

Equipment Fact Sheet

Closed Cycle Refrigerator

Top Loading 60 mm

CCR-06

Neutron Scattering Science Division

Sample Environment Group

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8ls@ornl.gov



Basic Description

- **Off-the-shelf cooling engine**
 - Displex model DE-210
- **SNS-designed top loading interface**
- **Design goals**
 - **Wide temperature range (4 to 500 K)**
 - **Present range 20 to 500 K**
 - Upgrades underway
 - **Uniform sample temperature**
 - Helium “exchange gas” in sample tube encourages uniformity
 - **Good results observed**

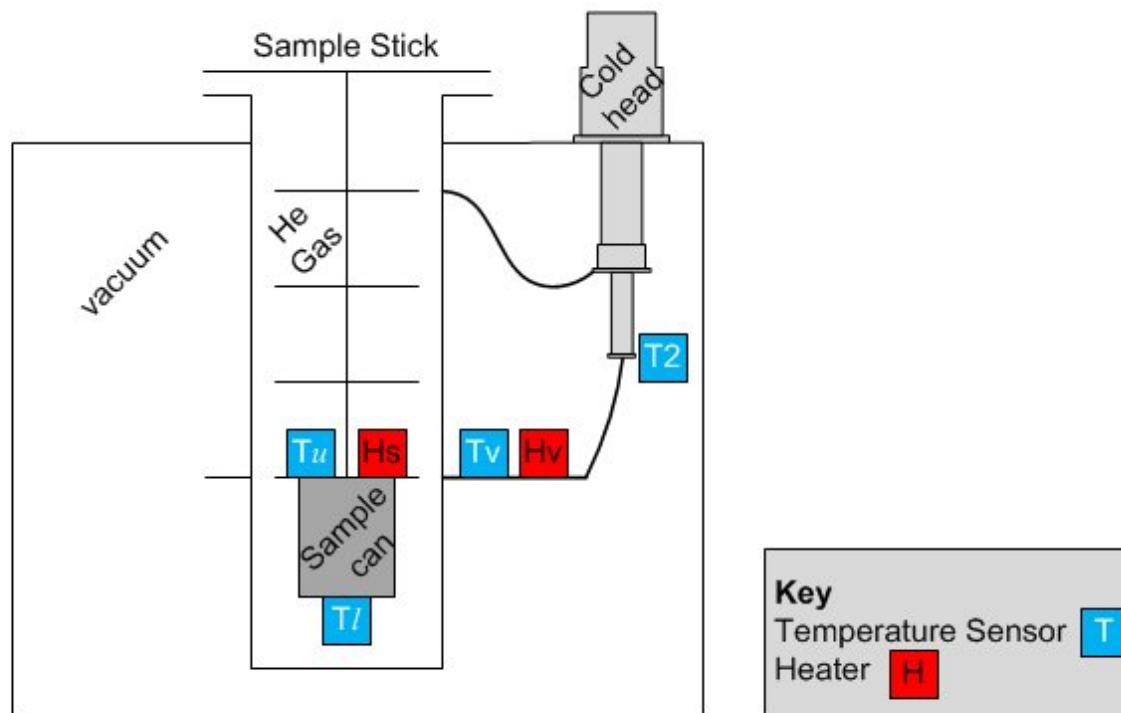


Thermal link

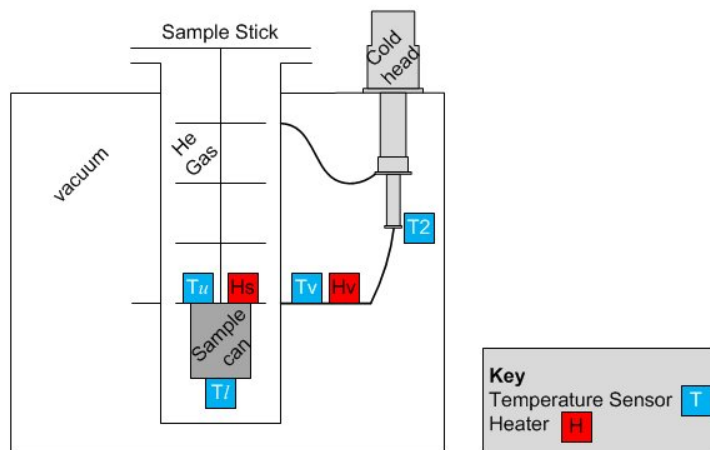
sample tube

