

Structural and magnetic properties of Cu-doped manganites

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The effects of Cu doping at the Mn site on the structural, the magnetic and the transport properties of electron-doped manganites $\text{La}_{0.85}\text{Te}_{0.15}\text{Mn}_{1-x}\text{Cu}_x\text{O}_3$ ($0 \leq x \leq 0.20$) have been investigated. Based on the analysis of the structural parameters, the valence state of Cu ion in the Cu-doped manganites is suggested to be +2. All the samples undergo the paramagnetic-ferromagnetic (PM-FM) phase transition. The Curie temperature T_C decreases and the transition becomes broader, with increasing the Cu doping. The magnetization of Cu-doped samples at low temperatures increases as x decreases below $x = 0.15$. The insulator-metal (I-M) transition moves to a lower temperature with increasing the Cu content and disappears at $x \geq 0.1$. In addition, the double-peak-like structures, observed on the resistivity curve, (T), for the sample without Cu doping, are completely suppressed as the Cu-doping level exceeds $x = 0.1$, and the (T) curve shows only a single I-M transition at a low temperature well below T_C . The results are discussed in terms of change of the magnetic exchange interaction, caused by the Cu doping.