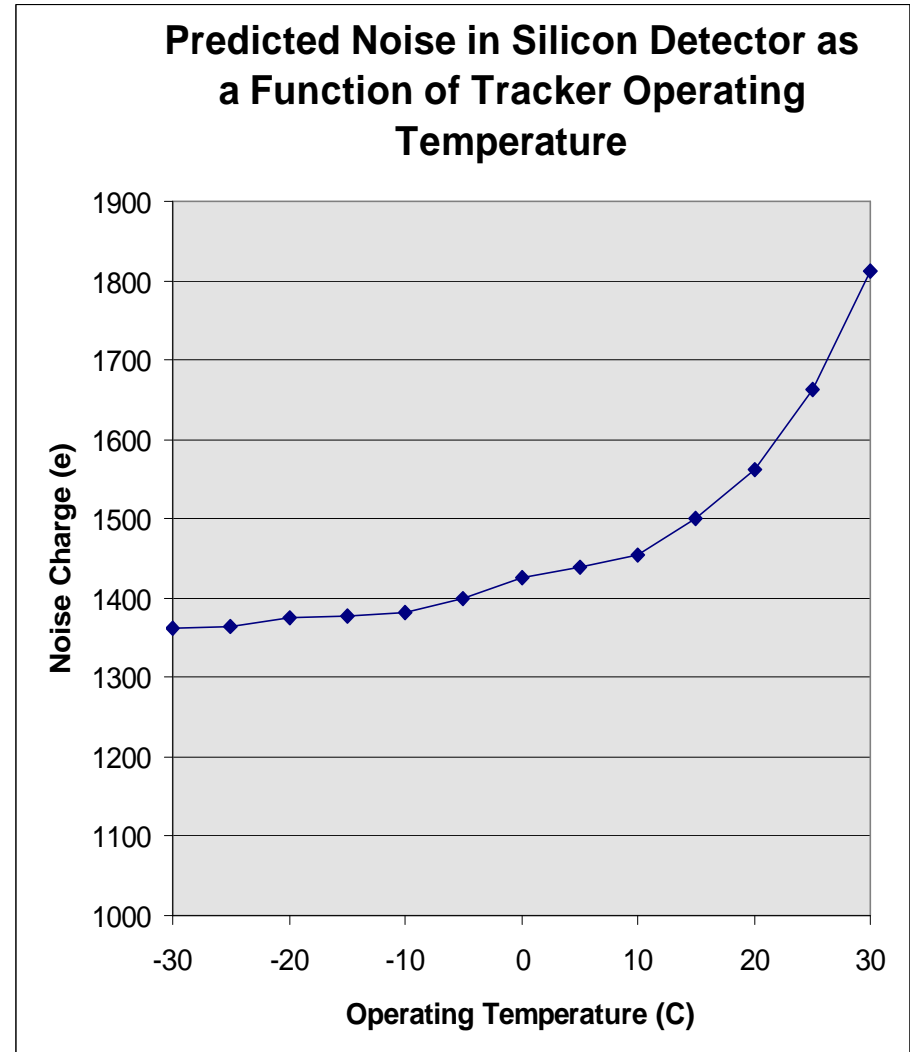
