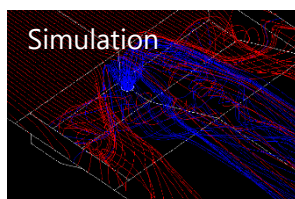
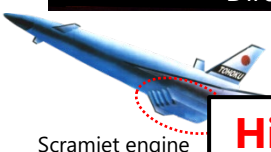
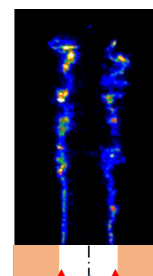


**Combustion** is a complex phenomenon composed of multi-dimensional dynamics of temperature, concentration, velocity, and chemical reactions. And also advanced combustion technologies are essential for solving the environmental and energy problems. Our laboratory focuses on **investigation of combustion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

### Study of Flameholding in Supersonic flows



### Laser diagnostics



**High speed  
combustion**

**High Pressure  
Combustion**

Supersonic combustion

Laser diagnostics  
for rocket engine

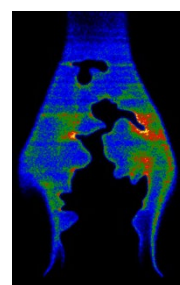
Ammonia combustion  
in gas turbines

Turbulent combustion  
at high pressure

Ammonia fundamental  
combustion

**New Concept  
Combustion**

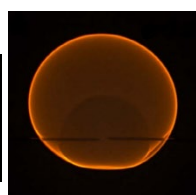
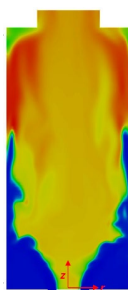
### Premixed turbulent combustion at high pressure



Ammonia turbulent flame

### Ammonia Combustion in Gas Turbine

### Ammonia Laminar Premixed Combustion



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)).



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