

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Non-Fermi-liquid behavior in annealed UCu_4Pd RYAN BAUMBACH, NICHOLAS BUTCH, M. BRIAN MAPLE, University of California San Diego and IPAPS, DOUGLAS MACLAUGHLIN, University of California Riverside — The effect of disorder in the polycrystalline UCu_4Pd system is addressed in an annealing study. Samples were annealed at 750°C for 7, 14 and 56 days and compared to unannealed samples. X-ray diffraction data indicate that all samples are single phase UCu_4Pd . Magnetic susceptibility vs. temperature data and the Sommerfeld coefficient ($\gamma = C_e/T$ where C_e is the electronic specific heat) vs. temperature both show little variation with annealing and can be fit with either a logarithmic or weak power law function for $4.5\text{K} \leq T \leq 50\text{K}$ and $0.6\text{K} \leq T \leq 2\text{K}$, respectively. In contrast, electrical resistivity vs. temperature data develop a Kondo-like minimum near 35K that strengthens with annealing. Additionally, at low temperatures ($2\text{K} \leq T \leq 10\text{K}$), the resistivity is linearly proportional to temperature for all samples. These data indicate that the non-Fermi liquid behavior of UCu_4Pd is not suppressed by annealing and may resolve inconsistencies reported in previous studies. Data will be collected and presented for electrical resistivity at temperatures less than 2K . This work was supported by grants from the NSF and DOE.

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Date submitted: 22 Nov 2004

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