel/natural gas dual-fueled combustion", International Journal of Automotive Technology, 23(6), 1703-1715, 2022.
- Sechul Oh, Junho Oh, Hyeonjun Jang, Seokhwan Lee, Sunyoup Lee, Changgi Kim, **Jeongwoo Lee***, "Effects of piston shape and nozzle specifications on part-load operation of natural gas–diesel dual-fuel RCCI engine and its application to high load extension", FUEL, 328, 125361, 2022.
- Kihong Kim, Donghyun Lim, Hyungjin Shin, Sanghyun Chu, **Jeongwoo Lee,** Kyoungdoug Min, "High-Load Expansion by Varying Effective Compression Ratio using Variable Valve Duration System under Dual-fuel Premixed Compression Ignition", International Journal of Automotive Technology, 23, 651-658, 2022.
- Donghyun Lim, **Jeongwoo Lee*(Co-first)**, Hyungjin Shin, Kihong Kim, Sunyoung Moon, Kyoungdoug Min, "Effect of Swirl Motion on Combustion and Emissions Characteristics with

Dual-fuel Combustion in Compression Ignition Engine", International Journal of Automotive Technology, 23(2), 379-388, 2022.

- Junho Oh, Sechul Oh, Changgi Kim, Sunyoup Lee, Seokhwan Lee, Hyungjun Jang, **Jeongwoo Lee***, "Effect of Multi-angle Diesel Injector Nozzle on Emission and Efficiency of Natural Gas/Diesel Dual-fuel Combustion in Compression Ignition Engine", FUEL 316, 123442, 2022.
- Sunyoup Lee, Wonbin Choi, Changgi Kim, Seokhwan Lee, Sechul Oh, **Jeongwoo Lee***, "Effects of Overall-equivalence Ratios by Varying Intake Pressures and Exhaust Gas Recirculation Rates on the Natural Gas/Diesel Dual-fuel Combustion at a High Load Condition", International Journal of Automotive Technology, Vol.23(1), 149-158, 2022.
- **Jeongwoo Lee***, Sanghyun Chu, Donghyun Lim, Hyunsung Jung, Yohan Chi and Kyoungdoug Min, "Comparison of Combustion and Emission Characteristics under Single-fueled and Dual-fueled Conditions with Premixed Compression Ignition", ENERGY 241, 122855, 2022.
- Sunyoup Lee, Changgi Kim, Seokhwan Lee, **Jeongwoo Lee**, Junghwan Kim, "Experimental investigation on combustion and particulate emissions of the high compressed natural gas reactivity controlled compression ignition over wide ranges of intake conditions in a multi-cylinder engine using a two-stage intake boost system", Fuel Processing Technology 228, 107161, 2022.

[2021]

- Sechul Oh, Cheolwoong Park, Ducduy Nguyen, Seonyub Kim, Yongrae Kim, Young Choi, **Jeongwoo Lee**, "Investigation on the operable range and idle condition of hydrogen-fueled spark ignition engine for unmanned aerial vehicle (UAV)", ENERGY, Vol 237, 121645, 2021.
- Seokhwan Lee, Changgi Kim, Sunyoup Lee, Sechul Oh, Junghwan Kim, **Jeongwoo Lee***, "Characteristics of Non-methane Hydrocarbons and Methane Emissions in Exhaust Gases under Natural-gas/Diesel Dual-fuel Combustion", FUEL, Vol 290, 120009, 2021.
- Ducduy Nguyen, Young Choi, Cheolwoong Park, Yongrae Kim, **Jeongwoo Lee**, "Effect of supercharger system on power enhancement of hydrogen-fueled spark-ignition engine under low-load condition", International Journal of Hydrogen Energy, Vol 46(9), 6928-6936, 2021.

[2020]

- **Jeongwoo Lee***, Cheolwoong Park, Jongwon Bae, Yongrae Kim, Sunyoup Lee, Changgi Kim, "Comparison between Gasoline Direct Injection and CNG Port Fuel Injection under the Maximum Load Conditions in a 1.4-L Turbocharged Spark Ignition Engine", ENERGY, Vol 197, 117173, 2020.
- Sunyoup Lee, Changgi Kim, Seokhwan Lee, **Jeongwoo Lee**, Junghwan Kim, "Diesel injector nozzle optimization for high CNG substitution in a dual-fuel heavy-duty diesel engine", FUEL, Vol.262, 116607, 2020.
- **Jeongwoo Lee***, Sunyoup Lee, Changgi Kim, Seokhwan Lee, "CHARACTERISTIC OF ENERGY FRACTIONS AND EMISSIONS UNDER NATURAL GAS/DIESEL DUAL-FUEL HEAVY-DUTY ENGINE IN TERMS OF THE COMBUSTION PARAMETERS", International Journal of Automotive Technology, Vol.21(1), pp.103-113, 2020.

