Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Growing Epitaxial Graphene on an Insulator by MBE CHANDRA MOHAPATRA, JAMES ECKSTEIN, Department of Physics, Univesity of Illinois Urbana Champaign, USA — We have used electron beam evaporation of solid carbon (C) to deposit graphene on MgO <111> at 850C. The growth appears epitaxial as observed by in-situ RHEED which also reveals that the hot scattering surface transitions from an insulator to a conductor after deposition of 1 monolayer of C. Growth at higher temperatures gives better crystallinity. We further characterize the film by ex-situ Raman spectroscopy, AFM and transport. Raman reveals all the characteristic G, D and 2D peaks of graphene and the 2D peak can be fit to a single lorentzian typical for graphene. AFM pictures show that the surface consists of flat connected domains, which are uniform across the substrate. Electrical transport shows insulating behavior with resistance (R) varying as $1/T^2$. This work was supported by the DOE BES at the F. Seitz Materials Research Laboratory at the University of Illinois, Urbana.

Chandra Mohapatra
Dept. of Physics, Univesity of Illinois Urbana Champaign, USA

Date submitted: 28 Nov 2008 Electronic form version 1.4