

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Molecular beam growth of sub-monolayer and multilayer graphene on h-BN flakes¹ LARA FERNANDES DOS SANTOS, SHENG WANG, ULRICH WURSTBAUER, Columbia University, NY, JORGE M. GARCIA, Instituto de Microelectronica de Madrid, CNM, CSIC, Spain, LEI WANG, ANTONIO LEVY, JUNGSIK PARK, CORY RAYMOND DEAN, Columbia University, NY, LOREN N. PFEIFFER, Princeton University, NJ, JAMES HONE, ARON PINCZUK, Columbia University, NY — We report the successful growth of graphene layers on h-BN substrate flakes in a MBE environment. The growth configuration was designed to allow a gradient in the deposition rate (DR) of carbon on the substrate. The growth conditions such as the substrate temperature were highly controlled. Characterization is carried out by spatially resolved Raman spectroscopy and by AFM imaging. We investigated the graphene coverage on the h-BN flakes. The flakes could be partially covered by a sub-monolayer film, fully covered by a single layer or fully covered by a multilayer film. We find high quality graphene in sub-monolayer and single layer growths. We found a striking independence on the carbon DR, which is attributed to the high mobility of carbons atoms on the h-BN surface. This is a characteristic feature of van der Waals molecular beam growth.

¹Work supported by ONR Graphene MURI.

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Date submitted: 18 Dec 2012

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