[2019]

- **Jeongwoo Lee***, Cheolwoong Park, Jongwon Bae, Yongrae Kim, Young Choi, Byeungjun Lim, "Effect of different excess air ratio values and spark advance timing on combustion and emission characteristics of hydrogen-fueled spark ignition engine", International Journal of Hydrogen Energy, Vol.44, pp.25021-25030, 2019.
- Cheolwoong Park, Yongrae Kim, Young Choi, **Jeongwoo Lee**, Byungjun Lim, "The effect of engine speed and cylinder-to-cylinder variations on backfire in a hydrogen-fueled internal combustion engine", International Journal of Hydrogen Energy, International Journal of Hydrogen Energy, Vol.44, pp.22223-22230, 2019.
- **Jeongwoo Lee***, Cheolwoong Park, Yongrae Kim, Young Choi, Jongwon Bae, Byeungjun Lim,

"Effect of Turbocharger on Performance and Thermal Efficiency of Hydrogen-fueled Spark Ignition Engine", International Journal of Hydrogen Energy, Vol.44, pp.4350-4360, 2019.

- **Jeongwoo Lee***, Sanghyun Chu, Kyoungdoug Min, Hyunsung Jung, Hyounghyoun Kim and Yohan Chi, "The Classification of Gasoline/Diesel Dual-fuel Combustion Based on the Heat Release Rate Shapes and its Application in a Light-duty Single Cylinder Engine", International Journal of Engine Research, Vol 20(1), pp.69-79, 2019.

[2018]

- Sanghyun Chu, **Jeongwoo Lee,** Jaegu Kang, Yoonwoo Lee, Kyoungdoug Min, "High load expansion with low emissions and the pressure rise rate by dual fuel combustion", Applied Thermal Engineering, Vol 144, pp. 437-443, 2018.
- **Jeongwoo Lee***, Sunyoup Lee, Seokhwan Lee, "Experimental investigation on the performance and emissions characteristics of ethanol/diesel dual-fuel combustion", Fuel, Vol 220, pp.72-79, 2018.
- **Jeongwoo Lee***, Sanghyun Chu, Minjae Kim, Kyoungdoug Min, Hyunsung Jung, Hyounghyoun Kim and Yohan Chi, "Classification of Diesel and Gasoline Dual-fuel Combustion Modes by the Analysis of Heat Release Rate Shapes in a Compression Ignition Engine", Fuel, Vol 209, pp. 587-597, 2018.
- Jaegu Kang, Sanghyun Chu, **Jeongwoo Lee**, Gyujin Kim and Kyoungdoug Min, "EFFECT OF OPERATING PARAMETERS ON DIESEL/PROPANE DUAL FUEL PREMIXED COMPRESSION IGNITION IN A DIESEL ENGINE", IJAT, Vol 19(1), 2018.
- **Jeongwoo Lee***, Sanghyun Chu, Kyoungdoug Min, Hyunsung Jung, Hyounghyoun Kim and Yohan Chi, "Experimental Investigation of Diesel/Gasoline Dual-fuel Premixed Compression Ignition Strategies for High Thermal Efficiency and High Load Extension", IMechE, Vol 232(10), 2018.

[2012~2017]

- **Jeongwoo Lee***, Sanghyun Chu, Jaegu Kang, Kyoungdoug Min, Hyunsung Jung, Hyounghyoun Kim and Yohan Chi, "STUDY ON THE OPERATING STRATEGY FOR GASOLINE/DIESEL DUAL-FUEL PREMIXED COMPRESSION IGNITION IN A LIGHT-DUTY DIESEL ENGINE", IJAT, Vol 18(6), pp.943-950, 2017.
- **Jeongwoo Lee***, Sanghyun Chu, Jaehyuk Cha, Hoimyung Choi and Kyoungdoug Min, "Effect of the diesel injection strategy on the combustion and emissions of propane/diesel dual fuel premixed charge compression ignition engines", ENERGY, Vol 93., pp 1041-1052, 2015.
- **Jeongwoo Lee***, Jungyeon Lee, Sanghyun Chu, Hoimyung Choi and Kyoungdoug Min, "Emission reduction potential in a light-duty diesel engine fueled by JP-8", ENERGY, Vol 89., pp 92-99, 2015.
- Seungmok Choi, Seung-Hyup Shin, **Jeongwoo Lee**, Kyoungdoug Min and Hoimyung Choi, "The Effects of the Combustion Chamber Geometry and a Double-row Nozzle on the Diesel Engine Emissions", Proceedings of the Institution of Mechanical Engineers Part D-Journal of Automobile Engineering, Vol. 229 (no.5), pp.590-598, 2015.
- **Jeongwoo Lee***, Seungmok Choi, Hyungjun Kim, Dongsu Kim, Hoimyung Choi and Kyoungdoug Min, "REDUCTION OF EMISSIONS WITH PROPANE ADDITION TO A DIESEL ENGINE" International Journal of Automotive Technology, Vol.14, pp. 551-558, 2013.
- Hoimyung Choi, **Jeongwoo Lee**, Kookeui Hong, Sangyul Lee, Seungmok Choi, Seongeun Yu and Kyoungdoug Min, "Comparison of the Effects of Multiple Injection Strategies on the Emissions between Moderate and Heavy EGR Rate Conditions: Part 2-Post Injections" Journal of Mechanical Science and Technology, Vol.27, pp.2217-23,2013.
- **Jeongwoo Lee***, Kookeui Hong, Seungmok Choi, Seongeun Yu, Hoimyung Choi and Kyoungdoug Min, "Comparison of the Effects of Multiple Injection Strategy on the Emissions

