Divalent manganese in A -position of perovskite cell: X-ray absorption finite structure study of $La_{0.6}Sr_{0.4-x}MnTi_xO_3$ manganites

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Abstract: Local structure and magnetic properties of Ti doped A -site deficient La0.6 Sr0.4-x Mn Tix O3+?? manganites (0.15x0) have been studied. The compositions belong to rhombohedral R 3- c phase. Segregation of (La0.6 Sr0.4-x Mny) (Mn1-y-z Tix) O3+?? phase and fallout of (z3) Mn3 O4 oxide was observed with x increase. Some amount (y) of Mn, being in divalent valence state, occupies the A (=La,Sr) -position of perovskite cell. Samples with x=0 and 0.05 are ferromagnetic with Curie temperature TC =350 and 172 K, respectively. Samples with x=0.1 and 0.15 are in spin(cluster)-glass states at low temperatures. ?? 2008 American Institute of Physics.

Index Keywords: Doping (additives); Lanthanum compounds; Magnetic properties; Perovskite; Valence bands; Divalent manganese; Divalent valence state; X-ray absorption finite structure; Manganites

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