

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Graphene Films Grown on Insulating Substrates¹ SIARHEI V. SAMSONAU, College of Staten Island CUNY, Graduate Center CUNY, ANNEMARIE L. EXARHOS, MICHAEL E. TURK, JING CAI, The University of Pennsylvania, YURY DESHKO, College of Staten Island CUNY, Graduate Center CUNY, ANSHEL A. GOROKHOVSKY, College of Staten Island CUNY, JAY M. KIKKAWA, The University of Pennsylvania, ALEXANDER M. ZAITSEV, College of Staten Island CUNY — We report a method of direct CVD growth of carbon films on quartz substrates. The films are grown at temperatures from 650 to 1200 °C in a graphite container filled with methane. Films grown at 1200 °C reveal clear G and 2D Raman bands characteristic of graphene. A combination of Raman, absorption and electrical measurements allows us to conclude that carbon films grown by this method are polycrystalline graphene, large areas of which may be composed of single carbon layer. Sheet resistivity of these graphene films is low enough to make them interesting objects for electronic applications. Advantages of our synthetic approach include simplicity and the ability to deposit films on any insulating substrate, which can stand temperature of at least 650 °C. Thus far, no factors limiting the area of deposition and uniformity of the deposited graphene films have been identified.

¹US Army Research Office (Grant # 47145-00 01) and PSC-CUNY (Grant # 62323-00-40)

Siarhei V. Samsonau
College of Staten Island CUNY, Graduate Center CUNY

Date submitted: 09 Mar 2011

Electronic form version 1.4