between Moderate and Heavy EGR Rate Conditions: Part 1-Pilot Injections" Journal of Mechanical Science and Technology, Vol.27, pp. 1135-1141, 2013.

- **Jeongwoo Lee***, Seungmok Choi, Seunghyup Shin, Hoimyung Choi, Kyoungdoug Min, "Experimental analysis of emission reduction by the split injection strategy using close post injection with a double-row nozzle in heavy EGR conditions" Journal of Mechanical Science and Technology, Vol.26, pp. 1265-1274, 2012.

Domestic Journal [KCI]

- **Jeongwoo Lee***, "Analysis on the potential of hydrogen-fueled internal combustion engine in the 'hydrogen era'", Technology policy mechanical engineering from KIMM, pp.15-45, 2022. [Non-KCI]
- Sechul Oh, Junho Oh, Hyungjun Jang, **Jeongwoo Lee**, Seokhwan Lee, Sunyoup Lee, Changgi Kim, "Investigation on Diesel Injection Characteristics of Natural Gas-Diesel Dual Fuel Engine for Stable Combustion and Efficiency Improvement Under 50% Load Condition", Journal of the Korean Institute of Gas, Vol.26 (3), pp.45-53, 2022.
- Yongrae Kim, Cheolwoong Park, Sechul Oh, Young Choi, **Jeongwoo Lee***, "Effects of Intake Gas Mixture Cooling on Enhancement of The Maximum Brake Power in a 2.4 L Hydrogen Spark-ignition Engine", Journal of the Korean Institute of Gas, Vol.25 (5), pp.11-18, 2021.
- Sunyoup Lee, Seokhwan Lee, Changgi Kim, **Jeongwoo Lee***, "Effects of Exhaust Gas Recirculation on Power and Thermal Efficiency of Reactivity Controlled Compression Ignition in Different Load Conditions with a 6-L Engine", Journal of the Korean Institute of Gas, Vol.24 (6), pp.1-10, 2020.
- **Jeongwoo Lee***, Cheolwoong Park, Jongwon Bae, Changgi Kim, Sunyoup Lee, Yongrae Kim, "Experimental Research on the Power Improvement by Increasing Intake pressure in a 1.4 L Turbocharged CNG Port Injection Spark Ignition Engine", Journal of the Korean Institute of Gas, Vol.23(6), pp.90-96, 2019.
- **Jeongwoo Lee*,** Sunyoup Lee, Seokhwan Lee, Changgi Kim, Young Choi, Wonbin Choi, "Effect of Various Diesel Injection Timings on Combustion and Emissions Characteristics as Different Compression Ratio and Bowl-shaped Pistons in a Heavy-duty Natural Gas/Diesel Dual-fuel Engine", Transaction of KSAE, Vol.27(5), pp.411-417,2019.
- Jongwon Bae, Cheolwoong Park, **Jeongwoo Lee**, Yongrae Kim, Changgi Kim, Sunyoup Lee, Jinwook Lee, "Study on Full Load Operation Characteristics and Thermal Efficiency of 1.4 L Turbo CNG SI Engine", Journal of the Korean Institute of Gas, Vol.22(6), pp.34-39, 2018.
- **Jeongwoo Lee*,** Sunyoup Lee, Seokhwan Lee, Changgi Kim, Junbeen Yim, Wonbin Choi, "Effect of the Inert Gas Addition on the Combustion and Emissions Characteristics of Natural Gas/Diesel Dual-fuel Engine", Transaction of KSAE, Vol 26(6), pp.783-790, 2018.

