

Abstract Submitted
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Deuterated vs Normal Hydrogen Magnetism of M (Mn,Co) Dichloride Monohydrate, and Crystal Structure S. PAGOLA, K.T. TROWELL, K.C. HAVAS, Z.D. REED, D.G. CHAN, G.C. DEFOTIS, College of William and Mary — Presented here are susceptibility data for fully deuterated forms of the title materials, and comparison with normal hydrogen forms. Also shown is the first structure determination for any monohydrate compound, for the Mn system with the simplest magnetic behavior to analyze. Interesting similarities and contrasts appear relative to normal hydrogen analogs. For the Co system the location of an enhanced susceptibility maximum, and its magnitude, match very well those of the normal hydrogen form. The deuterated Mn material shows a similar very broad susceptibility maximum as normal material, implying low-dimensional (probably $d=1$) magnetism, and with indication of a transition somewhat below $T(\text{max})$, presumably due to weak interchain interactions. But, the location of the maximum is at significantly lower temperature than in normal material, and the size is larger; both findings suggest a weaker intrachain interaction. Yet, the apparent transition, near 2.17 K, differs hardly at all in location from that in the normal material. The crystal structure determination for the normal Mn system provides the first evidence of a structural reason for the low dimensional magnetism observed, in that somewhat isolated magnetic chains are apparent.

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