

Abstract Submitted
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Instrumentation for Measuring Thermodynamic Properties of Rare-Earth Compounds¹ ULISES I. URBINA, JONATHON THOMPSON, PEI-CHUN HO, Department of Physics, Cal. State U., Fresno — Current models on some Rare-Earth compounds cannot fully account for their strongly correlated electron behavior, which give rise to phenomenon such as unconventional superconductivity, heavy Fermion, and quantum critical behavior. The specific heat, thermopower, and thermal conductivity measurements give important thermodynamic properties, such as effective electronic mass, stiffness of the lattice (Debye temperature), entropy, density of states of charge carriers, and phase transitions which are crucial in characterizing these materials of interest in our laboratory. A calorimeter and a thermopower-thermal conductivity probe, which are using a modified relaxation method and standard steady-state heat flow technique, respectively, are constructed for the above purpose. Detailed schematic diagram and operating principles will be discussed in the report.

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