Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Exposure of Epitaxial Graphene on SiC(0001) to Atomic Hydrogen[1] NATHAN GUISINGER, National Institute of Standards and Technology, GREG RUTTER, Georgia Institute of Technology, JASON CRAIN, National Institute of Standards and Technology, PHILLIP FIRST, Georgia Institute of Technology, JOSEPH STROSCIO, National Institute of Standards and Technology — Graphene films on SiC exhibit coherent transport properties that suggest the potential for novel carbon-based nanoelectronics applications. Recent studies suggest that the role of the interface between single layer graphene and silicon-terminated SiC can strongly influence the electronic properties of the graphene overlayer. In this study, we have exposed the graphitized SiC to atomic hydrogen in an effort to passivate dangling bonds at the interface. We have used scanning tunneling microscopy to investigate the interface surface structure following exposure to atomic hydrogen for a range of sample temperatures. Initial results indicate that regions of clean SiC were successfully passivated with atomic hydrogen below 400 $^{\circ}$C, while the underlying interface of the graphitized regions appear to be unchanged for all temperatures studied. The threshold temperature for passivating clean SiC suggest that the passivated dangling bonds are primarily from Si atoms that are present within the SiC surface reconstruction. Although the hydrogen does not appear to penetrate below the graphene layer, initial results suggest that it does adsorb to the graphene.

[1]This work was supported in part by NSF grant ECS-0404084.

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Date submitted: 27 Nov 2007 Electronic form version 1.4