

Temperature dependence of the electrical resistivity and the magnetization in $\text{RuSr}_{2-x}\text{Ca}_x\text{GdCu}_2\text{O}_8$ ($x=0, 0.1, 0.3, 2.0$)

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In $\text{RuSr}_{2-x}\text{Ca}_x\text{GdCu}_2\text{O}_8$, it was found that the magnetization ($=M$) decrease with the increase of x from 0 to 0.3 viceversa the electrical resistivity ($=\rho$) and then M drastically and perpendicularly arise from the transverse (as referred to temperature ($=T$)) for $x=2$ as well as ρ , however the arising positions of M and ρ in terms of T are different. These matters are very intriguing, so the author inferred from the pattern of X-ray powder diffraction and the temperature dependence of ρ , M that these occurred due to the impurity originated, the distortion of the crystal structure with the substitution of Ca for Sr and the double exchange interaction with the ferromagnetic transition of Ru ion.