

Abstract Submitted
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Graphene Growth and Defects on Ni(111) MATTHIAS BATZILL, University of South Florida, JAYEETA LAHIRI — Using scanning tunneling microscopy (STM) and Auger electron spectroscopy (AES) we have investigated the growth of graphene on Ni(111) surfaces by carbon segregation from the bulk. We reveal two distinct growth modes for graphene growth. Between 480 and 650 C graphene forms on clean Ni(111) and below 480 C graphene grows by an in-plane conversion of a surface carbide phase. This is the first time that graphene formation is observed by transformation of a surface carbide. STM indicates that a lattice-matched, one-dimensional in-plane domain boundary between graphene and the carbide forms and graphene grows by replacing Ni-atoms with carbon at this interface. In addition to the growth of graphene we will also briefly discuss atomic-scale defects that can be synthesized in Ni-supported graphene. In particular we emphasize the formation of an extended line-defect with metallic properties [1].

[1] J. Lahiri, Y. Lin, P. Bozkurt, I.I. Oleynik, M. Batzill Nature Nanotechnol. 5, 326 (2010).

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