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The effects of pressure and chemical substitution on the transition temperature and groundstate of Gd-based dilute rare earth intermetallic compounds P.C. CANFIELD, S. JIA, G.M. SAMOLYUK, S.L. BUD'KO, 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. We have investigated a family of Gd-based, ternary, dilute, rare earth intermetallic compounds in an attempt to understand the remarkably high ferromagnetic ordering found for some of the members (T_C as high as 90 K). By studies of the thermodynamic and transport properties as a function of temperature, field and hydrostatic pressure and combining these results with band-structure calculations we have been able to determine that some of these compounds have an enhanced DOS at the Fermi level that may be correlated with the enhanced ordering temperatures.

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