International Conference Papers

[2019]

- **Jeongwoo Lee**, Sunyoup Lee, Seokhwan Lee, Changgi Kim, "STUDY ON THE HIGH LOAD POTENTIAL UNDER NATURAL GAS/DIESEL DUAL-FUEL COMBUSTION IN A HEAVY-DUTY ENGINE", ECM 2019, 2019.04, Lisboa, Portugal. (Poster)
- Yongrae Kim, **Jeongwoo Lee**, Cheolwoong Park, Young Choi, "An analysis on the combustion an performance characteristics of hydrogen spark ignition engine with boosting condition", ECM 2019, 2019.04, Lisboa, Portugal. (Poster)

[2018]

- **Jeongwoo Lee**, Sanghyun Chu, Kyoungdoug Min, Hyunsung Jung, Hyounghyoun Kim and Yohan Chi, "The Classification of Gasoline/Diesel Dual-fuel Combustion Based on the Heat Release Rate Shapes and its Application in a Light-duty Single Cylinder Engine", THIESEL

2018, Sep 2018, Valencia, Spain.

- Young Choi, Cheolwoong Park, Yongrae Kim, **Jeongwoo Lee**, Changgi Kim, Kernyong Kang, "Combustion Characteristics of a 2.4-Liter Hydrogen engine", EKC 2018, Glasgow, U.K., 2018.08.
- **Jeongwoo Lee**, Sunyoup Lee, Changgi Kim, Seokhwan Lee, "Experimental Investigation into the Effect of Inert Gas (Nitrogen, Carbon dioxides) Addition on the Diesel-triggered Dual-fuel Combustion with Natural Gas in a Heavy-duty CI Engine", ETME 2018, Aug 2018, Jeju, RoK.

[2012~2017]

- Sanghyun Chu, **Jeongwoo Lee,** Jaegu Kang and Kyoungdoug Min, Hyunsung Jung, Hyounghyoun Kim, Yohan Chi, " " A STUDY OF COMBUSTION AND EMISSIONS CHARACTERISTICS OF DUAL-FUEL CI COMBUSTION " , Asian Conference on the Thermal Sciences, Mar 2017, Jeju, RoK.
- Sanghyun Chu, **Jeongwoo Lee**, Jaegu Kang and Kyoungdoug Min, "An Experimental Investigation of High Load Conditions using Micro-pilot Diesel Injection with Diesel/Propane Dual-fuel Combustion in a Light-duty CI Engine", FISITA 2016 World Automotive Congress, F2016-ESYB-016, Sep, 2016, Busan, RoK.
- Sanghyun Chu, **Jeongwoo Lee**, Jaehyuk Cha, Hoimyung Choi, Kyoungdoug Min, "An Experimental Investigation of Injection and Operating Strategies on Diesel Single Cylinder Engine under JP-8 and Dual-Fuel PCCI Combustion", SAE World Congress 2015, SAE 2015-01-0844, 2015.4, Detroit, US.
- **Jeongwoo Lee**, Sanghyun Chu, Jaehyuk Cha, Hoimyung Choi, Kyoungdoug Min, "An Investigation into the Operating Strategy for the Dual-Fuel PCCI Combustion with Propane and Diesel under a High EGR Rate Condition ", SAE World Congress 2015, SAE 2015-01-0854, 2015.4, Detroit, US.
- **Jeongwoo Lee**, Seungmok Choi, Gyujin Kim, Seunghyun Lee, Seungha Lee, Dongsu Kim, Jungyeon Lee, Hoimyung Choi, Kyoungdoug Min, "A Study of Emissions Reduction through Dual-Fuel Combustion with Propane in a CI Engine ", SAE/KSAE Powertrain Fuel & Lubricant 2013, SAE 2013-01-2669, 2013.10, Seoul, Korea.
- Seunghyun Lee, **Jeongwoo Lee**, Seungha Lee, Dongsu Kim, Yoonwoo Lee, Seongeun Yu, Hoimyung Choi, "Study on Reduction of Diesel Engine Out Emission through Closed Loop Control based on the In-Cylinder Pressure with EGR Model", SAE World Congress 2013, SAE 2013-01-0322, 2013.4, Detroit, US.
- **Jeongwoo Lee**, Seungmok Choi, Junyong Lee, Seunghyup Shin, Seunghyun Lee, Hanho Song, Hoimyung Choi, Kyoungdoug Min, "Emission Reduction using a Close Post Injection Strategy with a Modified Nozzle and Piston Bowl Geometry for a Heavy EGR Rate", SAE World Congress 2012, SAE 2012-01-0681, 2012.4, Detroit, US.

