Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Temperature Dependent Ultraviolet Raman Spectroscopy of Monolayer Graphene Films[1] IRENE CALIZO, BRENT SPERLING, National Institute of Standards and Technology, JOSHUA GILTINAN, Department of Physics, Astronomy, and Geosciences, Towson University, JAMES MASLAR, ANGELA R. HIGHT WALKER, National Institute of Standards and Technology — Strong interest in Raman spectroscopy lies in that it delivers a wealth of information about the structure of graphene. Raman spectroscopy allows for the identification of graphene layers and disorder. We have produced monolayer graphene films with lateral dimensions on the order of centimeters on copper foils by chemical vapor deposition (CVD). Temperature dependent Raman spectra were obtained at multiple wavelengths including ultraviolet and visible and at temperatures from 10 K to 300 K. Here we present the effect of excitation wavelength and temperature on the Raman spectrum of CVD grown graphene and compare it to theoretical predictions. The changes in Raman linewidth and positions provide powerful information about anharmonicity and electron-phonon interactions. The obtained results are important for Raman nanometrology of graphene.

[1]This work was supported in part by the National Research Council Research Associateship.

Irene Calizo
Physics Laboratory, National Institute of Standards and Technology

Date submitted: 28 Nov 2009 Electronic form version 1.4