

BS02

Effect of Oxygen Partial Pressure on Electrical, Structural and Magneto-transport Properties of Pulsed Laser Deposited Thin Films of $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_{3-d}$ Films

V. S. Raghuvanshi, P. R. Sagdeo, R. J. Choudhary, and D. M. Phase

UGC-DAE Consortium for Scientific Research, Indore-452017, India

Thin films of $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ were deposited by Pulsed laser deposition, on LaAlO_3 [010] substrate. To study the effect of oxygen pressure on the electrical transport, structural and micro-structural properties, the deposition is done from 400mTorr to 0.1mTorr of oxygen. X-ray diffraction shows the oriented growth [001] for samples deposited at higher pressure ($400 \leq P \leq 100$) and the mixed phases at low pressures ($P \leq 10\text{mTorr}$). The resistivity measurements show the insulator to metal transition (IMT) for the samples deposited for higher pressure ($400 \leq P \leq 100$), where as the samples deposited at lower pressure does not show any IMT. The maximum magneto-resistance (MR) is observed near IMT temperature and there is a systematic shift in IMT temperature with oxygen partial pressure, i.e. with increase in the oxygen pressure the IMT temperature shifts towards the higher side. Thus it is possible to tune the IMT and MR by controlling the oxygen pressure during deposition.

BS03

Withdrawn