

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Graphenated Infrared Screens: A New Platform for Bio- Detection. AMRITA BANERJEE, DIETER MOELLER, HAIM GREBEL, New Jersey Institute of Technology, ELECTRONIC IMAGING CENTER TEAM — We are proposing a novel spectroscopic tool – the graphenated infrared (IR) screens. It is aimed to enhance weak IR and Raman signals. Metallo-dielectric screens have been used for astronomy and remote sensing applications. These periodic structures are at resonance with the IR wavelength of interest: a standing wave of surface charges is formed at resonance conditions, which enables transmission or, reflection of certain IR bands. Graphene is a monolayer thick crystal of carbon. It is chemically inert and exhibits very large mobility values. Recently, we succeeded in fabricating mono and a few-layered suspended graphene on top of these IR screens. The result is a new spectroscopic platform, which enhances weak IR and Raman signals of molecules and specifically, bio-species, which are residing on the graphene layer. The IR absorption and Raman signals of bio-species under test have exhibited strong dependence on the screen periodicity pitch as well as on its orientation.

Amrita Banerjee
New Jersey Institute of Technology

Date submitted: 20 Nov 2008

Electronic form version 1.4