

Doctor Course Study Opportunity
FEST (Fluid Engineering and Spray/Simulation Technology) Laboratory
Department of Mechanical Systems Engineering
University of Hiroshima, Japan

Term: 3 Years Starting in October or April

Ex) October 2017 – September 2020, April 2018 – March 2021

Research Topics (currently running projects)

Fuel Atomization, Spray, Mixture Formation

- Effect of injection system parameters (multiple injection and injection rate shaping, special nozzle hole design, fuel temperature control, etc.) on air entrainment, fuel evaporation and mixture formation in Diesel spray (Fig.1)
- Fuel film formation process of wall-impinging spray injected by hole-type nozzle for DISI engine
- Characterization of spray and cross-flow interaction under high-pressure ambient pressure condition (Fig.2)
- Behavior of wall-impinging spray under high-pressure cross-flow environment

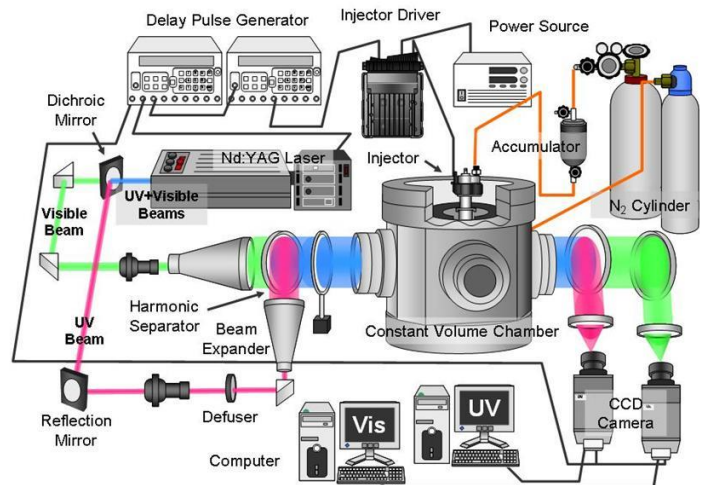


Fig.1 LAS Optical System and Spray Test Rig

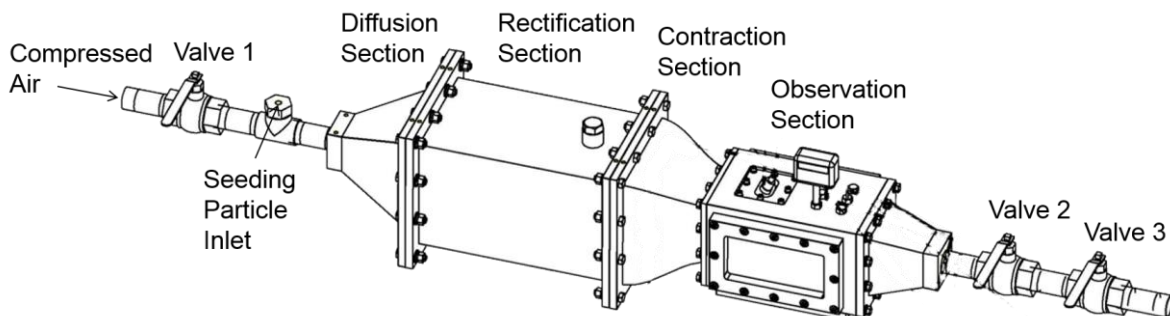


Fig.2 High-Pressure Wind Tunnel for Cross Flow Spray Research

- Nozzle internal flow / cavitation behaviors and their effect on near field spray breakup of Diesel injector

Spray Combustion and Emission Formation in Engines

- Mixture formation, combustion and soot formation processes of fuel spray injected into 2-dimensional piston cavity in high-pressure high-temperature constant volume vessel
- Effect of fuel injection parameters on Diesel spray flame and heat transfer through combustion chamber wall in constant volume combustion vessel

- Heat transfer study of Diesel spray flame impinging on piston cavity wall in rapid compression machine (Fig.3)
- Optical study on spray, mixture formation and combustion processes in single cylinder Diesel engine (Fig.4)
- Soot formation characteristics in spark-ignited spray flame impinging on piston cavity wall

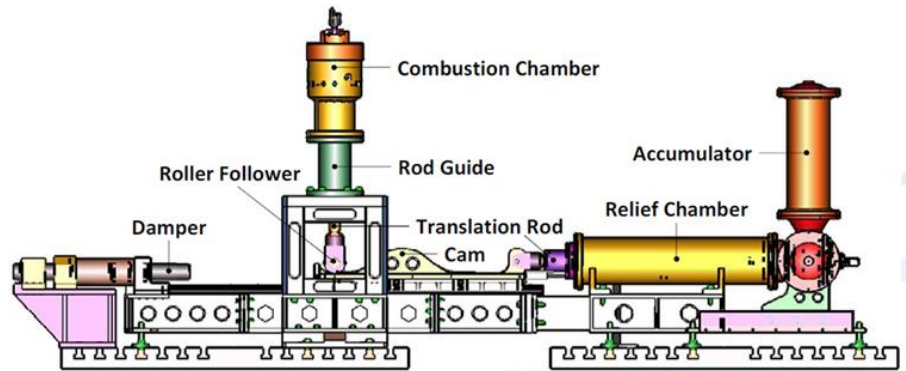


Fig.3 Rapid Compression Machine

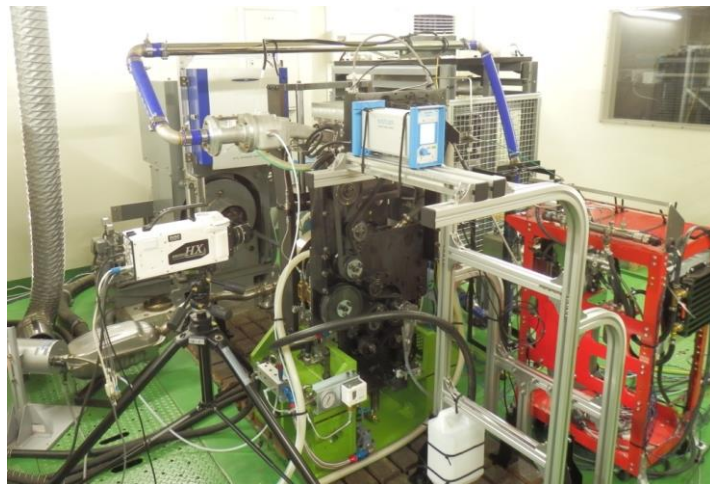


Fig.4 Single Cylinder Optical Engine

Scholarship

The students are suggested to apply for the following scholarships.

- Scholarship of Ministry of Education, Japanese Government
http://www.jasso.go.jp/en/study_j/index.html
- Scholarship of Chinese Government CSC
<http://www.csc.edu.cn/chuguo>
- Private foundation

Language

English is used in the research (discussion with supervisor professor, conference presentation). However it is recommended for the student to take the Japanese language and conversation class provided by the university language center.

Job Opportunity after Doctor Course

The department office supports the student to get a job in Japan. For getting the job in Japan, the Japanese language skill is usually requested.

Postdoctoral researcher positions open in University of Hiroshima, other universities and research institutes.

Contact

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