Lattice Constant of Sr-doped Lanthanum Titanate Thin Films with Various Oxygen Contents

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ABSTRACT

In this study, Sr-doped LaTiO3(Sr0.16La0.84TiO3+ δ) thin films on SrTiO3(001) were fabricated by the RF magnetron sputtering system. The deposited Sr-doped lanthanum titanate films were annealed under different oxygen pressure (10-4 torr, 6*10-5 torr, 4*10-5 torr, and < 2*10-5 torr). Using X-ray θ -2 θ scan, the c-axis lengths of the films with different oxygen contents were investigated. Using X-ray asymmetry scans, the a-axis and b-axis of the films were investigated. Comparison between the calculated lattice constants of the films and the lattice constants of bulk materials will be discussed. Finally, we study the stress between substrates and films grown in different oxygen pressure by investigating the strains ε Ψ dependence of sin2Ψ.

Keywords : Sr0.16La0.84TiO3+ δ、lattice constant、epitaxial growth、oxygen content

Table of Contents

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