



ELSEVIER

Journal of Magnetism and Magnetic Materials 242–245 (2002) 692–694

M Journal of
M magnetism
M and
magnetic
materials

www.elsevier.com/locate/jmmm

Magnetic properties of LCMO deposited films

Seung-Iel Park^{a,*}, Kwang Ho Jeong^a, Young Suk Cho^b, Chul Sung Kim^b

^a*Institute of Physics and Applied Physics, 134 Shinchon-dong, Sudaemoon-ku, Yonsei University, Seoul 120-749, South Korea*

^b*Department of Physics, Kookmin University, Seoul 136-702, South Korea*

Abstract

La–Ca–Mn–O films were deposited with various thickness (500, 1000 and 1500°C) by RF-magnetron sputtering at 700°C and by the spin coating of sol–gel method at 400°C on LaAlO₃(1 0 0) and Si(1 0 0) single-crystal substrates. The crystal structure and chemical composition of the film grown by RF sputtering method were orthorhombic and La_{0.89}Ca_{0.11}MnO₃, respectively, while the film prepared by sol–gel spin coating was cubic with La_{0.7}Ca_{0.3}MnO₃. The temperature dependence of the resistance for the film grown by RF sputtering method with the thickness of 1000°C shows that a semiconductor-metal transition occurs at 242 K. The relative maximum magnetoresistance is about 273% at 226 K. © 2002 Elsevier Science B.V. All rights reserved.

Keywords: Perovskite structure; Magnetoresistance; RF sputtering; Sol–gel method; Epitaxy