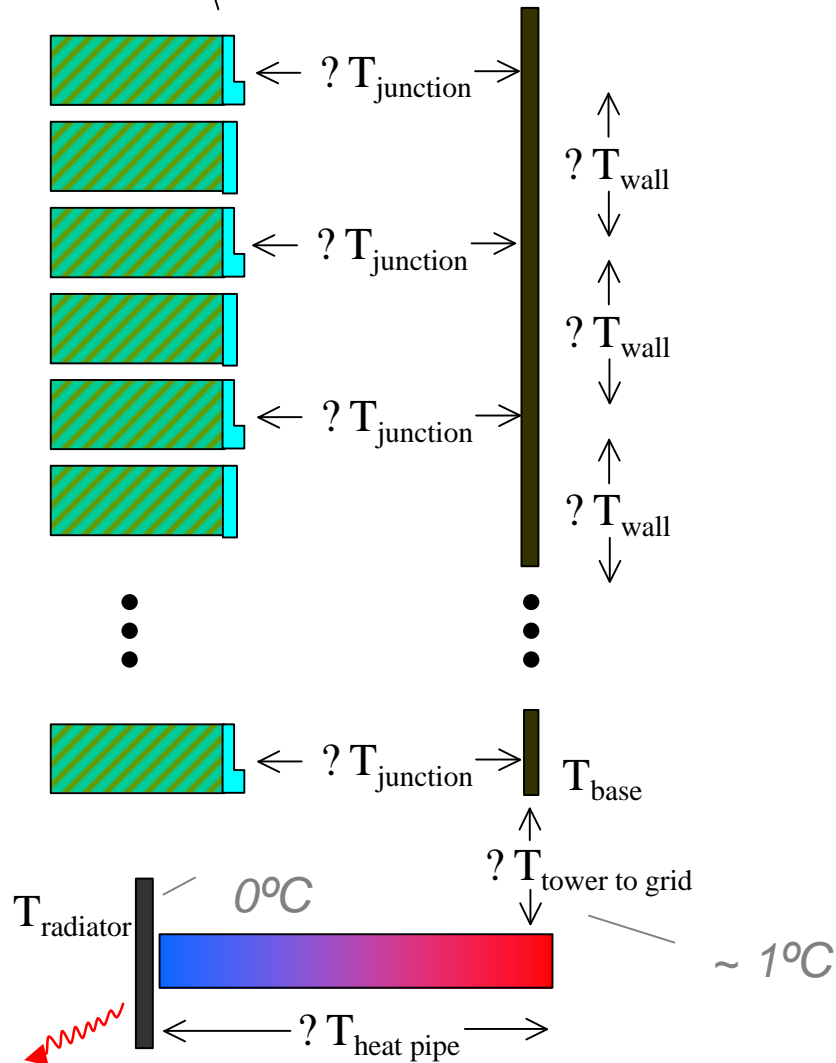


