Neutron diffraction study of crystal and magnetic structure of $(La_{0.7}Ca_{0.3})_{1-x}Mn_{1+x}O_3$ $(x = 0, 0.1)$ compounds

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9.7 cm

Evolution of crystal and magnetic structures of $(La_{0.7}Ca_{0.3})_{1-x}Mn_{1+x}O_3$ $(x = 0, 0.1)$ was determined as a function of temperature. For both compounds the crystal structure is orthorhombic (space group Pnma) with the following sequence of the lattice constants $b/\sqrt{2} < a < c$ for x=0 and $c < a < b/\sqrt{2}$ for x=0.1. The para-ferromagnetic transition at T 260 K is accompanied by structural distortions. For x=0 the ferromagnetic ordering of the Mn moments equal 3.6(1) μ_B, is stable in the temperature range from 1.5 K up to T_c=265 K. For x=0.1 at 1.5 K the magnetic order is complex, with the ferromagnetic (μ=3.5(1) μ_B) and modulated (0.5(1) μ_B) component. This order is stable up to 45 K. Then up to T_c=260 K the ferromagnetic order exists. The obtained results correlate well with the macroscopic magnetic data [1].

Reference.

[1] V. Dyakonov et al., J. Magn. Magn. Mater. (in press).

13.4 cm

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