

# Some properties of La-deficient $\text{La}_{0.54}\text{Ca}_{0.32}\text{MnO}_{3-\delta}$

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Abstract: A La-deficient sample of  $\text{La}_{0.54}\text{Ca}_{0.32}\text{MnO}_{3-\delta}$  was prepared by the solid-state reaction method. The Curie temperature  $T_C$  equals 300 K, which is significantly higher than those of the  $\text{La}_{1-x}\text{Ca}_x\text{MnO}_{3-\delta}$  system. The magnetic-entropy change reaches a maximum value of  $-\Delta S_M = 5.5 \text{ J/kg K}$  at the Curie temperature upon a 5 T magnetic field variation. A saturation magnetic moment  $\sigma_S = 2.99 \mu_B/\text{f.u.}$  at 5 K has been derived from the magnetization data. Values of 0.0230 and 0.441 for the oxygen deficiency  $\delta$  and the ratio of  $\text{Mn}^{3+}/\text{Mn}^{4+}$ , respectively, have been determined. From our study, it is suggested that this compound is a suitable candidate for application as a working substance in magnetic refrigeration. © 2003 Elsevier Science B.V. All rights reserved.

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