The concentration dependence of the Curie temperature of the colossal magnetoresistance perovskite $La_{1-x}Ca_xMnO_3$

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Abstract: The concentration dependence of the Curie temperature of the colossal magnetoresistance perovskite $La_{1-x}Ca_xMnO_3$ was studied. A phenomenological model was used for interacting electronic and magnetic-phase transitions. The results shows that in the doping range most of these perovskites undergo a paramagnetic (PM) insulator/semiconductor to ferromagnetic (FM) metal phase transition upon cooling.

Author Keywords: CMR; Magnetic perovskite; Phase transition

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References:

1. Rao, C.N.R., Raveau, B., (1998) Colossal Magnetoresistance, Charge Ordering and Related Properties of Manganese Oxides, , World Scientific, Singapore
2. Lyuksyutov, I.F., Pokrovsky, V., /Cond-Mat/9808248, Vol. 1, 1998Millis, A.J., Shraiman, B.I., Muller, B.I., (1996) Phys. Rev. Lett., 77, p. 175
3. Jaime, M., Salamon, M.B., (1999) Physics of Maganites, , T.A. Kaplan, S.D. Mahanti (Eds.), Kluwer Academic/Plenum Publishers, Dordrecht/New York
4. Moshalkov, V.V., (1987) JETPh Lett., 45, p. 181. , in Russian
5. Damay, F., Nguyen, N., Maignan, A., Hervieu, M., Reveau, B., (1996) Solid State Commun., 98, p. 997
6. Emin, D., (1993) Phys. Rev. B, 48, p. 13691
7. Patashinski, A.Z., Pokrovsky, V.L., (1980) Fluctuation Theory of Phase Transitions, , Moscow: Mir. in Russian
8. Ramirez, A.P., (1996) Phys. Rev. Lett., 76, p. 3188