Abstract Submitted
for the SES12 Meeting of
The American Physical Society

Tunable bands in biased multilayer epitaxial graphene[1] MICHAEL D. WILLIAMS, Department of Physics and Center for Functional Nanoscale Materials, Atlanta, GA 30314, DUMINDA K. SAMARAKOON, Department of Chemistry, Clark Atlanta University, Atlanta, GA 30314, DENNIS W. HESS, School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, Atlanta, GA 30332, XIAO-QIAN WANG, Department of Physics and Center for Functional Nanoscale Materials, Atlanta, GA 30314 — We have studied the electronic characteristics of multilayer epitaxial graphene under an electric bias. Ultraviolet photoemission spectroscopy measurements reveal that there is a notable increase of the electronic density-of-states in valence bands near the Fermi level. The evolution of electronic structure of rotational-stacked multilayer epitaxial graphene as a function of the applied electric bias is investigated using first-principles density-functional theory including interlayer van der Waals interactions. The tailoring of electronic band structure is shown to correlate with the interlayer coupling tuned by the applied bias. The implications of tunable electronic structure of rotational-stacked epitaxial graphene grown on the C-face of SiC for future device applications are discussed. Nanoscale DOI:10.1039/c2nr1199a

[1]Work supported by NSF under grants PREM DMR-0934142, MRSEC DMR-0820382, and CREST HRD-1137751 and AFOSR under grant FA9550-10-1-0254.

Michael Williams
Clark Atlanta University

Date submitted: 19 Sep 2012 Electronic form version 1.4