

CRYSTAL STRUCTURE AND ELECTRICAL RESISTIVITY OF GdNi_{5-x}Cu_x COMPOUNDS

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The effect of substitution of Cu for Ni on the lattice parameters and electrical resistivity of the polycrystalline GdNi_{5-x}Cu_x compounds has been studied. All investigated compounds crystallize in the hexagonal CaCu₅ type of crystal structure (space group P6/mmm). The compound GdNi₅ is a ferromagnet with T_C=32K where we have observed small negative *Ni 3d* band polarization and a small nickel moment is induced by exchange interactions with magnetic Gd. The compound GdCu₅ is considered as an antiferromagnet with T_N=26K. The influence of Cu substitution for Ni is reflected in both lattice parameters *a* and *c* as well as in the volume unit cell *V*. Quite peculiar behavior is observed in the temperature variation of the resistivity for Cu - rich compounds. At low temperatures especially below 30K the variation is quite unusual and is probably related to the incommensurate magnetic structure which arises from the weakly negative interaction between Gd nearest neighbours.

9.7 cm

13.4 cm

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