Abstract Submitted
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Investigation of the early stages of graphene formation on 6H-SiC J. R. SKUZA, Department of Physics, College of William and Mary, C. CLAVERO, K. YANG, Department of Applied Science, College of William and Mary, B. WINCHESKI, NASA Langley Research Center, R. A. LUKASZEW, Departments of Applied Science and Physics, College of William and Mary — The predicted and/or observed unique properties of graphene have sparked tremendous research efforts to develop graphene-based ultra-high speed electronic and optical devices. The most promising technique to fabricate epitaxial graphene to date is via high temperature sublimation of atomic layers of Si from monocrystalline SiC substrates [1,2]. However, this approach leads to rough surfaces and little work has been done to investigate graphene nucleation during the early stages of growth. We have used atomic force microscopy, scanning electron microscopy, and Raman spectroscopy to investigate the early stages of graphene nucleation and surface evolution when annealing semi-insulating and n-type doped 6H-SiC substrates under low vacuum ($\sim 10^{-3}$ Torr) and ultra-high vacuum (10^{-9} Torr) regimes. Scaling laws applied to the surface evolution in these two cases will be compared. [1] I. Forbeaux *et al.*, Phys. Rev. B **58**, 16396 (1998). [2] C. Berger *et al.*, J. Phys. Chem. B **108**, 19912 (2004).

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