

Abstract Submitted
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Transport Properties and X-ray Absorption Spectroscopy in Layered Cobaltate Na_xCoO_2 thin films W. J. CHANG, Department of Electrophysics, National Chiao Tung University, J. Y. JUANG, J.-Y. LIN, Institute of Physics, National Chiao Tung University, C. M. LEE, C.-M. HUANG, J. M. CHEN, C.-H. HSU — Na_xCoO_2 ($x \sim 0.7$) thin films (~ 200 nm) were fabricated on sapphire (0001) substrates via lateral diffusion of sodium into Co_3O_4 (111) epitaxial films. From the results of x-ray diffraction and in-plane resistivity ρ_{ab} , the single phase and the metallic behaviors of these Na_xCoO_2 films were identified, and consisting with the results of single crystals [1] and Ohta's films [2]. The anomalous Hall effect and the magnetoresistance were also measured in Na_xCoO_2 thin films. In addition, the O 1s x-ray absorption spectra of thin films show different anisotropy to those of single crystals. The electronic structures of Na_xCoO_2 single crystals and thin films will be discussed to investigate the splitting of e_g and t_{2g} states in Co 3d bands of Na_xCoO_2 thin films. *This work was supported by the National Science Council of Taiwan, under Grant Nos. NSC-94-2112-M-009-006. [1] Maw Lin Foo *et al.*, Phys. Rev. Lett. **92**, 247001 (2004). [2] Hiromichi Ohta *et al.*, Crystal Growth & Design **5**, 25 (2005).

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