

Abstract Submitted
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Scanning tunneling microscopy on CVD grown lateral graphene molybdenum disulfide heterostructures ALEXANDER KERELSKY, MINGHAO CHENG, XINJUE ZHONG, XIAODONG ZHAO, ALI DADGAR, DA WANG, Columbia Univ, HUI GAO, MARCOS GUIMARAES, KIBUM KANG, Cornell Univ, XIAOYANG ZHU, Columbia Univ, JIWOONG PARK, Cornell Univ, ABHAY N. PASUPATHY, Columbia Univ — We investigate the interface of single layer graphene, molybdenum disulfide lateral heterostructures using scanning tunneling microscopy (STM). Samples are fabricated using chemical vapor deposition to deposit graphene, photolithography to pattern graphene and metal-organic chemical vapor deposition to grow molybdenum disulfide in patterned areas. The lateral junction of the two materials allows investigation of structural and electronic properties at the interface of the two materials, an interface usually buried in conventional stacked heterostructures. STM is used to image the stitching of the two materials with nanoscale resolution. STM is also used to perform local spectroscopy, probing the local density of states on an atomic scale across the junction. Interesting phenomena such as the charge transfer and atomic bonding are investigated. The spatially changing chemical potential between the two materials is also examined at different gate voltages.

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