

Microstructural and Transport Properties of La_{0.7}Sr_{0.3}CoO₃ Thin Films Obtained by Metal-Organic Deposition

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Abstract : La_{0.7}Sr_{0.3}CoO₃ thin films have been epitaxially grown on LaAlO₃ and SrTiO₃ (001) single-crystal substrates by metal organic deposition process. The structural and micro structural properties of the obtained films have been investigated by means of high resolution X-ray diffraction, Raman spectroscopy and transmission microscopy observations on cross-sections techniques. We noted a close dependence of the crystallinity on the used substrate and the film thickness. By increasing the annealing temperature to 1000°C and the film thickness to 100 nm, the electrical resistivity was decreased by several orders of magnitude. The film resistivity reaches approximately $3\sim 4 \times 10^{-4} \Omega \cdot \text{cm}$ in a wide interval of temperature 77-320 K, making this material a promising candidate for a variety of applications.

Keywords : cobaltite, thin films, epitaxial growth, MOD, TEM

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