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Substitution dependence of magnetoresistance in sol–gel-derived $La_{2/3-x}Tl_xCa_{1/3}MnO_{3-\delta}$

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Abstract

We have fabricated a series of bulk samples of $La_{2/3-x}Tl_xCa_{1/3}MnO_{3-\delta}(0.0 \leqslant x \leqslant 0.20)$ by sol–gel process and studied their magnetization M and magnetic field dependence of resistivity in the temperature range $77 \leqslant T \leqslant 300$ K. The MR properties of these specimens were characterized to be broad, rather than a sharp as in a typical CMR material, which was explained by magnetic inhomogeneity.

Keywords: Colossal magnetoresistance; Manganite; Sol–gel process; Magnetic inhomogeneity