Thermal Contact Resistance at the Tray Closeout to Tower Wall Interf

Michael Hicks
SLAC

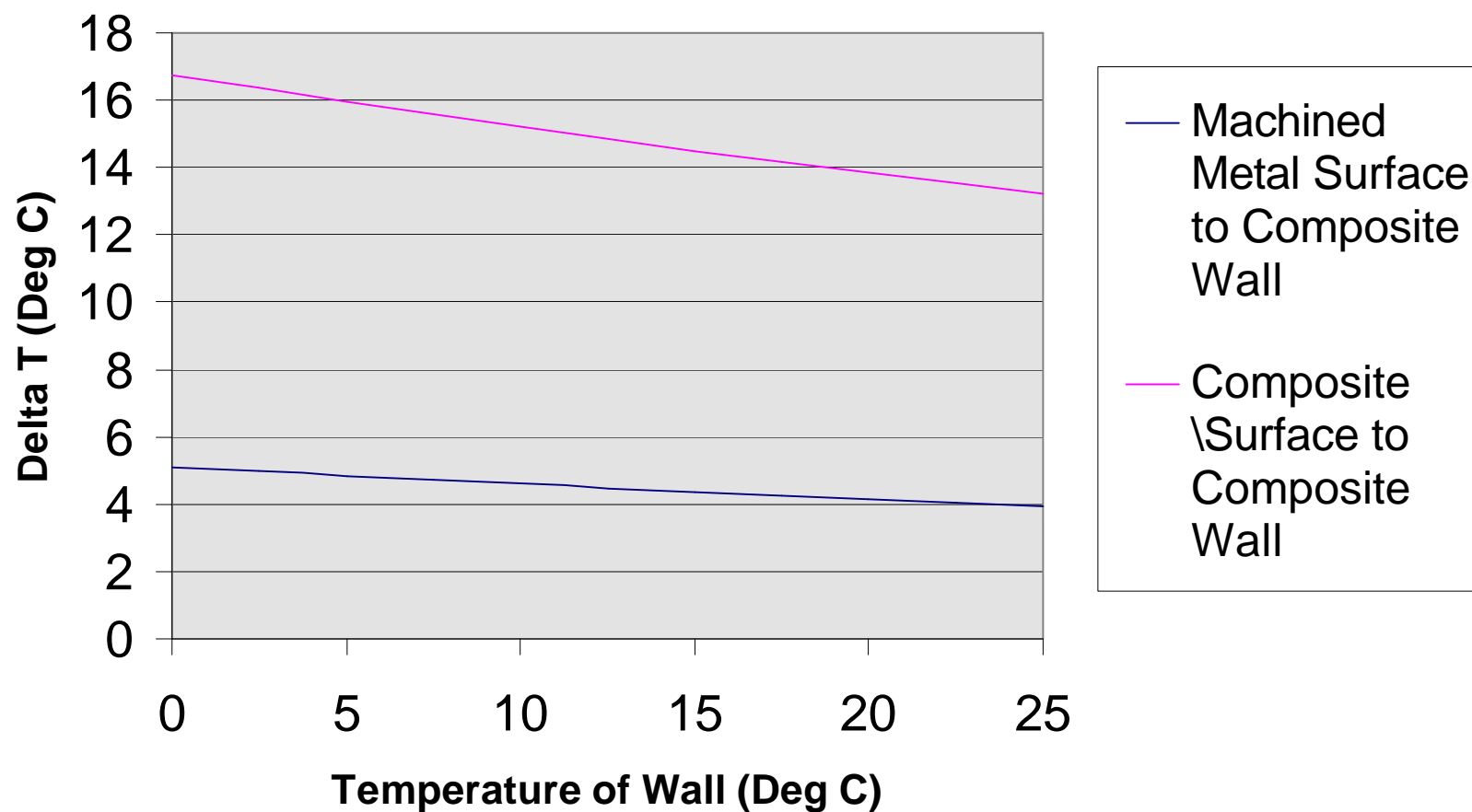
Importance of Instrument Perf

< 15°C



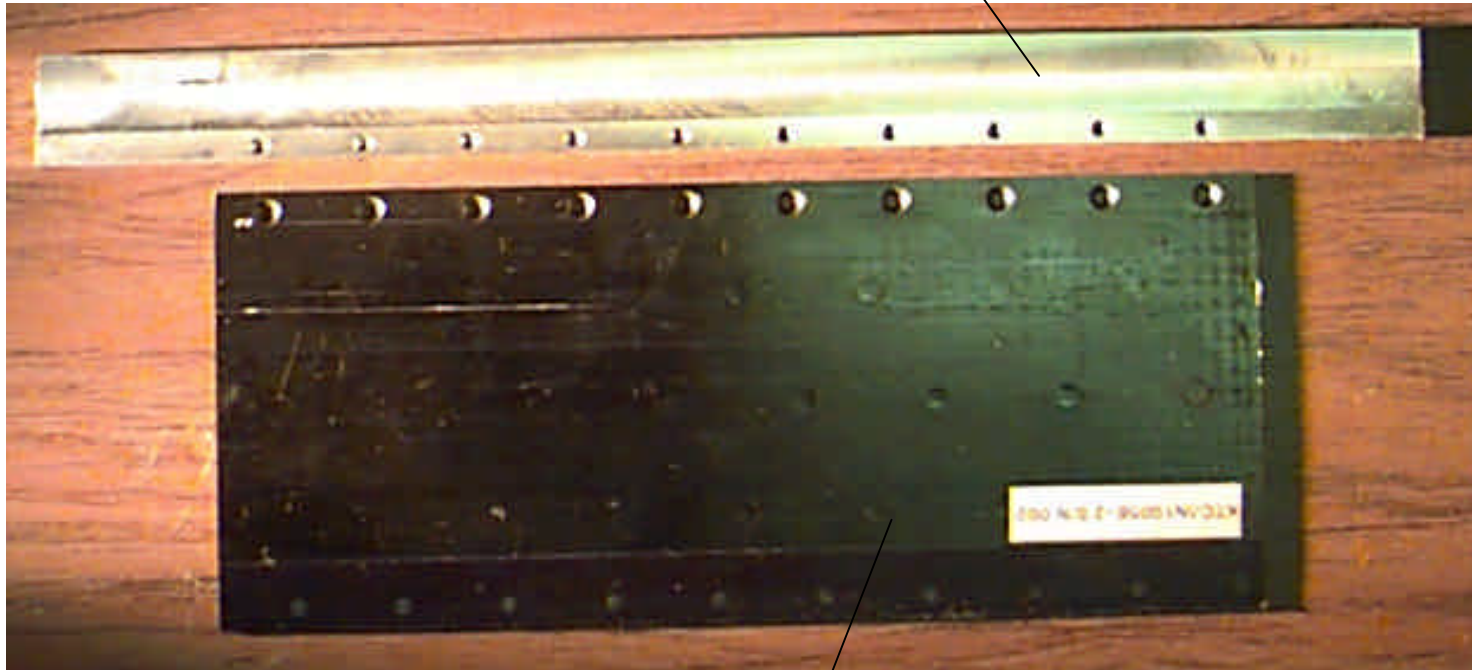
Thermal Resistance Should Be Tested

Limiting Cases for Delta T (deg C) Across Tray to Wall Interface (assuming 0.32 W heat flux)



