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Low temperature magnetic dynamics in one-dimensional Co(II) molecular chains A. AMJAD, Department of Physics, University of Central Florida, USA, G.M. ESPALLARGAS, J.M. CLEMENTE-JUAN, Instituto de Ciencia Molecular, Universidad de Valencia, Spain, R. KLEMM, E. DEL BARCO, Department of Physics, University of Central Florida, USA, E. CORONADO, Instituto de Ciencia Molecular, Universidad de Valencia, Spain, M. EVANGELISTI, ICMA, CSIC - Universidad de Zaragoza, Spain — We present a low-temperature study of one-dimensional Co-based molecular chains, trans-[$CoCl_2$(3,5-Br_2py)$_2$]. Ac and dc susceptibility experiments show that the cobalt ions tend to form anisotropic ferromagnetic chains, whose properties are dictated by the thermal excitations of 1D domain walls. The observation of anomalies in the hysteresis loops of the sample on increasing the magnetic field sweep rate reveals interesting dynamical effects at the individual chain level. On decreasing the temperature, no evidence for 3D ordering was observed in specific heat measurements, although the magnetization was strongly irreversible below ∼450 mK. Possible sources for this absence of a magnetic phase transition could be the weakness of the interchain interactions, the presence of single-ion anisotropy at skew angles, disordered domains, and lattice defects, etc. These possibilities will be studied both experimentally and theoretically.

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