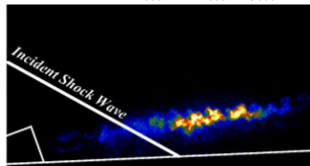




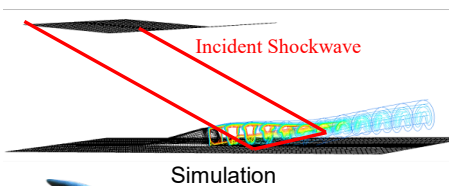
**Contact:** Institute of Fluid Science (Katahira), Building 2, 401  
 Tel. 022-217-5273 Web: <http://www.ifs.tohoku.ac.jp/kobayashi/en/indexen.html>

**Combustion** is a complex phenomenon composed of multi-dimensional dynamics of temperature, concentration, velocity, and chemical reactions. And also advanced combustion technologies are essential for solving the environmental and energy problems. Our laboratory focuses on investigation of combustion phenomena, development of diagnostics and analysis method. Projects on turbulent combustion at high pressure and high temperature, ammonia combustion, laser diagnostics for rocket motor, spray combustion, and controlling of supersonic combustion are in progress.

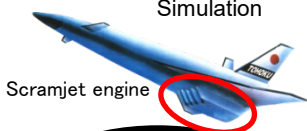
OH Fluorescence intensity : 600 2000 3000 4000



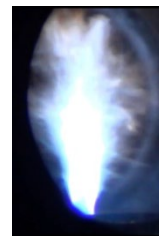
Experiment(OH-PLIF)



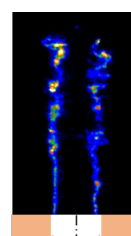
Simulation



Scramjet engine



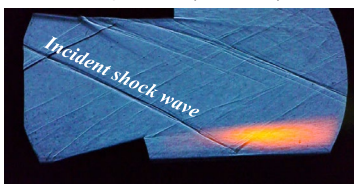
Direct photo



Flame structure

H<sub>2</sub> O<sub>2</sub> H<sub>2</sub>

Research and development of laser diagnostics of high-pressure and high-temperature combustion



Experiment (Schlieren)

Supersonic combustion

**High Speed Combustion**

**High Pressure Combustion**

Supersonic combustion

Laser diagnostics for rocket motor

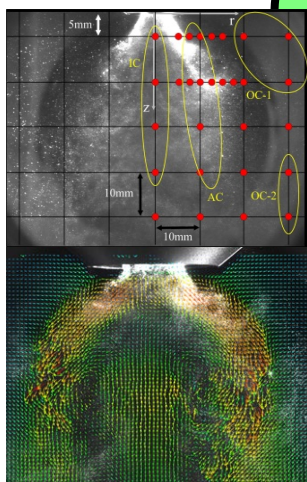
Spray formation and combustion in high pressure gas turbine

Turbulent combustion at high pressure

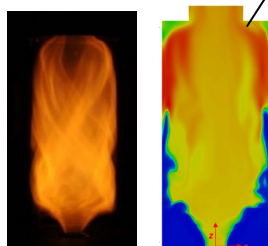
Ammonia combustion in gas turbine

Carbon free ammonia combustion

**New Concept Combustion**



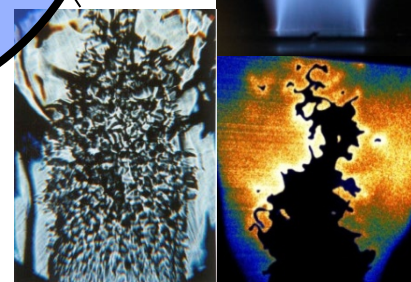
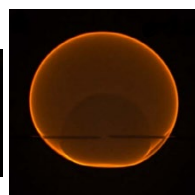
Spray formation and combustion



Ammonia combustion in gas turbine (experiment and numerical simulation)



Combustion science of fuel ammonia for carbon neutral



Premixed turbulent combustion at high pressure

We can explain the detail of our laboratory using online talk if you want to know further detail of our activity. Please contact us through the inquiry form or email ([hayakawa@flame.ifs.tohoku.ac.jp](mailto:hayakawa@flame.ifs.tohoku.ac.jp)).



Website



YouTube movie



Inquiry form