Test Item Duplicates Geometry of

Aluminum Closeout



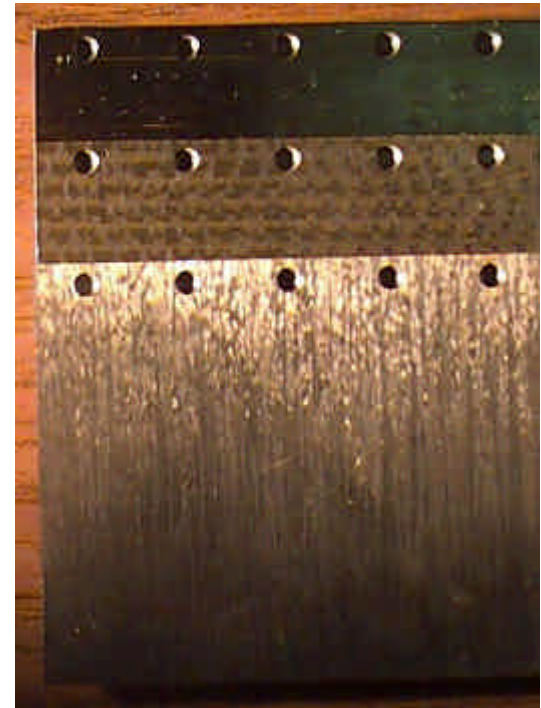
Tower Wall Material

Controlled Variables

Wall Material:	• TC1050	1200 $\frac{W}{mK}$
	• 5:1 weave	375 $\frac{W}{mK}$
	• $\pm 12^\circ$ fiber	500 $\frac{W}{mK}$
	* compare to copper:	400 $\frac{W}{mK}$
	beryllium:	200 $\frac{W}{mK}$

Number of Screw Holes: (8, 10, 12)

