

Structural, electrical and magnetic study of $\text{RuSr}_2\text{Gd}_{1.4}\text{Ce}_{0.6}\text{Cu}_2\text{O}_{10-\delta}$

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Coexistence of superconductivity and ferromagnetism in a hybrid ruthenate-cuprate $\text{RuSr}_2\text{Gd}_{1.4}\text{Ce}_{0.6}\text{Cu}_2\text{O}_{10-\delta}$ (Ru,Gd-1222) with layered perovskite structure has attracted a great deal of interest in the properties of this material. Here we are reporting the low field magnetoresistance in Ru,Gd-1222. The polycrystalline samples of Ru,Gd-1222 were prepared through solid state reaction method. The four-probe resistivity-temperature (ρ -T) measurements show metallic normal state resistivity with superconducting transition at 25 K. Magnetization measurements with respect to field and temperature were performed by using a SQUID magnetometer. The magnetization (M)-temperature (T) measurement reveals magnetic transitions (T_{mag}) at 105 K. The magnetization (M) vs field (H) hysteresis at 5 K showed the ferromagnetic behavior of the samples. The zero field cooled magnetization and field cooled magnetization diverges at 93 K. MR measurements were carried out at different temperatures (24 K, 50 K, 100 K and 200 K) by using applied magnetic fields in the range from -7.5 to $+7.5$ kOe. A clear hysteresis was observed in the magnetoresistance data. The samples show negative magneto resistance at all temperature except in superconducting state.