Domestic (Korean) Conference Papers

[2022]

- Seunhyun Lee, Sechul Oh, Yongrae Kim, Kiyeon Kim, **Jeongwoo Lee**, Seungil Lee, Kyoungdoug Min, "Study on the 0-D two zone model and exergy analysis under excess air ratio and ignition timing in hydrogen-fueled SI engine.", 2022 KSAE fall conference, 2022.11.
- Kiyeon Kim, Jun Ha, Yonghoon Jang, Seungil Lee, Seunghyun Lee, **Jeongwoo Lee***, "Study on the Thermal Efficiency Equation considering Entropy Generation as Various Excessive Air Ratios in a Hydrogen-fueled Spark Ignition Engine", 2022 KSAE fall conference, 2022.11.
- **Jeongwoo Lee***, "Analysis on the potential of hydrogen-fueled internal combustion engine in the 'hydrogen era'", 2022 KSME fall conference, 2022.11.
- **Jeongwoo Lee***, "H2ICE Research Trend and Future Works", 2022 ilassKorea conference, 2022.10.

- Junho Oh, Yongrae Kim, Cheolwoong Park, Young Choi, **Jeongwoo Lee**, "Effects of Fuel Injection Strategies on Combustion and Emission Characteristic in Hydrogen-fueled Spark Ignition Engine", 2022 Daejeon-Chungnam KSAE conference, 2022.05.

[2021]

- Jun Ha, Jinhwan Kim, Seokhee Lee, Bongkwan Sohn, Ilpoom Jang, Kyumin Lim, **Jeongwoo Lee***, "Study on the optimization of the power distribution of hydrogen-fueled internal combustion engine and fuel-cell hybrid system", 2022 Gwangju-Honam KSAE conference, 2021.12.
- Sehcul Oh, Junho Oh, Hyungjun Jang, **Jeongwoo Lee**, Seunghyup Shin, Sangyul Lee, Seokhwan Lee, Sunyoup Lee, Changgi Kim, "Investigation on the maximum load conditions of reactivity-controlled compression ignition (RCCI) non-road engine and prediction of combustion characteristics by using deep learning process", 2021 KIGAS fall conference, 2021.11.
- Seunhyun Lee, Sechul Oh, Yongrae Kim, Junho Oh, Ynghun Jang, Inyoung Hwang, **Jeongwoo Lee*,** "Study on the Exergy Efficiencies of 2.0 L Hydrogen-fueled Spark Ignition Engine by Port Fuel Injection as Varying Excessive Air Ratios", 2021 KSAE fall conference, 2021.11.
- Junho Oh, Sechul Oh, Hyungjun Jang, Seokhwan Lee, Sunyoup Lee, Changgi Kim, **Jeongwoo Lee*,** "Study on the effect of diesel spray patterns on combustion and emissions characteristics of natural gas/diesel dual-fuel combustion in a 6 L CI engine under part-load condition", 2021 KSAE spring conference, 2021.06.
- Sechul Oh, Junho Oh, Hyungjun Jang, **Jeongwoo Lee**, Seokhwan Lee, Sunyoup Lee, Changgi Kim, "Investigation on the enhancement of engine output from natural gas-diesel reactivity-controlled compression ignition (RCCI) engine with various types of pistons and diesel injector", 2021 KSAE spring conference, 2021.06.
- Sechul Oh, Junho Oh, Hyungjun Jang, **Jeongwoo Lee**, Seokhwan Lee, Sunyoup Lee, Changgi Kim, "Investigation on the characteristics of reactivity-controlled compression ignition (RCCI) engine fueled by natural gas and diesel with different injection and mixing strategies", 2021 KOSCO spring conference, 2021.05.

[2019]