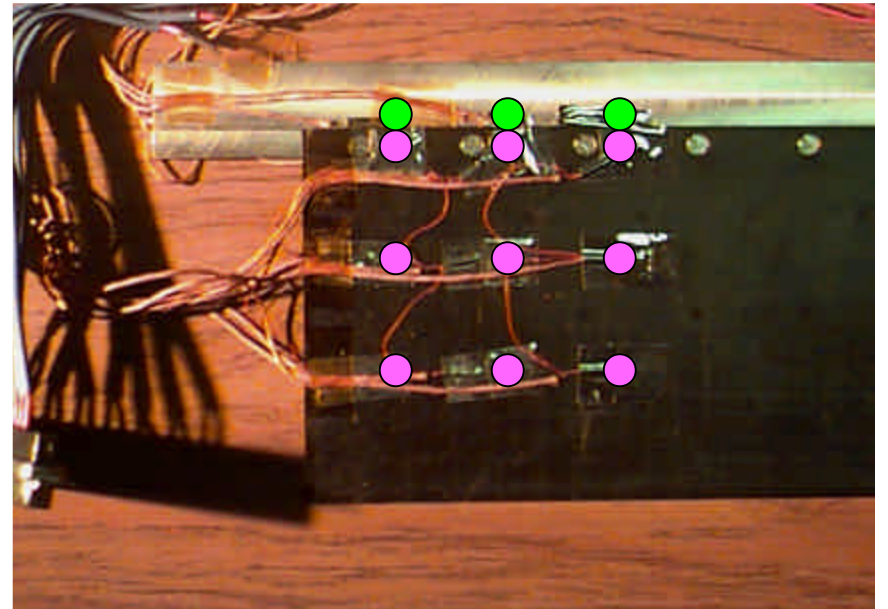
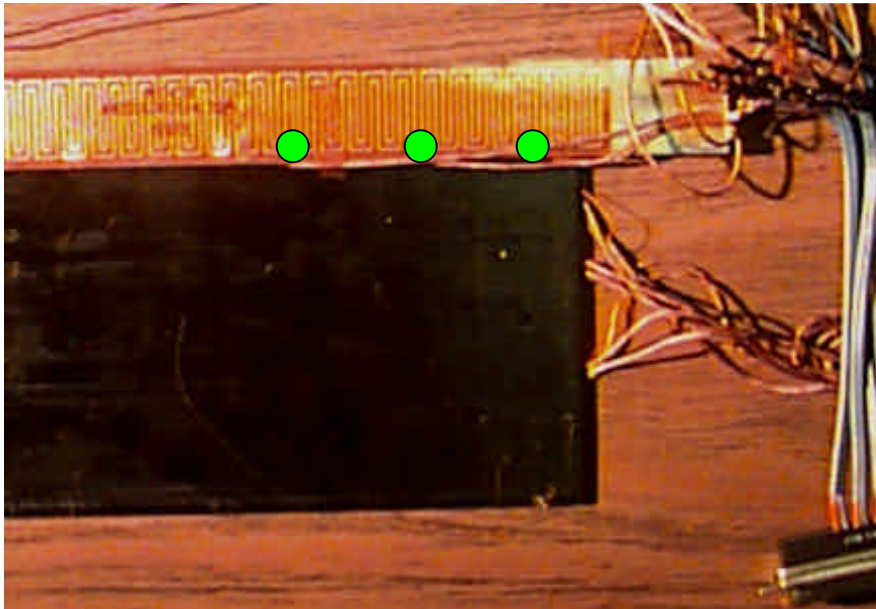
Thermal Interface Material



