Electrical Transport Properties in Sr-doped Lanthanum Thin Films with Various Oxygen Contents

黃晨益、宋皇輝

E-mail: 381835@mail.dyu.edu.tw

ABSTRACT

In this study, we use a magnetron rf sputtering system to deposit Sr-doped lanthanum titanate thin films on SrTiO3 (100) substrate. After deposition, the samples were annealing in-situ with oxygen partial pressure set on 10*10^-5, 6*106-5, 4*10^-5, and < 2*10^-5 torr, respectively. The deposited films (Sr0.16La0.84TiO3+ δ) with different oxygen content were measured by a low-temperature resistance measurement system (RT system) to study the resistance behavior from 300 K to 78 K. The van der Pauw measurement method was used to determine the resistivity of samples. The results show that the conducting characteristics of films were depending on the annealing oxygen pressure. The thin film transport properties were related to the oxygen vacancies.

Keywords : Sr0.16La0.84TiO3+ δ 、RT system、resistivity、transport properties、oxygen vacancies

Table of Contents

封面內頁 簽名頁 中文摘要 . . . . iii 英文摘要. . . . . iv 誌謝 . . . . v 目錄. . . . . vi 圖目錄. . . . . ix 表目錄. . . . . xi 第一章　緒論 1.1 前言 . . . . 1 1.2 研究背景 . . . . 2 1.3 文獻回顧 . . . . 3 第二章　實驗背景 2.1 電阻率原理. . . . . 13 2.2 Van Der Pauw原理. . . . . 14 2.3 x-ray能量散佈分析儀(EDS)量測原理. . . . . . 15 2.4 霍爾量測原理. . . . . 16 第三章　樣品製備與量測 3.1 樣品製備. . . . . 20 3.1.1 靶材製備. . . . . 22 3.1.2 實驗流程. . . . . 26 3.1.3 實驗流程敘述. . . . . 27 3.2 量測儀器及量測方式. . . . . 28 3.2.1 場發射電子顯微鏡(FE-SEM). . . . . 28 3.2.2 X-ray能量散佈分析儀(EDS). . . . . 28 3.3 量測方式. . . . . 30 3.3.1 電性量測. . . . . 30 3.3.2 霍爾量測. . . . . 32 3.3.3 Van Der Pauw量測. . . . . 35 第四章　結果與討論 4.1 薄膜之成長參數與結構、成份分析. . . . . . . 37 4.2 薄膜傳輸特性. . . . . 42 4.3 薄膜之霍爾量測探討. . . . . 46 第五章　結論. . . . . 55 參考文獻. 56

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