

Abstract Submitted
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SrO(001) on graphene: a universal buffer layer for integration of complex oxides ADAM AHMED, The Ohio State University, HUA WEN, University of California Riverside, IGOR PINCHUK, TIANCONG ZHU, ROLAND KAWAKAMI, The Ohio State University — We report the successful growth of high-quality crystalline SrO on highly-ordered pyrolytic graphite (HOPG) and single layer graphene by molecular beam epitaxy. The epitaxial SrO layers have (001) orientation as confirmed by x-ray diffraction (XRD), and atomic force microscopy measurements show rms surface roughness of optimal films to be 1.2 Å. Transport measurements of exfoliated graphene after SrO deposition show a strong dependence between the Dirac point and Sr oxidation. To show the utility of SrO as a buffer layer for complex oxide integration, we grew perovskite crystal SrTiO₃ on SrO, and it was also confirmed to have (001) orientation from x-ray diffraction. This materials advancement opens the door to integration of many other complex oxides to explore novel correlated electron physics in graphene.

Adam Ahmed
The Ohio State University

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