- **Jeongwoo Lee**, Young Choi, Yongrae Kim, Cheolwoong Park, Jongwon Bae, Duy Nguyen, "Study on the high power performance by air-charging system on the hydrogen fueled spark ignition engine", 2019 KSPE conference, 2019.11.
- Ducduy Nguyen, Jongwon Bae, **Jeongwoo Lee**, Yongrae Kim, Cheolwoong Park, Young Choi, "A Study on the Effect of Supercharger System in Hydrogen-fueled Spark Ignition Engine under Low Load Condition", 2019 KSAE fall conference, 2019.11.
- **Jeongwoo Lee**, Changgi Kim, Young Choi, Cheolwoong Park, Sunyoup Lee, Yongrae Kim, Seokhwan Lee, "Study on the effect of turbocharger system on the improvement of high efficiency and low emission gas-fueled IC engine development", 2019 KSAE fall conference, 2019.11.
- **Jeongwoo Lee,** Sunyoup Lee, Seokhwan Lee, Changgi Kim, "Study on the Reactivity Stratification Effect on Natural Gas/Diesel Dual-fuel Combustion in a HD CI Engine", 2019 KOSCO Spring conference, 2019.05.
- Jong-Won Bae. Cheol-Woong Park. **Jeong-Woo Lee.** Yong-Rae Kim. Chang-Gi Kim. Sun-Youp Lee, "A Study on the Comparison of Efficiency between CNG PFI-SI and Gasoline DI-SI Combustions in a 1.4 L Turbocharged Engine", 2019 KIGAS Spring conference, 2019.05.
- Jong-Won Bae. Cheol-Woong Park. **Jeong-Woo Lee.** Yong-Rae Kim. Young Choi, Duc Duy, "A Study on the Combustion and Emission Characteristics as Various Equivalent Ratio of Turbo-charged Hydrogen SI Engine under Low Load Condition", 2019 KSAE Spring

conference, 2019.05.

- **Jeongwoo Lee,** Sunyoup Lee, Seokhwan Lee, Changgi Kim, Wonbin Choi, "Study on the Operating Range Extension of Natural gas/Diesel RCCI Combustion by the Reduction of Compression Ratio in a HD Engine", 2019 KSAE Spring conference, 2019.05.

[2018]

- Yongrae Kim, **Jeongwoo Lee**, Young Choi, Sangho Lee, Hongsuk Kim, Bangwoo Han, "Combustion Characteristics of a Dual Injection System Engine applied by Naptha Fuel", KSPE conference, 2018.12.
- **Jeongwoo Lee,** Sunyoup Lee, Seokhwan Lee, Changgi Kim, Junbeen Yim, Wonbin Choi, "Experimental Research on the Effect of Fuel Fractions on Engine-out Hydrocarbons in Natural gas/Diesel Dual-fuel Premixed Combustion in a Heavy-duty Compression Ignition Engine", 2018 KSAE Fall conference, 2018.11.
- Wonbin Choi, Sunyoup Lee, Seokhwan Lee, Changgi Kim, **Jeongwoo Lee,** Junbin Lim, "Investigation of the EGR rates and intake pressure conditions on the thermal efficiency and exhaust emission characteristics at combustion of the CNG/diesel dual-fuel combustion in a Heavy-Duty Engine", 2018 KSAE Fall conference, 2018.11.
- Jong-Won Bae, Cheol-Woong Park, **Jeong-Woo Lee,** Yong-Rae Kim. Chang-Gi Kim. Sun-Youp Lee. Jin-Wook Lee, "Study on full load operation characteristics and thermal efficiency of 1.4L turbo CNG SI engine", 2018 KIGAS Fall conference, 2018.11.
- **Jeongwoo Lee,** Cheolwoong Park. Yongrae Kim. Young Choi. Jongwon Bae, "Effect of Various Valve-timings on the Power under Hydrogen Spark Ignition Combustion with Turbocharger in a 2.4 L Engine", 2018 KIGAS Fall conference, 2018.11.
- **Jeongwoo Lee,** Sunyoup Lee, Seokhwan Lee, Changgi Kim, Junbeen Yim, Wonbin Choi, "Investigation into the Operating Range Extension of Natural gas/Diesel Dual-fuel Premixed Compression Ignition in a Heavy-duty Engine", 2018 KSAE Spring conference, 2018.5.
- **Jeongwoo Lee,** Cheolwoong Park. Yongrae Kim. Young Choi. Uihyung Yi. Hyungjoon Jang. Jongwon Bae, "Study on the effect of turbocharger on performance and combustion characteristics with hydrogen in a 2.4 L SI reciprocating engine", 2018 KIGAS Spring conference, 2018.5.

[2012~2017]

