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Stoichiometry-Dependence of Electronic Properties in $LaVO_3$ Thin Films[1] BIWEN ZHANG, Florida State University, YAN XIN, National High Magnetic Field Laboratory, JADE HOLLEMAN, Florida State University, STEPHEN MCGILL, National High Magnetic Field Laboratory, CHRISTIANNE BEEKMAN, Florida State University — $LaVO_3$ (LVO) has been proposed as a promising material for photovoltaics because its strongly correlated 3d electrons can facilitate creation of multiple electron-hole pairs per incoming photon, which would lead to increased device efficiency. Our group grows thin films of LVO on $SrTiO_3$ substrates using pulsed laser deposition. We control the La:V ratio of the films from ˜60:40 to ˜40:60 by adjusting laser fluences. We find that while V-rich films show behaviors that are similar to bulk LVO, films that are La-rich show remarkable differences in optical measurements, and more rich temperature dependent transport behaviors, which indicates the presence of electronic phase separation. This study allows us to better understand the complex physical properties of strongly correlated insulators paving the way for their use as absorbers in high performance photovoltaics.

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