Instrumented Specimens

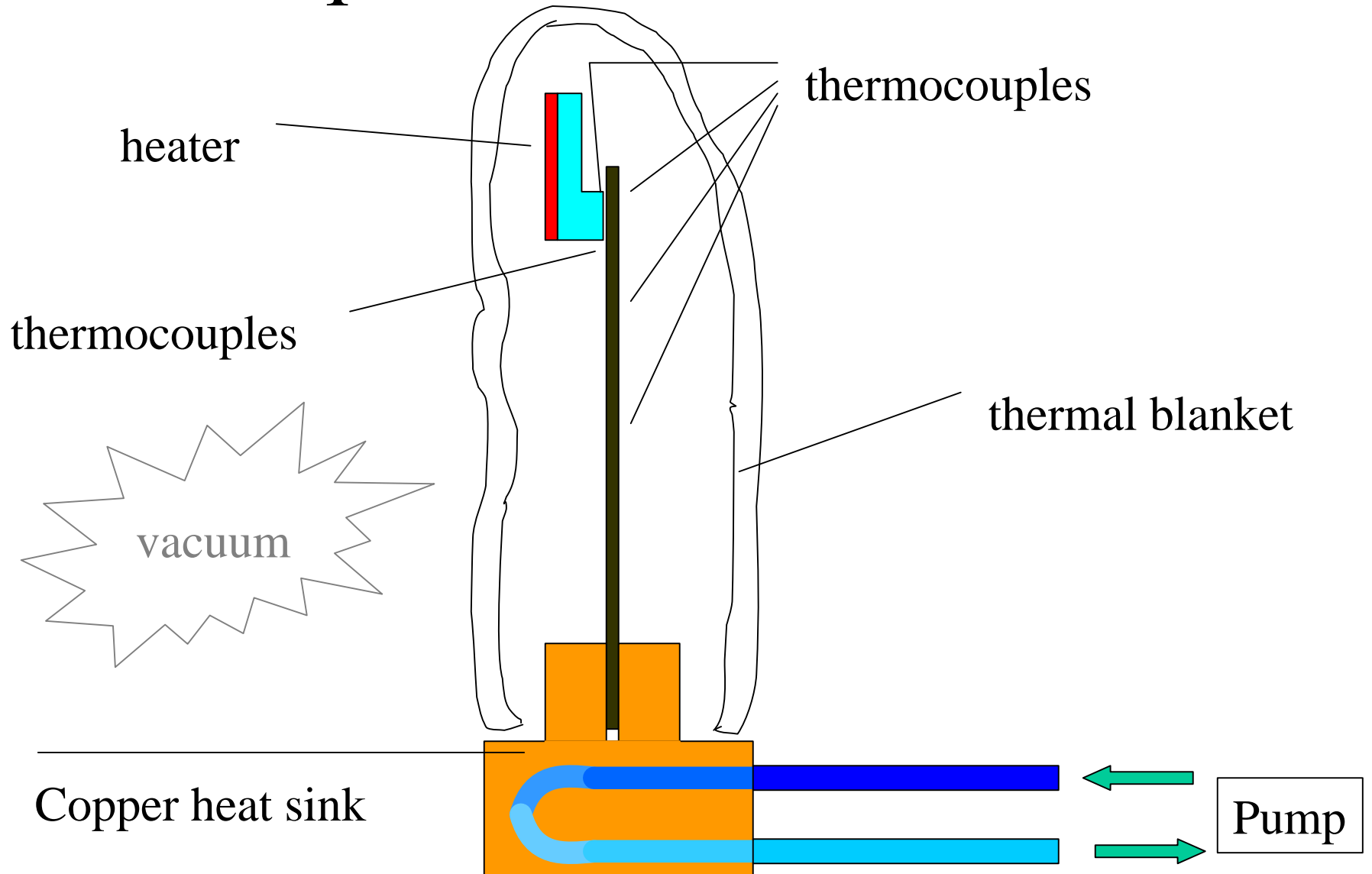
Back

Front

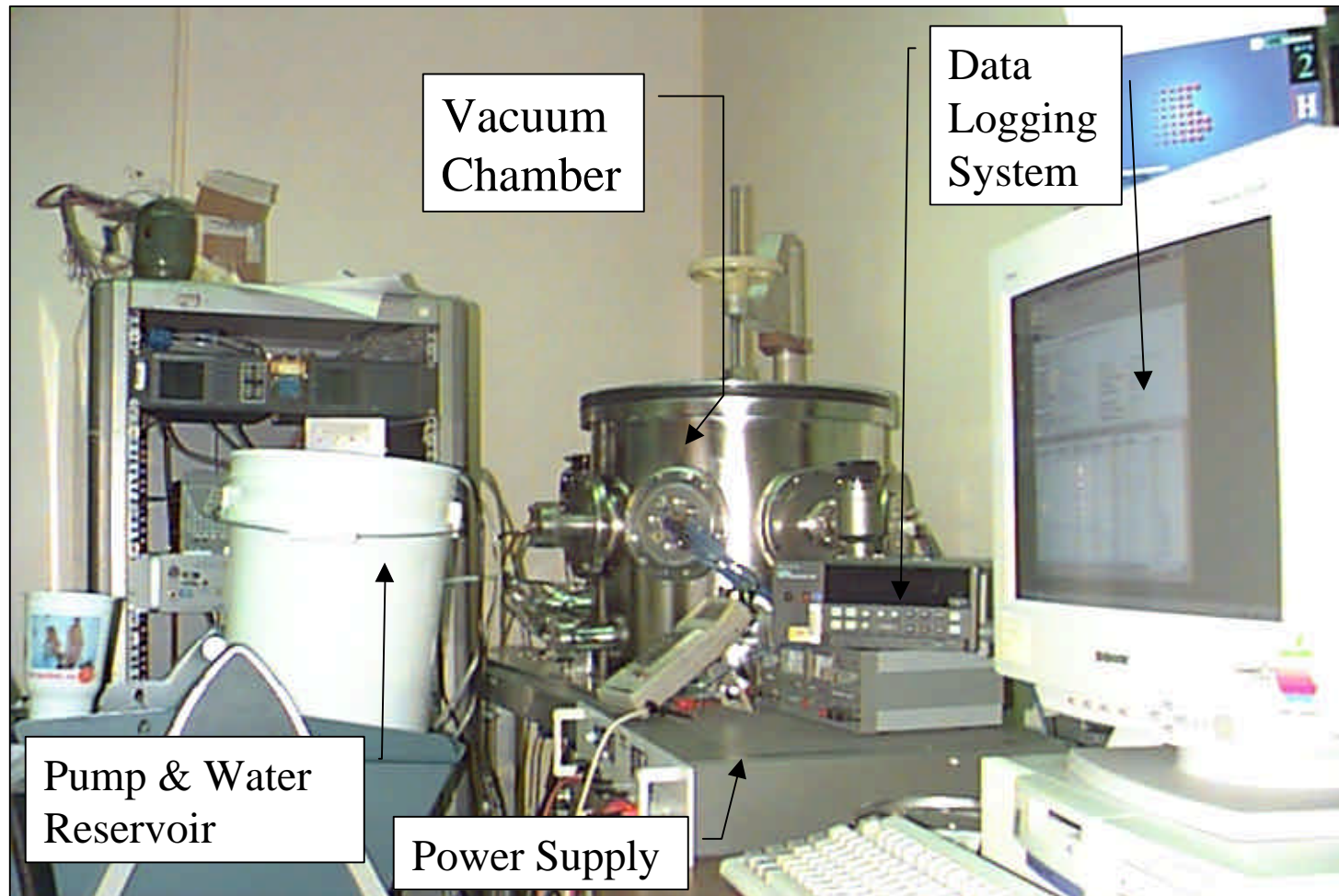


Thermocouple Locations - ● Wall
● Closeout

Experimental Schematic



Experimental Setup

