

Abstract Submitted
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An Experimental Analysis of $[(\text{CH}_3)_3\text{NH}]\text{CoCl}_3$ as a One-Dimensional Ising System Model¹ NICOLE BURNETT, MASOUD MARDANI, SHIVANI SHARMA, THEO SIEGRIST, National High Magnetic Field Laboratory — The room temperature single crystal structure of linear magnetic chain compound $[(\text{CH}_3)_3\text{NH}]\text{CoCl}_3$ is reported, along with low temperature magnetic susceptibility and heat capacity measurements. $[(\text{CH}_3)_3\text{NH}]\text{CoCl}_3$ single crystals were grown through slow evaporation and seed crystal methods. The compound crystallizes an orthorhombic structure with $a= 7.2716 \text{ \AA}$ $b= 8.0983 \text{ \AA}$ and $c= 16.6473 \text{ \AA}$, in accordance with previous literature¹. Small crystals grown initially via aqueous solvent evaporation were used to seed a supersaturated aqueous solution, resulting in crystals larger than previously reported. These crystals also experienced sensitivity to the Florida ambient, with crystals acquiring enough water from the humid air to dissolve. $[(\text{CH}_3)_3\text{NH}]\text{CoCl}_3$ is of interest because it structurally realizes a one-dimensional spin Ising system. The Ising model is investigated by heat capacity and magnetic susceptibility measurements, the latter by applying magnetic fields perpendicular to the c- and b-axis at low temperature, using a SQUID magnetometer.

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