9.7 cm

SPECIFIC HEAT STUDIES OF S=1 HEISENBERG PLANAR ANTIFERROMAGNETIC CHAIN $Ni(C_{11}H_{10}N_2O)_2Ni(CN)_4$

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In this work we discuss the results of experimental studies of specific heat of chain compound $Ni(C_{11}H_{10}N_2O)_2Ni(CN)_4$, which were performed in the temperature range 100mK-10K. We have observed a Schottky type anomaly at $T = 2.2K$ in temperature dependence of specific heat and the compound was identified as S=1 Heisenberg antiferromagnetic chain with subcritical exchange coupling $D/k_B = 5K$, $D/|J| = 11$ and strong in-plane anisotropy $E/k_B = 2.75K$. It has been found that in-plane anisotropy affects on the region of validity of a diluted excitons model [1] and strong coupling model [2] for S=1 Heisenberg chains with strong planar anisotropy. The analysis suggests that in-plane anisotropy should be considered in any attempt to find a compound potentially located in the boundary of Haldane and "large-D" phases.

[1] N. Papanicolaou, P. Spathis, J. Phys. Condens. Matter **2** (1990), 6575.
[2] N. Papanicolaou, P. Spathis, Phys. Rev. B **52** (1995), 16001.

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