

Abstract Submitted  
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**Experimental Probe for Measurement of Thermodynamic Properties** NICHOLAS SOLIZ, ULISES URBINA, PEI-CHUN HO, Department of Physics at CSU, Fresno — Our measurement probe was designed and built to measure thermoelectric power (TEP, Seebeck coefficient) and thermal conductance. This measurement probe is custom made to fit in our cryocooler refrigerator for the temperature range from 11 K to 300 K. By using a small,  $2\text{k}\Omega$  resistive heater chip, and careful thermal isolation, we can apply a temperature gradient across our samples. We then monitor the raw trace of temperature and thermoelectric voltage as a function of time. Later, we extract the thermal conductance and the TEP by using the thermal equilibrium data. Automated data acquisition from room temperature to  $\sim 12$  K is obtained using LabVIEW software. Calibration of the measurement probe was performed on a Nickel sample and the measured TEP is compared to literature values to demonstrate the accuracy. The probe is being developed and calibrated for use in our investigation of TEP and thermal conductivity in single crystal samples of  $\text{Pr}_{1-x}\text{Nd}_x\text{Os}_4\text{Sb}_{12}$  in the future.

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