

Abstract Submitted
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Kink kinetics of graphene growth on Ir(111) PAUL C. ROGGE, Department of Materials Science and Engineering, University of California, Berkeley and Materials Sciences Division, Lawrence Berkeley National Lab, SHU NIE, KEVIN F. MCCARTY, NORMAN C. BARTELT, Sandia National Laboratories, Livermore, CA, OSCAR D. DUBON, Department of Materials Science and Engineering, University of California, Berkeley and Materials Sciences Division, Lawrence Berkeley National Lab — Graphene growth of aligned domains on Ir(111) and Ru(0001) is controlled by the attachment of clusters of carbon adatoms. Here we study the growth of rotational variants on Ir(111) and show that the growth is dependent on both cluster attachment and kink kinetics. We simultaneously measure the growth velocity of individual facets and the local concentration of carbon adatoms. The faceted domains tend to lie along the equilibrium zigzag or armchair direction. As the carbon adatom concentration increases, the facets deviate from their equilibrium orientation. This increases the kink density, allowing faster growth. The kink density is a function of the carbon adatom supersaturation. We will discuss how these findings account for the different growth velocities between aligned and rotated domains. This work was supported by the Director, Office of Science, Office of Basic Energy Sciences, Division of Materials Sciences and Engineering, of the U.S. Department of Energy Contract No. De-Ac04-94AL85000 (SNL). ODD acknowledges support from the NSF (Grant No. DMR-1105541). PCR acknowledges support from a DoD NDSEG fellowship (32 CFR 168a).

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