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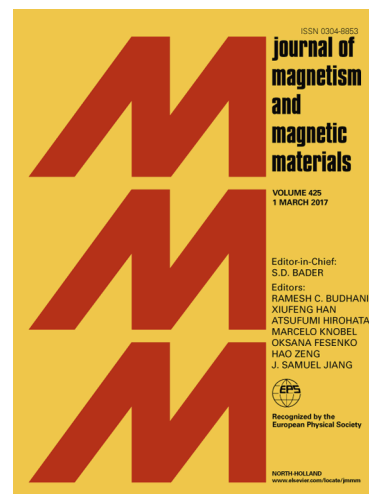
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Effect of sodium deficiency on the critical behavior near the paramagnetic to ferromagnetic phase transition temperature in $La_{0.8}Na_{0.2-x}MnO_3$ oxides.

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Abstract

The critical behavior associated with the magnetic phase transition has been investigated by in $La_{0.8}Na_{0.2-x}MnO_3$ ($0.00 \leq x \leq 0.15$) (x is the sodium deficiency). The critical exponents are estimated by various techniques such as the Modified Arrott plot, Kouvel–Fisher plot and critical isotherm technique. Compared to standard models, the critical exponent values determined in our work are close to those expected by the Tricritical model ($\beta = 0.25$, $\gamma = 1$, and $\delta = 5$) for $x = 0.00$ and 0.05 samples and by mean field theory ($\beta = 0.5$, $\gamma = 1$, and $\delta = 3$) for $x = 0.10$ and 0.15 samples. We conclude that the Na deficiency rate affect the critical exponents.

Keywords: Manganites; phase transition; critical behavior,

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