

Magnetic Properties of Polycrystalline PrCu_2 : A Quadrupolar Transition Material

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Dedicated to Dr. Bernard Chevalier on the occasion of his 60th birthday

Polycrystalline PrCu_2 , which has a quadrupolar transition at 7.7 K, has been investigated using electrical resistivity, magnetization and dilatometry techniques. To study dilution effects, two solid solutions of PrCu_2 , $(\text{Pr}_{0.8}\text{La}_{0.2})\text{Cu}_2$, and $(\text{Pr}_{0.8}\text{Y}_{0.2})\text{Cu}_2$, were also studied. The quadrupolar transition decreases in temperature with doping, while it increases slightly with the magnetic field. In resistivity and thermal expansion, the magnetic contributions show a clear evidence of crystal field excitations. The analysis of both properties provided benchmark values of the Debye temperature and Grüneisen parameters.

Key words: Quadrupolar Effects, PrCu_2 , Magnetic Properties, Electrical Resistivity, Crystal Field