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**Charge transfer and magnetism in $(LaNiO_3)_n/(LaMnO_3)_2$ superlattices** JASON HOFFMAN, Argonne National Laboratory, I-CHENG TUNG, Northwestern University, BRITTANY NELSON-CHEESEMAN, MING LIU, JOHN FREELAND, ANAND BHATTACHARYA, Argonne National Laboratory — Interfaces in solids have been an enduring them in materials physics, where dimensionality and proximity effects cooperate to create interfacial states that are distinct from their bulk counterparts. In this work, we investigate the interfacial ferromagnetism induced in the the paramagnetic metal $LaNiO_3$ via proximity to the antiferrmagnetic insulator $LaMnO_3$. We fabricated a series of $(LaNiO_3)_n/(LaMnO_3)_2$ ($2 \leq n \leq 5$) digital superlattices on (001) $SrTiO_3$ substrates using ozone-assisted molecular beam epitaxy. The total superlattice thickness is maintained at $\sim$30 nm by varying the number of superlattice periods. X-ray absorption and x-ray magnetic circular dichroism measurements at the Mn and Ni $L$-edges confirm the presence of charge-transfer at the $LaNiO_3/LaMnO_3$ interface, with magnetism residing on both Mn and Ni sites. Magnetotransport measurements performed on superlattices with $n \leq 3$ show insulating behavior between 5 K and 300 K, while samples with $n =$ 4,5 are metallic. We observe an anomalous Hall effect in the sample with $n = 4$, that vanishes in the more metallic $n = 5$ sample. We discuss possible models for the electronic and magnetic behavior of $LaNiO_3$.

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