# Magnetic and electrical properties of the $R(Co, Si)_2$ compounds (R = Gd, Tb, Dy) with invariable crystal unit cell parameters

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Abstract: The invariable crystal unit cell parameter compounds $R(Co, Si)_2$ (R = Gd, Tb and Dy) have been studied by mean of the magnetization, ac susceptibility and resistivity measurements. By partial substitution Co by Si, the ordering temperature is almost constant for all of the considered compounds, whereas the reduction of the 3d magnetic moment is observed. In the condition of fixed volume, these findings suggest the important effects of the hybridization between the 3d states of Co and the p states of Si. The anomalies of magnetization, susceptibility, resistivity and the character of the magnetic phase transition at $T_c$ are also discussed for the compounds with Dy.

Index Keywords: Dysprosium alloys; Electric conductivity measurement; Electron energy levels; Gadolinium alloys; Magnetic moments; Magnetic permeability measurement; Magnetization; Phase transitions; Terbium alloys; Thermal effects; Hybridization; Invariable crystal unit cell parameters; Rare earth alloys

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