- Jaegu Kang, Sanghyun Chu, **Jeongwoo Lee**, Gyujin Kim and Kyoungdoug Min, "A Study on Operating Strategies of Diesel and Propane Dual Fuel PCI Combustion in CI Engine", 2016 KSAE Fall conference, 2016.11.
- **Jeongwoo Lee**, Sanghyun Chu, Jaegu Kang, Kyoungdoug Min, Hyunsung Jung, Hyounghyoun Kim and Yohan Chi, "A Study on the Characteristics of Diesel and Gasoline Dual-fuel Combustion as Engine Operating Conditions in a CI Engine", 2016 KSAE Spring conference, 2016.5.
- Sanghyun Chu, **Jeongwoo Lee**, Jaegu Kang and Kyoungdoug Min, "A study of Load Expansion by Diesel/Propane Dual-fuel combustion in Diesel Engine", 2016 KSAE Spring conference, 2016.5.
- **Jeongwoo Lee**, Sanghyun Chu, Jungyeon Lee, Jaehyuk Cha and Kyoungdoug Min, "Experimental Investigation into the PPCI Combustion under Light-duty Diesel Engine Fueled with JP-8", 2014 KSPE conference, 2014.12.
- Jaehyuk Cha, Sanghyun Chu, **Jeongwoo Lee**, Hoimyung Choi and Kyoungdoug Min, "The Characteristics of Size Distribution and Number of Particulate Matters with Diesel-Propane and JP-8-Propane Duel Fuel Combustion", 2014 KSAE Autumn conference, 2014.11.
- Sanghyun Chu, **Jeongwoo Lee**, Jaehyuk Cha, Hoimyung Choi and Kyoungdoug Min, "Analysis of JP-8 and Propane Dual-Fueled Combustion and Emissions Characteristics in Diesel Engine", 2014 KSAE Autumn conference, 2014.11.

- **Jeongwoo Lee**, Sanghyun Chu, Jaehyuk Cha, Hoimyung Choi and Kyoungdoug Min, "A Study on the Optimization of Dual-fuel PCCI Combustion with Diesel and Propane by Adjusting Diesel Injection Timing", 2014 KSAE Autumn conference, 2014.11.
- **Jeongwoo Lee**, Sanghyun Chu, Kyoungdoug Min, "Investigation into the combustion duration and emissions characteristics of propane-diesel dual-fueled combustion as varying diesel injection strategy and propane premixed ratio", 2014 KOSCO SYMPOSIUM, 2014.11.
- **Jeongwoo Lee**, Sanghyun Chu, Jungyeon Lee, Seunghyun Lee, Yoonwoo Lee, Sungmoon Lee, Hoimyung Choi and Kyoungdoug Min, "A Study on the Emission Reduction by Using Multiple Injection Strategy under JP-8 Fueled Combustion in a Light-duty Diesel Engine", 2014 KSAE Spring conference, 2014.5.
- Sanghyun Chu, **Jeongwoo Lee**, Jungyeon Lee, Seungha Lee, Cheolhwan Lee, Hoimyung Choi and Kyoungdoug Min, "A Study of Number and Size Distribution of PM Emission under JP-8 Fueled Combustion in a Light-duty Diesel Engine", 2014 KSAE Spring conference, 2014.5.
- **Jeongwoo Lee**, Jungyeon Lee, Yoonwoo Lee, Sanghyun Chu and Kyoungdoug Min, "An Experimental Analysis of NOx and PM Reduction by Using Higher EGR Rate for JP-8 Combustion in a Light-duty Diesel Engine", 2014 KSME Spring conference, 2014.5.
- Jungyeon Lee, **Jeongwoo Lee**, Seunghyun Lee, Dongsu Kim, Seungha Lee, Cheolhwan Lee, Hoigmyung Choi and Kyoungdoug Min, "A study on the Combustion and Emission Characteristics of a CI Engine fueled with JP-8", 2013 KSME Annual conference, 2013.12.
- Cheolhwan Lee, Seungha Lee, **Jeongwoo Lee**, Dongsu Kim, Seokwon Cho, Hoimyung Choi and Kyoungdoug Min, "Analysis of Emissions Characteristics of GDI Engines as Various Displacement under Steady and Transient states", 2013 KSAE Autumn conference, 2013.11.
- Seungha Lee, Cheolhwan Lee, **Jeongwoo Lee**, Seunghyun Lee, Kyoungdoug Min, Sungwoo Kim and Minho Lee, "The effect of intake air temperature on NOx emissions in light-duty Diesel vehicle and engine", 2013 KSAE Autumn conference, 2013.11.
- Dongsu Kim, **Jeongwoo Lee**, Seungha Lee, Jungyeon Lee, Cheolhwan Lee, Hoimyung Choi and Kyoungdoug Min, "The Effect of Various Propane Ratios on the Number of Particulate Matter under Dual-fuel Combustion with Propane Addition to CI Engine", 2013 KSME Spring conference, 2013.5.
- **Jeongwoo Lee**, Seungmok Choi, Seungha Lee, Dongsu Kim, Jungyeon Lee, Cheolhwan Lee, Hoimyung Choi and Kyoungdoug Min, "The Effect of Various Diesel Injection Timings on Combustion and Emissions under DUAL-fuel Combustion with Propane Addition on CI Engine", 2013 KSME Spring conference, 2013.5.
- **Jeongwoo Lee**, Hyungjun Kim, Dongsu Kim, Junyong Lee, Seungmok Choi, Hoimyung Choi and Kyoungdoug Min, "A Study on the Characteristics of Diesel Assist Propagated Combustion and Emissions Using Propane Gas for Light-duty CI Engine", 2012 KSAE Autumn conference, 2012.11.
- Dongsu Kim, **Jeongwoo Lee**, Junyong Lee, Seungha Lee, Seunghyun Lee, Jungyeon Lee, Yunwoo Lee, Hoimyung Choi and Kyoungdoug Min, "A study on the characteristics of PM size distribution and number of particulate matters during DPF regeneration in a HSDI Diesel engine", 2012 KSAE Autumn conference, 2012.11.
- Junyong Lee, Wonah Park, **Jeongwoo Lee**, Seungha Lee, Seunghyun Lee, Kyoungdoug Min, Jun Yu and Sunghwan Cho, "The development of real time virtual NOx sensor based on in-cylinder pressure - Part 2 : Verification of the model on a diesel engine and its real time application", 2012 KSAE Autumn conference, 2012.11.
- **Jeongwoo Lee**, Seungmok Choi, Seunghyun Lee, Seungha Lee, Hyungjun Kim, Dongsu Kim, Hoimyung Choi and Kyoungdoug Min, "The Effect of the Close Post Injection Strategy on Diesel Combustion and Engine-out Emissions as Various EGR Rates for a Heavy EGR Condition", 2012 KSAE Spring conference, 2012.5.

