

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Magnetic Susceptibility Experiments on the Heavy Lanthanides Using Designer Diamond Anvils DAMON JACKSON, VINCE MALBA, SAMUEL WEIR, Lawrence Livermore National Laboratory, PAUL BAKER, YOGESH VOHRA, University of Alabama, Birmingham — The high pressure magnetic properties of the heavy lanthanide elements Gd, Tb, Dy, Ho, Er, and Tm have been investigated by ac magnetic susceptibility using designer diamond anvils. It is found that the magnetic transition temperatures monotonically decrease with increasing pressure. In addition, the amplitudes of the magnetic transition signals decrease with increasing pressure, with the signals all eventually disappearing at pressures by 20 GPa. The transition temperatures, T_{Crit} are all found to drop at a rate proportional to their de Gennes factor, and the values of $T_{Crit}/T_{Crit}(P = 0)$ vs P/P_{Crit} , where P_{Crit} is the pressure where the magnetic transition disappears, all sit on a single phase diagram.

Damon Jackson
Lawrence Livermore National Laboratory

Date submitted: 17 Nov 2005

Electronic form version 1.4