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Specific Heat Studies of a New 2D S = 1/2 Heisenberg Antiferromagnet, $[Cu(pz)_2(2\text{-}OHpy)_2](PF_6)_2$ CHRISTOPHER LANDEE, Department of Physics, Clark University, PAUL GODDARD, Department of Physics, Oxford University, WILL BLACKMORE, Department of Physics, Warwick University — We report on the zero-field specific heat (0.3 – 300 K) of a highly two-dimensional Heisenberg, S = 1/2 antiferromagnet (2D QHAF), $[Cu(pz)_2(2\text{-}OHpy)_2](PF_6)_2$ (pz = pyrazine and 2-OHpy = 2-hydroxypyridine). The copper atoms and pyrazine molecules form square layers of pyrazine-bridged copper(II) ions with the pyridone molecules normal to the layers, providing exceptional spacing between layers. The magnetic specific heat of this compound corresponds to an exchange strength J = 6.6 K, in excellent agreement from the value deduced from susceptibility experiments. The Néel temperature of this compound has been found to be 1.37 K by muon spin relaxation .[1] The critical ratio $T_N/J = 1.37/6.6 \approx 2.1$ is the lowest value known for a molecular-based 2D QHAF and indicates a remarkable degree of isolation between the magnetic planes. [1] T. Lancaster, S. Blundell et al, private communication.

Christopher Landee
Department of Physics, Clark University

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