Abstract Submitted
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Epitaxial Stabilization of Ultrathin Rare-Earth Nickelates[1] D.J. MEYERS, E.J. MOON, M. KAREEV, University of Arkansas, I.C. TUNG, Northwestern University, B.A. GRAY, JIAN LIU, University of Arkansas, M.J. BEDZYK, Northwestern University, J.W. FREELAND, Advanced Photon Source, Argonne National Laboratory, J. CHAKHALIAN, University of Arkansas — The nickelate family of perovskite materials has attracted great attention in recent years due to the interesting range of properties they exhibit. In this talk we report on the successful synthesis of $EuNiO_3$, $YNiO_3$, and $PrNiO_3$ films grown by interrupted pulse laser epitaxy on various substrates. Investigation of the phase space of nickelate thin film epitaxy revealed a linear trend between the optimized growth temperature and the Goldschmidt tolerance factor. This correlation is explained through epitaxial stabilization and the increase of the lattice energy via distortion of the ideal perovskite cell. This explanation offers the additional benefit of not being restricted only to the nickelate perovskite family, giving it possible applicability for a wide range of perovskite-structured materials.

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