

Condensed Matter Physics

STUDYING INTERCALATED LAYERED MAGNETIC COMPOUNDS WITH MONTE CARLO SIMULATIONS, B. Wandling,¹ M.W. Roth¹, T.E. Kidd¹, P.M. Shand¹ and L. Strauss², ¹*Department of Physics, University of Northern Iowa, Cedar Falls, IA 50614*, ²*Department of Chemistry, University of Northern Iowa, Cedar Falls, IA 50614* Faculty Sponsor email: rothm@uni.edu

We present the results of Monte Carlo simulations of intercalated manganese-titanium (Mg-Ti) layered crystals for monolayer as well as multilayer cases. Pure Mn coverage at 0.25 results in a ferromagnetic phase and introduction of any amount of Ti intercalant dramatically alters the magnetic behavior of the system. With pure Mn coverage of 0.3 the monolayer presents an antiferromagnetic phase which is altered through competition when multiple layers are introduced. Interesting topological features are present at intermediate densities and intercalant percentages, and the sensitivity of results to variation in the RKKY interaction wave vector are explored.

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