

Abstract Submitted
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Magnetism of Co/Mn/Ni Dichloride Dihydrate¹ G.C. DEFOTIS, A.S. HAMPTON, J.M. POTHEN, T.J. WALLIN, E.A. WELSHHANS, K.C. HAVAS, K.T. TROWELL, College of William and Mary — Many unusual kinds of behavior have appeared in well selected binary magnetic mixtures. It is also of interest to explore suitable ternary mixtures. Surveyed here are magnetic susceptibility and magnetization measurements for a range of compositions of the title system. This is only the second ternary insulating mixed magnet to be examined with systematic composition variation. Intrachain exchange is ferromagnetic in the Co and Ni components and antiferromagnetic in the Mn (chemical/structural metal-dichloride...infinite chains). Interchain interactions are comparable in size to intrachain, and antiferromagnetic in each component. Competing interactions occur in mixtures, as well as different kinds of spin anisotropy. Remarkable variety appears in the form of susceptibility vs temperature plots for different compositions, reflecting effects of random mixing. Different compositions display a susceptibility maximum located differently from any pure component's, or two maxima, or no maximum. Magnetization vs field isotherms also display contrasting behavior for different compositions, and varying degrees of hysteresis.

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