- Seunghyun Lee, Junyong Lee, **Jeongwoo Lee** and Kyoungdoug Min, "Experimental researches on the size distribution and the number of PM emission according to EGR types in a HSDI Engine", 2011 KSAE Autumn conference, 2011.11.
- **Jeongwoo Lee**, Seungmok Choi, Junyong Lee, Seunghyun Lee, Hoimyung Choi and Kyoungdoug Min, "Experimental researches on the characteristics of close post injection strategy as various load conditions in diesel combustion with heavy EGR rate", 2011 KSAE Autumn conference, 2011.11.
- Hyowon Lee, Seungmok Choi, **Jeongwoo Lee**, Seunghyup Shin, Seunghyun Lee and Kyoungdoug Min, "Emissions and Combustion characteristics of propane-diesel dual-fuel combustion as various intake pressure at same light Load", 2011 KSAE Spring conference, 2011.5.
- **Jeongwoo Lee**, Seungmok Choi, Seunghyup Shin, Hyowon Lee, Seunghyun Lee, Hoimyung Choi and Kyoungdoug Min, "Experimental researches on the characteristics of diesel combustion and emissions as various hard ware combinations in heavy EGR rate condition", 2011 KSAE Spring conference, 2011.5.
- **Jeongwoo Lee**, Seungmok Choi, Seunghyup Shin and Kyoungdoug Min, "A Study on Change of Diesel Combustion Mode as Varying Intake Pressure and Oxygen Concentration", 2010 KSAE Autumn conference, 2010.11.
- **Jeongwoo Lee**, Seunghyup Shin, Seungmok Choi and Kyoungdoug Min, "The Effects of Multiple Injection Strategy on Emissions in Diesel Combustion with Extremely High EGR rate", 2010 KSME Autumn conference, 2010.11.
- Seunghyup Shin, Hyunwoo Noh, Seungmok Choi, **Jeongwoo Lee**, and Kyoungdoug Min, " A Study on effect of Combustion Chamber Shape and Multi-spray-angle Nozzle on Diesel Combustion and Emissions ", 2010 KSAE Spring conference, 2010.5.

Invited Lectures

- **Jeongwoo Lee,** "Development of Hydrogen ICE", KOCETI, 2022.07.
- **Jeongwoo Lee**, "Future of Hydrogen-fueled power-trains", Education for job seekers, Ulsan City, 2021.08. & 2022.06 & 2022.08.
- **Jeongwoo Lee,** "Future mobility power sources", Kyungpook National Univ., 2018.12. & 2021.03.
- **Jeongwoo Lee**, "HCCI combustion", UNIST, 2020.10.
- **Jeongwoo Lee,** "Investigation into the Gasoline/Diesel Dual-fuel PCI Engine", Korea Institute of Machinery and Materials, 2017.1.
- **Jeongwoo Lee,** "Investigation into the Gasoline/Diesel Dual-fuel PCI Engine", Doosan Infra-core, 2017.1.
- **Jeongwoo Lee** et al., "Emission Characteristics of Dual-fuel Combustion in a CI engine", 2013 US-ASIA Transtech R&D Consortium, Argonne national laboratory, 2013.07. (※ Prof. Min gave a presentation.)