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Electronic and Atomic-Scale Properties of Ultraflat CVD Graphene CHRISTOPHER GUTIERREZ, ETHAN ROSENTHAL, ALI DADGAR, Columbia University, LOLA BROWN, EDWARD LOCHOCKI, KYLE SHEN, JIWOONG PARK, Cornell University, ABHAY PASUPATHY, Columbia University — Chemical vapor deposition (CVD) growth on copper foils has proven to be a reliable and cost-effective method for the production of graphene. However, most films grown by this method suffer from misoriented graphene grains as well as topographic roughness due to the polycrystallinity of the underlying copper foil substrate. Recent methods of copper foil treatment have allowed for the growth of graphene predominantly on large single crystal Cu(111) facets. In this talk we discuss scanning tunneling microscope (STM) measurements on such samples that reveal large terraces and atomically-resolved images that allow us to analyze the graphene-copper interaction during the growth. Scanning tunneling spectroscopy (STS) measurements and mapping are further employed to probe the electronic interaction between the graphene and copper substrate.

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