The FCF FIR includes support subsystems and laboratory style diagnostics common to the specific researchers and supplements the laboratory with unique science hardware developed for each Payload.

**Payload Specific Hardware**
- Sample Cell with universal Sample Tray
- Specific Diagnostics
- Specific Imaging
- Fluid Containment

**Multi-Use Payload Apparatus**
- Test Specific Module
- Infrastructure that uniquely meets the needs of PI experiments
- Unique Diagnostics
- Specialized Imaging
- Fluid Containment

**Light Microscopy Module**

**FCF Fluids Integrated Rack**
- Power Supply
- Avionics/Control
- Common Illumination
- PI Integration Optics Bench
- Imaging and Frame Capture
- Diagnostics
- Environmental Control
- Data Processing/Storage
- Light Containment
ISS Fluids and Combustion Facility (FCF)

Fluids Integrated Rack (FIR) Overview

- **Volume** ~ 0.7 m³ (1100mm x 895mm x 495mm on the front of the OB)
- **Mass** ~ 300kg depending on FIR be utilized
- **Electrical Power Control Unit (EPCU)**
  - Nominal 672 W/1600W max at 28Vdc
  - 1450 W at 120Vdc
- **Thermal Cooling**
  - 3 kW water (MTL)
  - 1300 W air (provided at 20°C to 30°C)

*Video*
- Common Image Processing Unit (C-IPSU) - IEEE 1394 FireWire & Analog Frame Grabber Interfaces for PI provided cameras
- C-IPSU - Image processing & storage units for real time and post processing of image data
- Illumination – White Light & 150mW 532nm Nd:YAG LASER*
- Analog Color Camera*

**Control & Data Acquisition**
- Fluid Science Avionics Package (FSAP) - Standard control and data acquisition interfaces (e.g. analog & digital Inputs/Outputs, motion control, RS-422)
- 540 GB of Data Storage

*Not on First Flight*
ISS Fluids and Combustion Facility (FCF)

The Fluids Integrated Rack Test Overview

- HFIT
- Acoustic Testing
- EMI Testing
- Off Gas Testing
- Integrated Payload Testing
- Modal Survey Testing
- Integrated Thermal Testing
- Mission Sequence Testing