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Phase diagram of La1-xCaxMnO3 thin films in 0.40 = x = 0.45

D. SANCHEZ, L.E. HUESO, J.C. CHAPMAN, N.D. MATHUR, Department of Materials Science, University of Cambridge, Pembroke Street, Cambridge CB2 3QZ, UK — The $x - T$ phase diagram of $La_{1-x}Ca_xMnO_3$ films is expected to be very different from that of polycrystalline samples, due to epitaxial strain. Two series of films differing in composition by x=0.01 were prepared in the range 0.40 $\leq$ x $\leq$ 0.45 by pulsed laser deposition on $SrTiO_3$ (001) and $NdGaO_3$ (001) substrates. Ferromagnetism was found in all samples, with the ferromagnetic fraction decreasing with increasing x. Low temperature metallic behaviour was only observed for $x \leq$ 0.41.

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