

Large magnetocaloric effect in $\text{La}_{0.845}\text{Sr}_{0.155}\text{M}_{1-x}\text{O}_3$ (M = Mn, Cu, Co) perovskites

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Abstract: We present the results of an investigation on the magnetocaloric effect in the perovskites of $\text{La}_{0.845}\text{Sr}_{0.155}\text{M}_{1-x}\text{O}_3$ (M = Mn, Cu, Co). It is found that there was a large magnetic entropy change, i.e. a large magneto-caloric effect, in all these samples. Among them, the magnetic entropy change reaches a maximum value of 2.67 J/kg K at the applied field of 13.5 kOe for the Cu-doped sample, suggesting that this material would be a suitable candidate for the advanced magnetic refrigeration technology. The large magnetic entropy change produced by the abrupt reduction of magnetization is attributed to the strong coupling between spin and lattice that occurs in the vicinity of the ferromagnetic-paramagnetic transition temperature (T_C) - which is experimentally verified by electron paramagnetic resonance study. ?? 2004 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.

Year: 2004

Source title: Physica Status Solidi (B) Basic Research

Volume: 241

Issue: 7

Page : 1744-1747

Cited by: 18

Link: Scopus Link

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ISSN: 3701972

DOI: 10.1002/pssb.200304587

Language of Original Document: English

Abbreviated Source Title: Physica Status Solidi (B) Basic Research

Document Type: Conference Paper

Source: Scopus

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