$[Ni(Pr^{i}xa)_2(pyr)]_n$ - LOW - DIMENSIONAL $S = 1$ HEISENBERG MAGNET.

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9.7 cm

$[Ni(Pr^{i}xa)_2(pyr)]_n$ was previously identified as an $S = 1$ Heisenberg chain with intrachain interaction $J/k_B = -2.7$ K and subcritical single-ion anisotropy D [1]. Specific heat measurements conducted from 100 mK to 10 K in zero magnetic field revealed the presence of a λ-like anomaly, at $T_c = 2.2$ K, that can be associated with a phase transition to an ordered state. Magnetic entropy removed above T_c indicates a low-dimensional character of the magnetic system. Strong deviations between the specific heat data and the $S = 1$ Heisenberg chain model with various D/J ratios can be ascribed to the presence of a set of hydrogen bonds, mediating an additional exchange coupling J'. This interaction and the intrachain coupling J form a two-dimensional triangular $S = 1$ Heisenberg lattice that governs the magnetic behaviour above T_c.

[1] A. Orendáčová, M. Orendáč, Z. Trávníček, M.W. Meisel, phys. stat. sol. (a) 196 (2003) 278.

13.4 cm

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