

# Dilatometer (for PPMS® / DynaCool™)

## Features

- Automated thermal expansion measurements and processing capabilities from 1.8 K to 400 K:
  - Thermal expansion coefficient vs. temperature
  - Dilation vs. temperature
  - Magnetostriction coefficient vs. field
  - Dilation vs. field
- Ratiometric measurement:
  - Absolute capacitance bridge is not required
  - Greatly reduces the effects of adsorbed gasses
  - Measures linear imbalance of the cell that is directly proportional to sample length change
- Module and Software:
  - Integrated data acquisition electronics and analysis software
  - Software manages all aspects of the workflow from raw data to finished analysis within MultiVu
- Capsule:
  - Integrated thermometry
  - Detachable capsule
  - Manual rotation of cell  $-20^{\circ}$  to  $110^{\circ}$  outside of system
  - Axis of cell rotation is perpendicular to field
- Fused Silica Cell:
  - Low thermal and magnetic background / reduced empty cell effects
  - Symmetrical – 2 parallel plate configuration reduces effects from thermal gradients
  - Grounded sample configuration
  - 2mm  $\pm$  .05mm sample size (shims can be used for smaller samples)
  - Calibration using fused silica and copper standard reference samples
- Balance meter:
  - Sample mounting
  - Verify cell imbalance before measurement

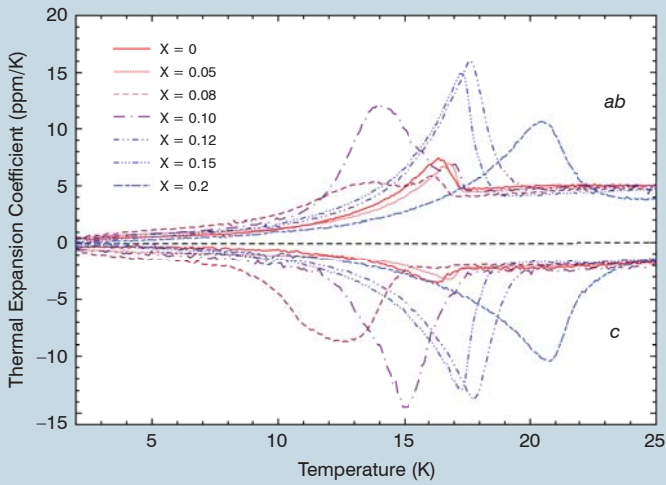


*Dilatometer Capsule*

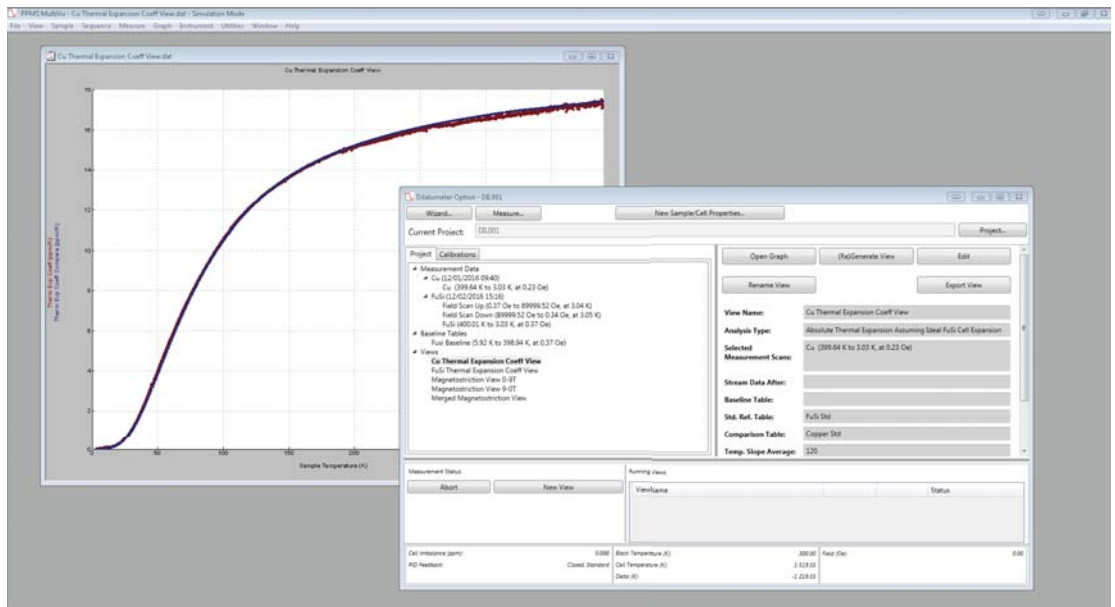
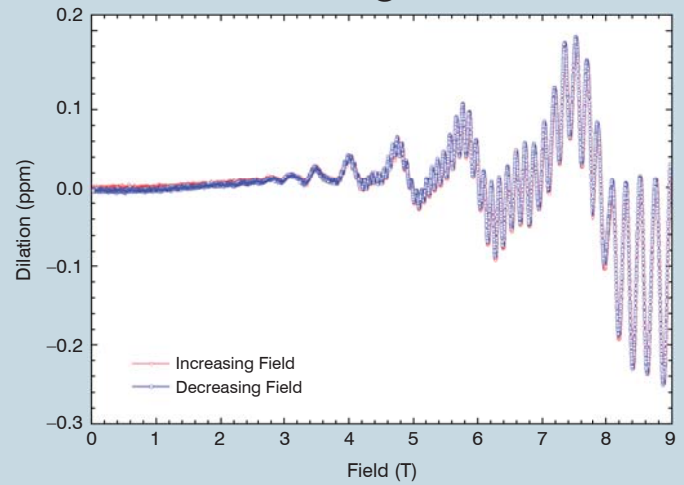


*Dilatometer Probe*

**Thermal Expansion Measurements of URu<sub>2-x</sub>Fe<sub>x</sub>Si<sub>2</sub>**  
(Department of Physics, University of California, San Diego, USA)



**Aluminum Magnetostriction**  
0 – 9 T @ 10 K



Screenshot from Dilatometer software in MultiVu

**Specifications**

Model:	P680, D680
Electronics	QD Dilatometer Module
ΔL/L Resolution	10 <sup>-9</sup> for 2 mm sample
Low Temp Resolution	< .1 Å
Low Temp Noise Level	< .2 Å
Sample Size	2 mm ±0.05 mm x 2.5 mm x 3 mm
Sample Size < 2 mm	Shims may be used
Cell Material	Fused Silica
Background Dilatation vs. Temperature (300 K)	< 75 nm
Background Dilatation vs. Field @ 2 K	< 1 Å
Calibrations	Fused Silica and Copper Standard Reference Samples

☑PPMS ☑EverCool ☑DynaCool ☐VersaLab



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Specifications subject to change without notice  
1071-105 Rev. A0 (Feb. 2017)