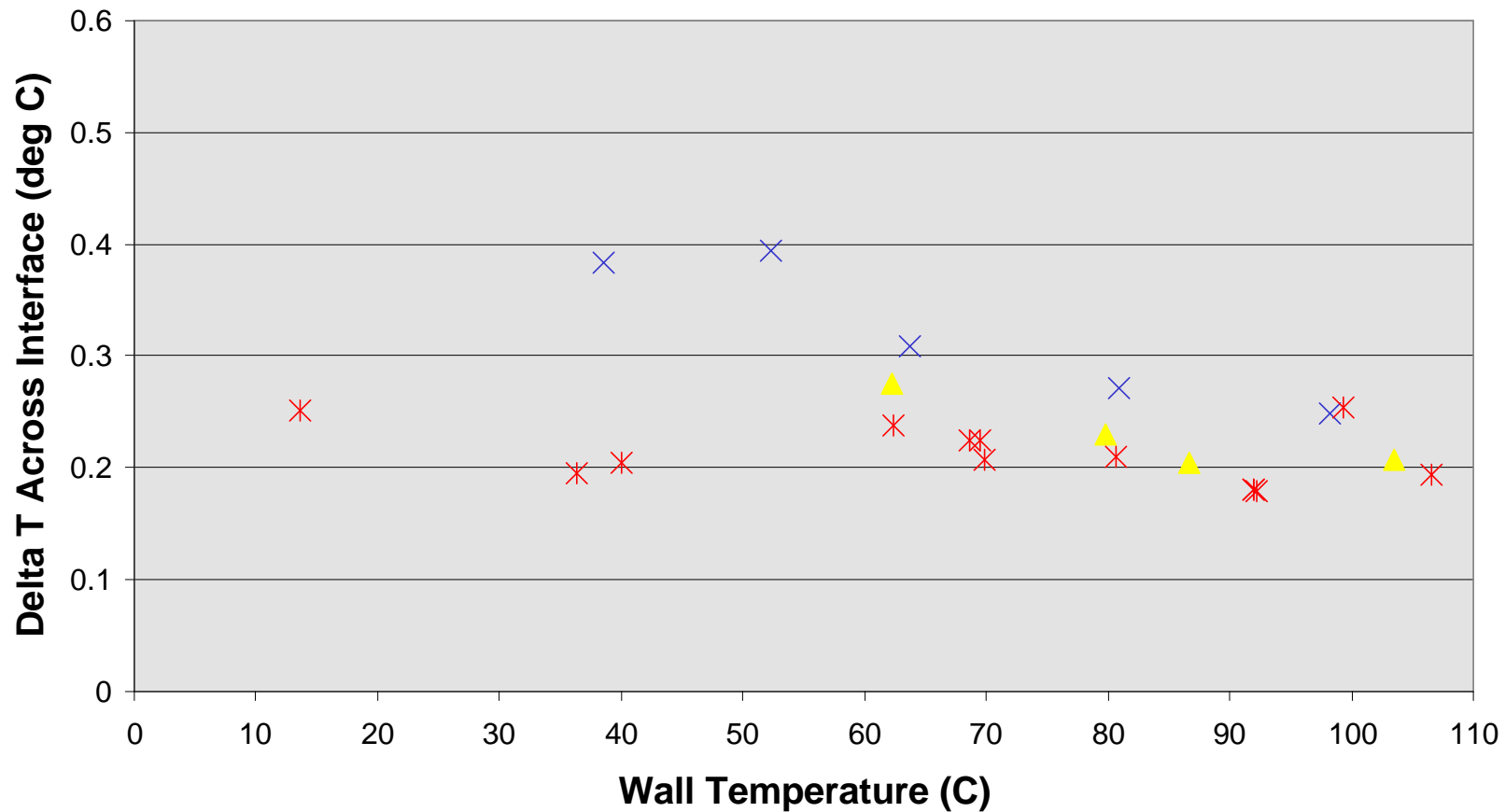


Special thanks to  for use of facilities

Results

Delta T Predicted from Experimentally Determined Thermal Resistance, (Three Configurations)

▲ 5:1 weave, 10 holes × TC1050, 8 holes * TC1050, 10 holes



Conclusion

- ? T_{junction} will be less than 0.5°C
- Not very sensitive to # of holes
- No special interface material required between surfaces