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Pulsed laser deposition growth and transport studies of superconducting $La_{1.85}Y_{0.15}CuO_4$ thin films WEIQIANG YU, B. LIANG, P. LI, R. L. GREENE, Center for Superconductivity Research, Department of Physics, University of Maryland, College Park, MD 20742, S. FUJINO, T. MURAKAMI, I. TAKEUCHI, Department of Material Science and Engineering, University of Maryland, College Park, MD 20742 — The recent MBE growth of the "nominally undoped" cuprate superconductor $(La,RE)_2CuO_4$ has led to the speculation that this system is a band metal and not a "doped Mott insulator" as found in all other superconducting cuprates [1]. Here we report the first pulsed laser deposition (PLD) growth of insulating and superconducting $La_{1.85}Y_{0.15}CuO_4$ thin films, which are prepared under different oxygen conditions. We also report resistivity, Hall, Nernst, and magnetoresistance measurements, which show that $La_{1.85}Y_{0.15}CuO_4$ is an electron-doped, Mott-Hubbard system, where the carriers originate from oxygen nonstoichiometry produced by the oxygen reduction. This work is supported by NSF (DMR 0352735).

[1] A. Tsukada et al., Sol. Stat. Commu. 133, 427 (2005).

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