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Transport and thermodynamic properties of UFe2Zn20

Transport and thermodynamic properties of UFe2Zn20

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Ternary rare-earth-based intermetallic compounds RT2M20 (R = Ce, Gd, Yb; T = d-electron transition metal; M = Z
Similar compounds with uranium and zinc were reported to form with T = Fe, Co, Ru, Rh, Ir [6-9]. They exhibit a v
Single crystals of UFe2Zn20 were grown in Zn flux. The obtained crystals were well-developed cubes with the dir
The temperature variation of the specific heat of UFe2Zn20 is shown in Fig. 1. In agreement with the magnetic da
Fig. 2 displays the temperature dependence of the electrical resistivity of UFe2Zn20. At room temperature the r
To summarize hitherto findings, UFe2Zn20 seems to be a novel paramagnetic moderately-enhanced heavy-fermion sy

Fig. 1. Temperature dependence of the specific heat of single-crystalline UFe2Zn20. The inset shows the heat capacity data in the form C/T vs. T2. The dashed line emphasizes the linear dependence.

Fig. 2. Temperature variation of the electrical resistivity of single-crystalline UFe2Zn20 (note semilogarithmic scale). The solid and dashed curves mark the Fermi-liquid- and Kondo-like behaviors at low and ambient temperatures, respectively.

References

[1] S. Niemann et al., J. Solid State Chem. 114, 337 (1995).
[2] O. Moze et al., J. Alloys Compd. 268, 39 (1998).
[3] N. Gross et al., J. Solid State Chem. 161, 228 (2001).
[4] S. Jia et al., Phys. Rev. B 77, 104408 (2008).
[5] S. Jia et al., Phys. Rev. B 80, 104403 (2009).
[6] A. P. Goncalves et al., J. Alloys Compd. 271-273, 456 (1998).
[7] E. D. Bauer et al., Phys. Rev. B 74, 155118 (2006).
[8] E. D. Bauer et al., J. Magn. Magn. Mater. 449-451, 310 (2007).
[9] E. D. Bauer et al., Phys. Rev. B 78, 115120 (2008).

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