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

A. Orendáčová\(^a\), A. Zorkovská\(^a\), J.-H. Park\(^b\), M. Orendáč\(^a\), Z. Trávníček\(^c\), A. Feher\(^a\) and M. W. Meisel\(^b\)

\(^a\)Faculty of Science, Institute of Physics, Centre of Low Temperature Physics, P.J. Šafárik University, Park Angelinum 9, 041 54 Košice, Slovakia

\(^b\)Department of Physics and Center for Condensed Matter Sciences, University of Florida, Gainesville, FL 32611-8440, USA

\(^c\)Department of Inorganic and Physical Chemistry, Palacký University, Křižkovského 10, 77 147 Olomouc, Czech Republic

[NI(Pr\(^{i}\)xa)\(_2\) (pyr)]\(_n\) was previously identified as an \(S = 1\) Heisenberg chain with intra-chain 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 \(\lambda\)-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 \(T_c\).