

Abstract Submitted
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Composition dependent properties of mixed magnetic Fe/Ni dichloride dihydrate¹ G.C. DEFOTIS, M.G. KIM, D.G. CHAN, Z.D. REED, A.T. HOPKINSON, Y. MATSUYAMA, College of William and Mary — This mixed magnet is composed of two approximate 3D-Ising antiferromagnets ordering at 22.3 K (Fe component) and 7.3 K (Ni component). The pure substances also display metamagnetic transitions at low temperature near 39 kG (Fe) and 19 kG (Ni). Ferromagnetically coupled metal-dichloride-metal...chemical and structural chains occur in each component, with predominantly antiferromagnetic interchain interactions. Homogeneous mixtures have been obtained and examined by dc susceptibility and magnetization measurements over the entire composition range. Curie and Weiss constants are obtained from fits to high temperature data. In many mixtures two magnetic transitions at different temperatures are observed. In several mixtures marked nonlinearities in magnetization vs field appear, with significant temperature dependence, and suggestive of metamagnetic transitions with associated hysteresis. Most interestingly, the inferred transition fields are lower than those of either component. The overall behavior can be compared with that in the previously studied and closely related Co/Ni mixed system. Some similarities appear, but also notable differences.

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