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Magnetic and Transport Studies in $\text{La}_x\text{Gd}_{1-x}\text{Rh}_3\text{B}_2$ and $\text{Ce}_x\text{Gd}_{1-x}\text{Rh}_3\text{B}_2$ ULHAS VAIDYA, S.K. DHAR, A. THAMIZHAVEL, S. RAMAKRISHNAN, A.K. GROVER, Dept. of CMP and MS, Tata Institute of Fundamental Research, Colaba, Mumbai, India — The nonmagnetic rare earth ternary boride LaRh_3B_2 , a hexagonal system of space group P6/mmm with CeCo_3B_2 type structure, is known to superconduct below $T_c(0) \sim 2.7$ K. When doped with Gd the $T_c(0)$ reduces and no superconductivity is observed above 1.2 K with more than 15% (atomic) doping. The alloys, $\text{La}_{0.8}\text{Gd}_{0.2}\text{Rh}_3\text{B}_2$ and $\text{La}_{0.6}\text{Gd}_{0.4}\text{Rh}_3\text{B}_2$ show a jump at ~ 70 K and rapid rise in magnetization below 10 K. However, no peaks are observed in at these temperatures in AC susceptibility which would have indicated magnetic ordering of the system. It is worth noting that GdRh_3B_2 orders ferromagnetically at ~ 93 K. We shall present results of our investigations, above 2 K, in magnetic and transport properties of polycrystalline specimens $\text{La}_x\text{Gd}_{1-x}\text{Rh}_3\text{B}_2$ ($0 < x < 1$). CeRh_3B_2 is a ferromagnet with $T_c \sim 115$ K. The results of Gd doping in this reveal the survival of antiferromagnetic coupling between Ce and Gd spins.

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