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**Epitaxial growth of the electron-doped  $\text{Sr}_{1-x}\text{La}_x\text{CuO}_2$  by magnetron sputtering** KEITA SAKUMA, HIROYUKI AKATSUKA, TETSUYA MIYAWAKI, KENJI UEDA, HIDEFUMI ASANO, Department of Crystalline Materials Science, Nagoya University — The electron-doped  $\text{Sr}_{1-x}\text{La}_x\text{CuO}_2$  (SLCO) has the simplest structure among high temperature superconductors (HTS). In addition, transition temperature of SLCO is the highest among electron-doped HTS. Therefore, SLCO is suitable for fundamental researches and electronic applications. Several groups reported growth of  $c$ -axis oriented SLCO thin films on various substrates, however  $a$ -axis oriented SLCO thin films, which are useful for superconductor junctions, have not been obtained. In this study, we deposited SLCO thin films on various substrates [(001)  $\text{KTaO}_3$ (KTO),  $\text{SrTiO}_3$ (STO), MgO and  $\text{LaAlO}_3$ (LAO)] by magnetron sputtering. KTO and STO have better lattice matching to SLCO[100] compared with MgO and LAO. SLCO thin films on KTO and STO were  $c$ -axis oriented. On the other hand, SLCO thin films on MgO and LAO were (101) and  $a$ -axis oriented, respectively. We considered that the differences of crystal orientations in these films were caused by lattice matching to the substrates. These results indicated that we can control crystal orientation of SLCO thin films using substrates with various lattice constants.

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