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Scanning Tunneling Spectroscopy (STS) studies of graphene films on an insulating substrate ELENA STOLYAROVA, LI LIU, Columbia University, MARK HYBERTSEN, Brookhaven National Laboratory, PHILIP KIM, TONY HEINZ, GEORGE FLYNN, Columbia University, CENTER FOR FUNCTIONAL NANOMATERIALS, BNL TEAM, CENTER FOR ELECTRON TRANSPORT IN MOLECULAR NANOSTRUCTURES, COLUMBIA UNIVERSITY TEAM, DEPARTMENT OF CHEMISTRY, COLUMBIA UNIVERSITY TEAM — Scanning Tunneling Spectroscopy has been utilized to study the differences between the electronic structure of a three-dimensional graphite crystal and its two-dimensional building block, graphene. Single and few-layer graphene samples were isolated on a non-conductive silicon dioxide substrate and contacted at the edges with a gold electrode. For single layer flakes current-voltage dependent I(V) curves, recorded at 4.6 K under Ultra-high Vacuum (UHV) conditions, show no additional features (for states far from the Fermi energy) that might be considered characteristic of a weak interaction between graphene and the substrate. No significant spatial inhomogeneity of local sample properties was observed. Evolution of spectroscopic curves as a function of graphene layers will be discussed.

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