Large magnetic-entropy change above 300 K in CMR materials

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Abstract: A large magnetic-entropy change ??S_M associated with the ferromagnetic-paramagnetic transition in CMR materials ($La_{0.65}Sr_{0.35}MnO_3$, $La_{0.6}Sr_{0.2}Ca_{0.2}MnO_3$, $La_{0.6}Sr_{0.2}Ba_{0.2}MnO_3$ and $La_{0.7}Ca_{0.06}Ba_{0.24}MnO_3$) has been observed. It is shown that the ??S_M reaches a maximum value of 2.26J/kg/K for $La_{0.6}Sr_{0.2}Ba_{0.2}MnO_3$ composition at Curie temperature of 354 K, upon 10 kOe applied field variation. Due to the large ??S_M and high Curie temperature, these CMR materials are suggested to use as active magnetic refrigerants for magnetic refrigeration technology above room temperature. ?? 2002 Elsevier Science B.V. All rights reserved.

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