Abstract Submitted
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Measurement of Specific Heat of $Pr_{1-x}Nd_xOs_4Sb_{12}$ from 11K-300K[1] TAYLOR MCCULLOUGH-HUNTER, SHOJI HISHIDA, PEI-CHUN HO, Physics Department, California State University, Fresno, BRIAN MAPLE, Physics Department, University of California, San Diego, TATSUYA YANAGISAWA, Physics Department, Hokkaido University, Japan — The filled skutterudite compound $PrOs_4Sb_{12}$ exhibits heavy fermion behavior and unconventional superconductivity at low temperatures (T_c =1.85K). The exact causes of these behaviors are unknown. The compound $NdOs_4Sb_{12}$ exhibits ferromagnetism at a Curie temperature near 1 K. Originally, Nd doped compounds of the form $Pr_{1-x}Nd_xOs_4Sb_{12}$ were developed to investigate the effect of ferromagnetism on the unconventional superconductivity and heavy fermion behavior of $PrOs_4Sb_{12}$. The specific heat of $Pr_{1-x}Nd_xOs_4Sb_{12}$ (where x=0.25, 0.5, 0.75, 0.8, and 1) is measured at 11K-300K to investigate the compounds' normal state properties. The specific heat is measured using relaxation calorimetry of finite heat pulse in a cryocooler system. Values of the electronic specific heat coefficient, γ, for these compounds are estimated to be 10-60 mJ/K^2-mol. This contrasts with previous low temperature measurements (<10K) of $NdOs_4Sb_{12}$ with γ approximately 520 mJ/K^2-mol.

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