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Composition spread studies of (RE)NiO_3-$LaNiO_3$ thin films[1]
RICHARD SUCHOSKI, ICHIRO TAKEUCHI, University of Maryland, College Park - MSE, CNAM, KUI JIN, RICHARD GREENE, University of Maryland, College Park - Physics, CNAM — Epitaxial thin films of $La_xNd_{1-x}NiO_3$ and $La_xPr_{1-x}NiO_3$ were grown via pulsed laser deposition on $SrTiO_3$ (001) with an automated moving shutter system to create 100 nm thick composition spreads. These films have the advantage of providing a continuous spectrum of doping compositions at the same deposition conditions, such as temperature and oxygen pressure, without the need to prepare different stoichiometric targets or perform different depositions for desired compositions. Composition evolution is verified via wavelength dispersive spectroscopy, and x-ray diffraction mapping shows that the lattice constant of the film varies continuously from $LaNiO_3$ to $NdNiO_3$. Simultaneous measurements of resistance versus temperature down to 4.2 K across the spreads show evolution in transport behavior. The details will be discussed.

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