

**THERMAL HYSTERESIS OF THE PHASE TRANSITION
TEMPERATURE OF SINGLE CRYSTALLINE GdB₆**

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The intermetallic compounds REB_6 type crystallize in the cubic CaB_6 structure. They display a great diversity of magnetic phenomena. Among them GdB_6 is interesting because of two magnetic transition at low temperatures. Recently, a detailed X-ray scattering study of the phase transition showed 2 new wave vectors at low temperatures [1]. We have studied the phase transition on the single crystalline sample of GdB_6 , oriented along $\langle 111 \rangle$ axis using the temperature dependence of electrical resistivity, heat capacity and susceptibility under an applied magnetic field. The temperature dependence of the electrical resistivity $\rho(T)$ has shown 2 anomalies - a sharp drop at $T_N = 15$ K and a small maximum at $T_2 = 9$ K (when cooling down), as previously reported. However, the clear thermal hysteresis occurred at transition temperature T_2 . When heating up the transition is shifted to $T_2 = 8.5$ K. Heat capacity $C(T)$ shows a sharp peak at T_N which was practically unaffected by an applied magnetic field up to 9 T. At the second transition temperature T_2 the heat capacity shows a small maximum which position shows the thermal hysteresis behaviour. Moreover, this maximum is shifting its position to lower temperatures and vanishing with increasing magnetic field. Our measurements confirm the variety and complexity of magnetic phase diagram of GdB_6 . [1] D.F. McMorrow et al., Physica **B345** (2004) 66

9.7 cm

13.4 cm

Subject category :

4. Rare Earths and Actinides, Alloys and Compounds

Presentation mode :

poster

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