

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Control of $\text{La}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ superstructure through epitaxial strain release¹ S. COX, E.J. ROSTEN, J.C. LOUDON, J.C. CHAPMAN, D.-J. KANG, M.J. CALDERON, P.B. LITTLEWOOD, P.A. MIDGLEY, N.D. MATHUR, University of Cambridge — Intergranular variations of superlattice periodicity in polycrystalline $\text{La}_{1-x}\text{Ca}_x\text{MnO}_3$ have been attributed to variations in strain. Here we control the superlattice periodicity within a continuous crystal. A focussed ion beam microscope (FIB) was used to pattern an electron transparent window in an untwinned coherently strained epitaxial thin film of $\text{La}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ grown on NdGaO_3 by pulsed laser deposition. It was found that the wavenumber could be reduced by 3% in regions isolated by cuts from the rest of the window. We attribute this variation to the release of epitaxial strain beyond the resolution of the electron microscope.

¹This work was funded by the UK EPSRC and the Royal Society

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Date submitted: 02 Dec 2004

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