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Direct evidence for the suppression of charge stripes in epitaxial $La_{5/3}Sr_{1/3}NiO_4$ thin films[1] CHANGKUN XIE, JOSEPH BUDNICK, BARRETT WELLS, Department of Physics, University of Connecticut, Storrs, CT 06269, FEIZHOU HE, Canadian Light Source, University of Saskatchewan, Saskatoon, Canada, ARNOLD MOODENBAUGH, Materials Science Department, Brookhaven National Lab, Upton, NY 11973 — We have successfully grown epitaxial $La_{5/3}Sr_{1/3}NiO_4$ films with a small crystalline mosaic using pulsed laser deposition. With synchrotron radiation, the x-ray diffraction peaks associated with charge stripes have been successfully observed for relatively thick films. Anomalies due to the charge-ordering transition have been examined using four-point probe resistivity measurement. We also have produced multilayer films with the same total thickness through the use of thin films $La_{5/3}Sr_{1/3}NiO_4$ alternating with $SrTiO_3$. A thorough search for the charge stripe peaks in the multilayers has been negative; the stripes appear to be suppressed for epitaxial thin films. This suggests that electron-lattice interactions are critical for the formation of stripe phases.

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