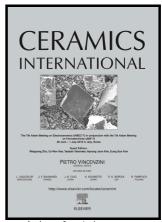
Author's Accepted Manuscript

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www.elsevier.com/locate/ceri

PII: S0272-8842(16)31653-4

DOI: http://dx.doi.org/10.1016/j.ceramint.2016.09.122

Reference: CERI13782

To appear in: Ceramics International

Received date: 29 July 2016

Revised date: 16 September 2016 Accepted date: 18 September 2016

Cite this article as: S. Tarhouni, A. Mleiki, I. Chaaba, H. Ben Khelifa, W. Cheikhrouhou-Koubaa, M. Koubaa, A. Cheikhrouhou and E.K. Hlil, Structural magnetic and magnetocaloric properties of Ag-doped $Pr_{0.5}Sr_{0.5-x}Ag_xMnO$ manganites $(0.0 \le x \le 0.4)$, *Ceramics International* http://dx.doi.org/10.1016/j.ceramint.2016.09.122

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Structural, magnetic and magnetocaloric properties of Ag-doped $Pr_{0.5}Sr_{0.5-x}Ag_xMnO_3 \ manganites \ (0.0 \le x \le 0.4)$

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Abstract

The effects of partial silver substitution on the structural, magnetic and magnetocaloric properties of $Pr_{0.5}Sr_{0.5}._xAg_xMnO_3$ ($0.0 \le x \le 0.4$) compounds have been studied. Our powder specimens are synthesized using the sol-gel method at high temperatures. X-Ray diffraction study reveals that all compounds crystallize in the distorted orthorhombic symmetry with Pbnm space group. Magnetization measurements versus temperature under 0.05 T reveal the presence of an antiferromagnetic (AFM) to ferromagnetic (FM) transition at low temperatures for the parent compound, followed by a second one from FM to paramagnetic state (PM). Ag doping is found to reinforce the FM behavior with a Curie temperature (T_C) increasing from 268 (x = 0.0) to 305 K(x = 0.2). However, for higher Ag amount, T_C decreases again from 285 K (x = 0.3) to 170 K (x = 0.4). The maximum of the magnetic entropy change ($-\Delta S_M^{nux}$) was calculated using the isothermal magnetization curves M (H) under magnetic field change of 5 T and is found to be 4.7 J/(kg K) for x = 0.3. The relative cooling power (RCP) turns out to be 188 J/kg and 229J/kg for x = 0.0 and x = 0.1, respectively. This suggests that these compounds may be suitable candidates for magnetic refrigeration.

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