Effects of 3d-p hybrization on intersublattice exchange interactions in RCoB compounds

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Abstract: The strength of the intersublattice GdCo exchange-coupling parameter (A_{GdCo}) derived from different methods has been reported for the $Gd(Co_{1-x}B_x)_5$ intermetallics. As the B content increases, a tendency of A_{RCo} to decrease is found. This variation is compared with that observed for the Co magnetic moment. The results are related to the influence of the 3d-p hybridization on the 4f-3d coupling and discussed in terms of the magnetic valence concept. These discussions are extended to other GdCoB systems. ?? 1995.

Index Keywords: Boron; Cobalt; Crystal lattices; Electron energy levels; Magnetic anisotropy; Magnetic moments; Magnetization; Mathematical models; Rare earth elements; Systems (metallurgical); Hybridization; Intersublattice exchange interactions; Magnetic valence; Intermetallics

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