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Discovery of remarkably high magnetic ordering temperatures in dilute rare earth intermetallic compounds S. JIA, G.D. SAMOLYUK, NI NI, E-D. MUN, S.L. BUD'KO, P.C. CANFIELD, Ames Laboratory and Dept. of Physics and Astronomy, Iowa State University — Dilute, rare earth intermetallic compounds are ordered structures in which the rare earth comprises less than 5% atomic of the compound, but still fully occupies a unique crystallographic site. When none of the other elements are moment bearing, it is generally anticipated that such a compound will have magnetic ordering temperatures near 10 K for the R = Gd member of the series and systematically lower temperatures for heavier R members. In this talk we will present a series of dilute rare earth intermetallic compounds that have ferromagnetic ordering temperatures that range from $T_C \sim 90$ K for R = Gd to $T_C \sim 5$ K for R = Tm. The origin of this high ordering temperature as well as systematic trends across the series will be discussed.

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