

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Toward graphene based electronics from homogeneous top-gated graphene devices JINSEONG HEO, HYUNJONG CHUNG, HEEJUN YANG, DAVID SEO, HYUN JAE SONG, KYOUNG-EUN BYUN, SEONGJUN PARK, Samsung Advanced Institute of Technology, GRAPHENE TEAM — We report high quality top-gated graphene field effect devices integrated on 150mm substrate, which involves unprecedented homogeneous chemical vapor deposition growth of monolayer graphene on Ni/Cu. Statistics of maximum resistance, dirac voltage and also mobility over a thousand devices are shown for the first time, in which 5% of measurable devices are in 3,000~5,000 $\text{cm}^2/\text{V}\cdot\text{s}$ of mobility. Furthermore, logic gates such as NOT and AND based on top-gated graphene devices were demonstrated. Our results imply a route toward graphene based electronics with complementary metal-oxide-semiconductor (CMOS) compatible process.

Jinseong Heo
Samsung Advanced Institute of Technology

Date submitted: 20 Dec 2011

Electronic form version 1.4