STRUCTURE, TOLERANT FACTOR AND PROPERTIES OF $(La_{0.7}Ca_{0.3})_{1-x}Mn_{1+x}O_3$ MAGNETORESISTIVE MATERIALS

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9.7 cm

The structure and properties of $(La_{0.7}Ca_{0.3})_{1-x}Mn_{1+x}O_3$ $(0 \leq x \leq 0.3)$ single-phase ceramic samples were investigated by X-rays, NMR on ^{55}Mn, magnetoelectical methods. Tolerant factor (t) calculated for ideal and real radiuses of ideal and defect lattices was monotonous decreased at x increasing. Wide NMR spectra ^{55}Mn testified about different valent states of ions Mn^{3+}-Mn^{4+}. There is a high-frequency electron exchange between them. The amplitude of NMR spectrum practically was not depend on composition, and spectrum width, ΔF, was monotonous decreased at x increasing. At x increasing the temperature of magnetoresistance peak, $\Delta R/R_0$, measured under 5 kOe, was not changed practically (T_p=265 K). Magnetoresistance at that was grown 2 times. The correlation between x, t_r, ΔF and $\Delta R/R_0$ was most clearly displayed at the account of real ion radiuses, moreover, with different coordination number (12, 9, 8, 6) of defect lattice contained simultaneously cationic and anionic vacancies.

13.4 cm

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