CCR-06 Schematic

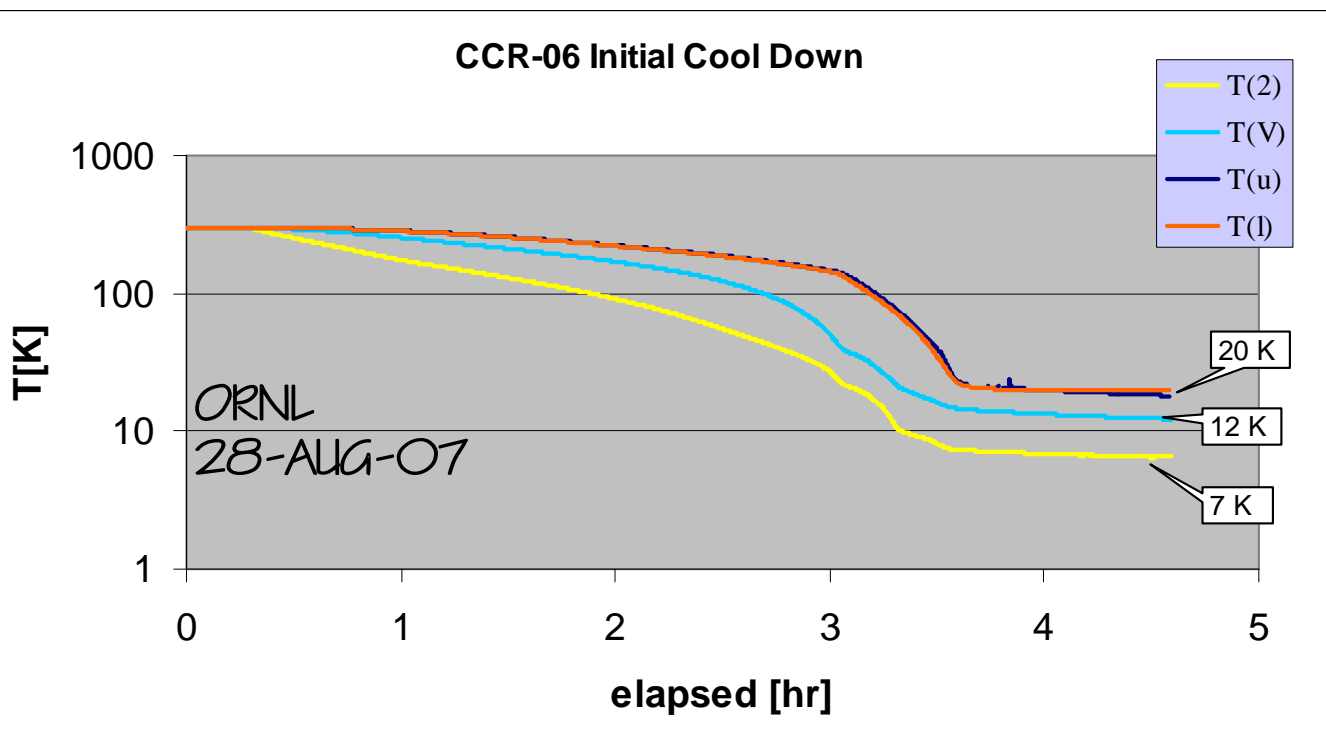
- Sample mounted on bottom of stick
- Sample tube (60mm ID) charged with helium exchange gas (heat exchange medium)
- System equipped with multiple temperature sensors



Test Data: Cool Down

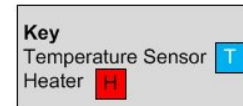
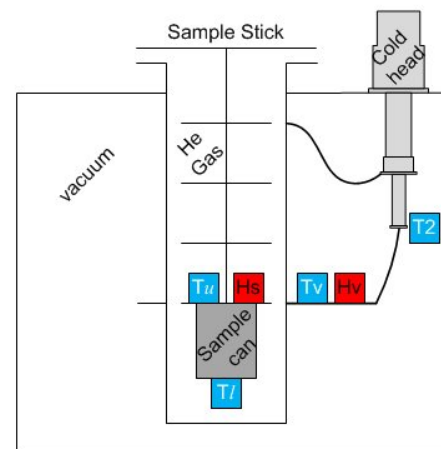


Work is underway to improve base temperature, but system works well throughout the range 20 K to 500 K



Test Data: Temperature Uniformity

- **Sensors on upper (Tu) and lower (Tl) region of sample cell (thin-walled aluminum can filled with sample)**
- **Uniformity achieved after ~ 60 minute equilibration period**



CCR-06 Temperature Uniformity Test

