Structural and electronic response via oxygen vacancy control in 
\textbf{SrFeO}_3 \textbf{heterostructures} ALEX KRICK, EUN JU MOON, AMANDA HUON, 
STEVEN MAY, Drexel University — The electronic and structural properties of 
complex perovskite oxide thin films are often directly influenced by their oxygen va-
cancy concentration. Here, we investigate epitaxial films of SrFeO$_3$, which exhibits 
a variety of structural and electronic phases as a function of oxygen content. The 
ability to control these functional properties via temperature or external fields is 
not present in conventional semiconductors and is attractive from an application 
perspective. As-grown films are oxidized using a post-growth anneal in dilute ozone, 
yielding metallic behavior consistent with bulk SrFeO$_3$. X-ray diffraction and tem-
perature dependent resistivity collected at different stages of oxidation and reduction 
reveal minute structural transformations that yield large changes in electronic be-
havior due to oxygen loss.

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