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
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