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Scanning tunneling microscopy/spectroscopy studies of local electronic structure in Epitaxial Graphene NIKHIL SHARMA, MICHAEL SPRINKLE, Georgia Institute of Technology, CLAIRE BERGER, Georgia Institute of Technology/ CNRS, France, WALTER DEHEER, PHILLIP FIRST, Georgia Institute of Technology — Epitaxial growth of graphene on hexagonal SiC by thermal desorption of Si has produced high quality films, providing a potential route to wafer-scale graphene electronics. However, many aspects of this new electronic material system remain to be understood. Using scanning tunneling microscopy and spectroscopy (STM/STS), we investigate the layer-dependent effect of atomic defects and deposited metal islands on the local electronic structure of epitaxial graphene. Metal islands locally dope the graphene due to the work function difference between materials, and atomic defects can have a similar effect. The lateral gradient in carrier density and the possible transition from hole- to electron- doping (PN junction) is investigated experimentally for these cases.

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