

**COMPARISON OF FEATURES OF STRUCTURAL TRANSITIONS IN $\text{LaMnO}_{3+\delta}$
AND $\text{La}_{1-x}\text{Sr}_x\text{MnO}_{3+\delta}$ ($x = 0.05 - 0.2$)**

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The features of the structural transformations in $\text{La}_{1-x}\text{Sr}_x\text{Mn}_{0.98}\text{Fe}_{0.02}\text{O}_{3+\delta}$ ($x = 0.05 \div 0.20$) depending on the Sr concentration have been investigated by Mössbauer spectroscopy and X-ray diffraction analysis. The features of the phase formation and suppression in the basic compound $\text{LaMn}_{0.98}\text{Fe}_{0.02}\text{O}_{3+\delta}$ and in $\text{La}_{1-x}\text{Sr}_x\text{Mn}_{0.98}\text{Fe}_{0.02}\text{O}_{3+\delta}$ have been compared and both their common regularities and the essential distinctions between themselves have been revealed.

In undoped $\text{LaMnO}_{3+\delta}$ with the stoichiometric composition (*PnmaII* phase, $\delta = 0$) all lattice positions are occupied and only Jahn-Teller Mn^{3+} ions are present. Under oxidation a part of Mn^{3+} transfers to Mn^{4+} and additional oxygen ($\delta > 0$) occupies interstitial positions in the lattice notably distorting it. As the Mn^{4+} concentration increases, phase transitions appear.

Doping with Sr^{2+} occupying La^{3+} sites results in an appearance of vacant oxygen sites in the lattice. Therefore a part of Mn^{3+} ions transfers to Mn^{4+} ions already during synthesis and additional oxygen occupies vacant oxygen sites in the lattice. As the Sr^{2+} concentration increases, the concentration of Mn^{4+} ions and additional oxygen in lattice sites increases that leads to a decrease in an amount of interstitial oxygen and, correspondingly to a decrease in lattice distortions related to it and in the value of quadrupole splitting.

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