

Thermal and magnetic properties of $\text{Sr}_{1-x}\text{Ba}_x\text{Mn}_{1-y}\text{Ti}_y\text{O}_3$ (with $x \geq 0.43$ and $y \geq 0$) multiferroics

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The $\text{Sr}_{1-x}\text{Ba}_x\text{Mn}_{1-y}\text{Ti}_y\text{O}_3$ manganites attract interest because of their multiferroic properties, i.e., the coexistence of magnetically ordered phase and ferroelectric phase. Comparative specific heat and magnetization studies were performed for several compounds with different x and y values. The studies were aimed at explaining an influence of the barium content and the titanium content on thermal and magnetic properties of these compounds. The specific heat studies were performed over the temperature range 2 – 395 K, in the magnetic field up to 5 T. The magnetization studies were performed over the temperature range 3 – 400 K, in the magnetic field up to 9 T. Lattice and magnetic contributions to the specific heat were separated and described theoretically. The temperature of the phase transition to the magnetically ordered phase was determined for studied compositions. Specific heat anomaly accompanying this transition was analyzed. The influence of magnetic field on this phase transition was also investigated.