

Structural Phase Transition of $\text{La}_{0.815}\text{Ba}_{0.185}\text{MnO}_3$ studied by X-ray Diffraction and the Maximum Entropy Method

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$\text{La}_{0.815}\text{Ba}_{0.185}\text{MnO}_3$ (rhombohedral, spacegroup R-3c) has been studied as one of the compounds in which the colossal magnetoresistance (CMR) effect occurs. Physical properties are often found to be strongly related to the structures of CMR compounds. For $\text{La}_{0.815}\text{Ba}_{0.185}\text{MnO}_3$ a metal-insulator transition and CMR take place at $T_c=251\text{K}$ [1,2]. A first-order structural phase transition takes place at $T\approx 196\text{K}$. At the latter temperature, anomalies in both resistivity and magnetization temperature dependency have been observed. We present the results of accurate structure determinations at several temperatures between 160 and 293K by single-crystal x-ray diffraction, in order to characterize the low temperature phase. To further clarify the structural changes as a function of temperature we have analyzed the diffraction data by the Maximum Entropy Method (MEM) [3] in a small temperature range close to the phase transition.

[1] Arkhipov V.E., et al., *Phys. Rev. B*, 2000, **61**, 11229. [2] Mukovskii Ya., et al., *J. Alloys and Compounds*, 2001, **326**, 108-111. [3] Smaalen S.V., Palatinus L., Schneider M., *Acta Cryst. A*, 2003, **59**, 459-469.

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