

Abstract Submitted
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Effects of Strain in Highly Ordered $\text{Sr}_2\text{CrReO}_6$ Epitaxial Films¹ A.J. HAUSER, J.R. SOLIZ, M. DIXIT, R.E.A. WILLIAMS, M.A. SUSNER, B. PETERS, L.M. MIER, T.L. GUSTAFSON, M.D. SUMPTION, H.L. FRASER, P.M. WOODWARD, F.Y. YANG, The Ohio State University — $\text{Sr}_2\text{CrReO}_6$, a double-perovskite ferrimagnet, has attracted much attention because of its Curie temperature well above room temperature and predictions of half-metallicity. We have deposited pure-phase $\text{Sr}_2\text{CrReO}_6$ epitaxial films on several (001)-oriented substrates and buffer layers by ultrahigh vacuum off-axis magnetron sputtering, in order to study tensile and compressive strain effects due to lattice mismatches up to 1.5%. Triple-axis x-ray diffractometry was used in tandem with direct observations via HAADF STEM to confirm film epitaxy, phase purity, Cr/Re ordering, and strain via film lattice constants. Magnetic characterization shows a marked effect on the saturation magnetization due to strain, with slight changes in the Curie temperatures. Finally, electrical and optical characterization suggest that $\text{Sr}_2\text{CrReO}_6$ is a gapped material under both unstrained and strained systems, and will be discussed in detail as well.

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