

Abstract Submitted
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Scanning Tunneling Microscopy Study of Graphene/Cuprate Heterostructures. MINGHAO CHENG, ALEXANDER KERELSKY, XINJUE ZHONG, DA WANG, YUFENG HAO, JAMES HONE, XIAOYANG ZHU, AH-BAY PASUPATHY, Columbia Universtiy in the City of New York — We study the properties of single-layer graphene co-laminated to BSCCO-2212 single crystals using UHV-Low Temperature-STM. Samples were prepared by transferring large-area single layer graphene grown on copper substrate using the chemical vapor deposition to the freshly-cleaved surface of a BSCCO single crystal in an inert atmosphere. Under optimal conditions, the graphene acts as a protective film for the freshly-cleaved surface of BSCCO allowing for high-quality spectroscopic measurements to be performed subsequently. We will show evidence of this protection from topographic imaging of the BSCCO through the graphene monolayer. More interestingly, the d-wave superconductivity of BSCCO couples to the Dirac Fermions of graphene via the proximity effect. We will describe the signatures of this coupling as probed by point spectroscopy and spectroscopic imaging in the STM.

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