Abstract Submitted
for the 4CF06 Meeting of
The American Physical Society

Temperature Calibration for Sample Heating in Ultrahigh Vacuum HEIDI WHEELWRIGHT, T.C. SHEN, Utah State University — Precision temperature measurement is a challenge for ultrahigh vacuum sample preparations. Thermocouples and pyrometers can be used to measure the temperature of samples, but these two techniques need calibration. We have made a mathematical model to calibrate the thermocouple readings with the pyrometer readings. This model is based on equations considering the input power and the heat loss by conduction and radiation. The heat conduction constant is determined from pyrometer temperature measurements at various power inputs. Given any input power, this model will return a temperature value that agrees very closely to the thermocouple readings which have been calibrated with the pyrometer.

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Date submitted: 11 Sep 2006 Electronic form version 1.4