

Abstract Submitted
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Growth and Characterization of Graphene on Single Crystal Cu Substrates¹ Z.R. ROBINSON, P. TYAGI, H. GEISLER, C.A. VENTRICE, JR., University at Albany, A.A. BOL, J.B. HANNON, IBM T. J. Watson Research Center — One of the key issues for the use of CVD graphene in device applications is the influence of defects on the transport properties of the graphene. Therefore, it is important to understand the influence of the substrate on the orientation of the graphene. Growth of graphene films on Cu(111) has the potential for producing films with a low defect density because of the hexagonal symmetry of the substrate and relatively small lattice mismatch, whereas growth on Cu(100) is expected to result in multi-domain growth because of its square symmetry. In this study, graphene films were grown on Cu single crystal substrates, and characterized with LEEM, LEED, SEM, AFM, and Raman spectroscopy. The clean Cu substrates were prepared by sputtering and annealing in UHV. For the initial growth studies, the samples were transferred to a tube furnace for graphene growth using a technique optimized for Cu foils. The UHV system has recently been modified with a button heater compatible with the conditions needed for graphene growth to enable in-situ growth and characterization.

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